

Regional regulation as a new form of  
telecom sector governance:  
the interactions with technological socio-economic  
systems and market performance



Regional regulation as a new form of telecom sector governance: the interactions with technological socio-economic systems and market performance

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*Study to show thyself approved...*

St Paul, 2 Timothy 2:15

*To my pearl of great price,*

*Andrea, Seth and Justin.*



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Delft, June 2006



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## List of Abbreviations

ADSL	Asymmetrical Digital Subscriber Line
ASEAN	Association of South East Asian Nations
AU	African Union
ARICEA	Association of Regulators for Information and Communication Services of Eastern and Southern Africa
ART	Autorité de Régulation des Télécommunications (French Regulator)
ATNR	African Telecommunication Regulators Network
BT	British Telecommunications
BTA	Botswana Telecom Authority
CaTV	Cable Television
C&W	Cable and Wireless
CCA	Current Cost Accounting
CFI	Court of First Instance
CIDA	Canadian International Development Agency
COCOM	Communications Committee in the European Parliament
COSITU	The Model for calculation of costs, tariffs and rates for telephone services
DBSA	Development Bank of Southern Africa
DECT	Digital Enhanced Cordless Telecommunications
DTAG	Deutsche Telekom (German Telecom)
ECJ	European Court of Justice
ECTEL	Eastern Caribbean Telecommunications Authority
ECTRA	European Committee for Telecommunications Regulatory Affairs
ECSC	Eastern Caribbean Supreme Court
EFTA	European Free Trade area
EIE	Evolutionary Institutional Economics
ERG	European Regulators Group
ETNO	European Telecommunications Network Operators' Association
EU	European Union
FCC	Federal Communications Commission
FCM	Financial Capital Maintenance
FDC	Fully-distributed costs
FDI	Foreign Direct Investment
FTTH	Fiber to the home
FL-RAIC	Forward Looking Long Run Average Incremental Cost
FL-RIC	Forward Looking Run Incremental Cost
FRATEL	Francophone Telecommunication Regulatory Network
GDP	Gross Domestic Product

GSM	Global System for Mobile Communications
IBA	Independent Broadcasting Authority
IDA	International Development Association
IP	Internet Protocol
IRG	Independent Regulators Group
ISDN	Integrated Digital Services Network
ITU	International Telecommunications Union
Kpi	Key performance indicators
LLU	Local Loop Unbundling
LRAIC	Long Run Average Incremental Costs
LRIC	Long Run Incremental Costs
MDF	Main Distribution Frame
MERCOSUR	Trade agreement between Argentina, Brazil, Paraguay and Uruguay (Communications)
NARUC	National Association of Regulatory Utility Commissioners
NIE	New Institutional Economics
NRA	National Regulatory Authority
NTRC	National Telecommunications Regulatory Commission
OCM	Operating Capital Maintenance
OECS	Organization of Eastern Caribbean States
OFCOM	Office of Communications
OIE	Original Institutional Economics
ONP	Open Network Provision
OOCUR	Organization of Caribbean Utility Regulators
OPTA	Onafhankelijke Post en Telecommunicatie Autoriteit (OPTA) (Dutch Telecom Regulatory Authority)
PA	Principle Agent Theory
PIBs	Principals of implementation and best practices
PBX	Private Branch Exchange
POP	Point of Presence
PSA	Principle Supervisor Agent
PSTN	Public Switch Telecommunications Network
PTO	Public Telecommunication Operators
RAPID	Regional Activity to Promote Integration through Dialogue and Policy Implementation
RegTP	Regulierungsbehoerde für Telekommunikation und Post(German Telecom Regulatory Authority)
REGULATEL	Regulators Forum
RTRP	Regional Telecommunications Restructuring Program
RTRP	Regional Telecoms Restructuring Project
RUO	Reference Unbundling Offer

SADC	South African Development Community
SATA	Southern African Telecommunications Association
SATCC	Southern African Telecommunications Co-ordinating Commission
SCP	Structure Conduct Performance
SLA	Service Level Agreement
SLA	Service Level Agreement
SMP	Significant Market Power
TDMA	Time Division Multiple Access
TCE	Transaction Cost Economics
TRASA	Telecommunications Regulatory Association of Southern Africa
UMTS	Universal Mobile Telecommunications System
USAID	US Agency for International Development
VANs	Value Added Network Services
VSAT	Very Small Aperture Terminal
WACC	Weighted Average Cost of Capital
WATRA	West Africa Telecommunications Regulator's Association
WiFi	Wireless Fidelity



## **1. Introduction**

*“As the economy of the 21st century begins to reveal the dominant characteristics of a new global information economy, it is apparent that many industries and markets are changing in quite fundamental ways. A new structure of private/public institutional arrangements will be required if economic efficiency, growth and other public policy objectives are to be achieved”<sup>1</sup>*

### **1.1 Introduction**

Over the past decade telecom technologies, markets and services have all grown beyond national boundaries. Market reform initiatives have had to follow and in most instances extend beyond and across traditional national jurisdictions. In the process, telecom regulation has been transformed into an increasingly multi-level, multi-actor and multi-faceted complex system. Understandably, these developments have raised issues of the scope and capabilities of national regulation as different forms of regional regulation have been developed to assist, supplement and in some cases replace, certain elements of national regulation. In this introductory chapter we discuss the emergence of regional regulation, the research objective and the organization of this thesis.

### **1.2 The emergence of regional organizations of telecom regulators**

The emergence of a new regional institutional phenomenon in the mid 1990's was one such form of regional regulation. The first regional organization of telecom regulators was created in the Association of South-East Asian Nations (ASEAN) in 1995. This was followed by other similar regional organizations of telecom regulators within different regional economic blocks. By 2003 this trend seemed unstoppable; thirteen such regional organizations had been created across developed, emerging and developing regions. This regional shift did not go unnoticed by the international community, in recognition of its increasing importance, the International Telecommunications Union (ITU) held the first informal meeting of regional regulators in December 2003. In many respect this represents an important watershed in the regional reform process. The regional organizations and the economic regions in which they were created are shown in Table 1.1.

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<sup>1</sup> W.H. Melody, Designing Utility regulation for the 21st Century Markets, 2002.

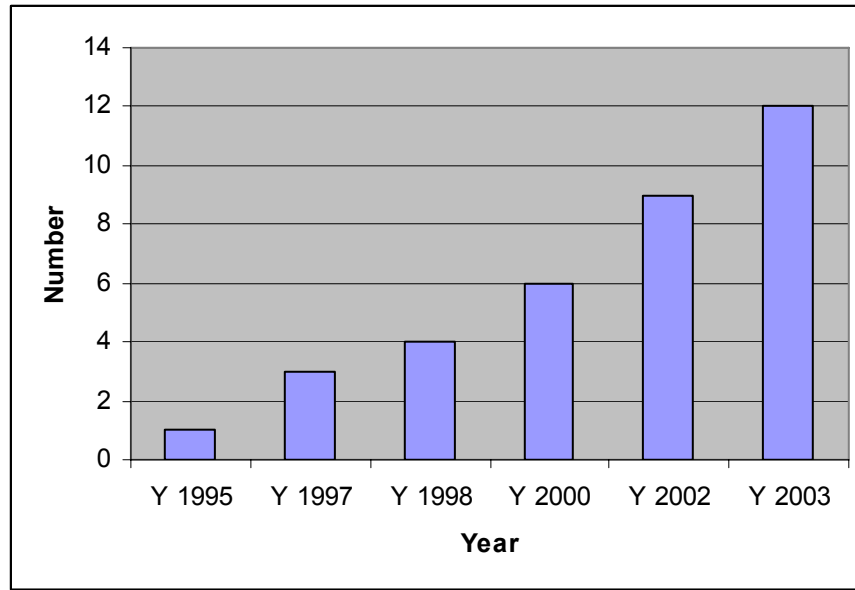
**Table 1.1 Regional Organizations of Telecom Regulators**

<b>Organization</b>	<b>Economic Region</b>	<b>Created</b>
ASEAN Telecommunication Regulators' Council	ASEAN	1995
Independent Regulators Group	European Union	1997
Telecommunications Regulators' Association of Southern Africa	Southern African Development Community	1997
Latin American Telecommunications Regulators Forum	MERCOSUR	1998
Arab Regulators Network	Arab States	1998
South Asian Telecommunications Regulators' Council.	Asia Pacific	1998
African Telecommunication Regulators Network	African Union	2000
Eastern Caribbean Telecommunications Authority	Organization of Eastern Caribbean States	2000
West Africa Telecommunications Regulators' Association	COMESA	2002
Organization of Caribbean Utility Regulators	America	2002
European Regulators Group	European Union	2002
Association of Regulators for Information and Communication Services of Eastern and Southern Africa	Southern African Development Community	2003
Francophone Telecommunication Regulatory Network	ECTRA	2003

*Source ITU 2003*

The steady growth in the setting up of these organizations in the period 1995 – 2003 is illustrated in Figure 1.1.

**Figure 1.1. Growth in regional organizations of telecom regulators**



*Source ITU 2003*

The setting up of these regional organizations was not done in isolation, rather it formed part of a broader set of regional market reform initiatives, the most significant of which have been the adoption of pro-competition regional policies, as opposed to a reliance on traditional sector specific regulation, liberalizing regional markets, and harmonizing regional regulatory tools such as access, interconnection, and price regulations. The actual adoption of these policies, however, has differed substantially across regions depending on the political, social and economic settings.

### **1.3 Implications for regional regulation**

In many respects these changes are creating benefits, and challenges, for regional policymakers and regulators. Here we discuss three sets of implications; the shift in the scope of national regulatory authorities, the new regulatory functions and the new system of regional governance.

#### **1.3.1 The shift in the scope of national regulatory authorities**

The regional market reform initiatives seem to signal a fundamental shift in the scope and orientation of national regulatory authorities (NRAs). To date (2006) their regulatory scope has

been largely confined to promoting competition in, and regulating, national markets. The “normal” regulatory duties have comprised controlling access, incumbent behavior, performance of universal service obligations, etc. with respect to their own national markets. The expansion of telecom markets across borders has challenged this. Regulation now had to follow the markets, or telecom operators, it was directed towards. As such the NRAs could no longer ignore developments in their respective regional markets; they were now compelled to consider regional issues that had a bearing on the effective regulation of their national markets.

While many of the NRAs were accustomed to harmonizing around common international technical standards, i.e. numbering and spectrum, they were less experienced at implementing regional policies and regulations. Furthermore, the NRAs were accustomed to bilateral cooperation with neighboring states but were less experienced at participating in a regional regulatory system.

With regional regulation the NRA’s were called upon to assess developments beyond their national markets and to contribute towards facilitating the development of regional competitive markets. In a sense they became the de facto implementers of national and regional policy and regulation. While some NRA’s have responded well to the challenge, many have not. In most instances regulators have had difficulty in putting regional policies into effect or finding appropriate methods to implement regional policies and regulations.

### **1.3.2 The new regulatory function**

The regional market reform initiatives seem to herald the “arrival” of a new regulatory function, one that can be considered distinct from the regulatory functions performed at national level. Aspects of these new regulatory functions have included the traditional economic, social and technical aspects of regulation now applied uniformly across regional rather than national markets. The areas for regulatory attention are also similar to those found at national levels – access, price, interconnection, regulations. The main difference is that on a regional level, the regulatory principles have been harmonized in an attempt to minimize regulatory incompatibilities. These incompatibilities have arisen from a regional regulatory process in which multi-actors participating across multi-levels (national and regional) adopt, implement and enforce regional regulation.

### **1.3.3 The new system of regional regulatory governance**

The regional market reform initiatives seem to have fundamentally transformed the system of regional governance for telecom markets. Regional regulation has become the accepted new form of arranging the coordination of economic activities in the telecom sector. Whilst regional regulation existed to some extent prior to 1995, the emergence of regional organizations of telecom regulators and the changing role of national regulators seem to have confirmed its importance as an integral part of the three level structure of national, regional and international regulation.



For purposes of our study we have identified three levels of regulation; national, regional and international. International regulation is considered to be the oldest. The public arrangement of international telecom has its foundation in the agreements made between European telegraphy administrations over 140 years ago. In the case of international regulation it was the barrier to development caused by inconsistent telegraph systems and tariffs across Western European states that led to the first International Telegraphy Convention of 1865. A common European telegraphy network was created resulting in, for example, the use of Morse code to connect European cities. Through the years the ITU has continued this role of harmonizing standards on various aspects of telecom matters, and today, in terms of public ordering, it continues to provide direction in telecom areas that require international cooperation and coordination.

National regulation followed international regulation in terms of age and tradition. The public arrangement of national telecom has its foundations in the US experiments of the latter 19th and early 20th century. Telecom was considered a public utility and first came under state regulation where it was regulated by independent state commissions. Interstate communications would later come under federal regulation to form a two-tiered system. Europe and the rest of the world has adopted a modified version of the US public utility regulation model, generally as a one tier national system although regional regulation in some cases adds a second tier.

Of the three levels of telecom governance outlined here, the organization of regional telecom regulatory bodies is the most recent. It does not have the rich heritage of international regulation as provided by the ITU. Nor does it have the benefit of experimentation as demonstrated by the long history of the US and the EU models of public utility regulation. Rather regional governance is at a very early stage of its development. In fact in some regions, regional regulation is only just emerging as an important regulatory function.

The global structure of telecom reform is illustrated in Figure 1.2 and a distinction is made between the national, regional and international levels. The following organizations are examples at the national, regional and international levels.

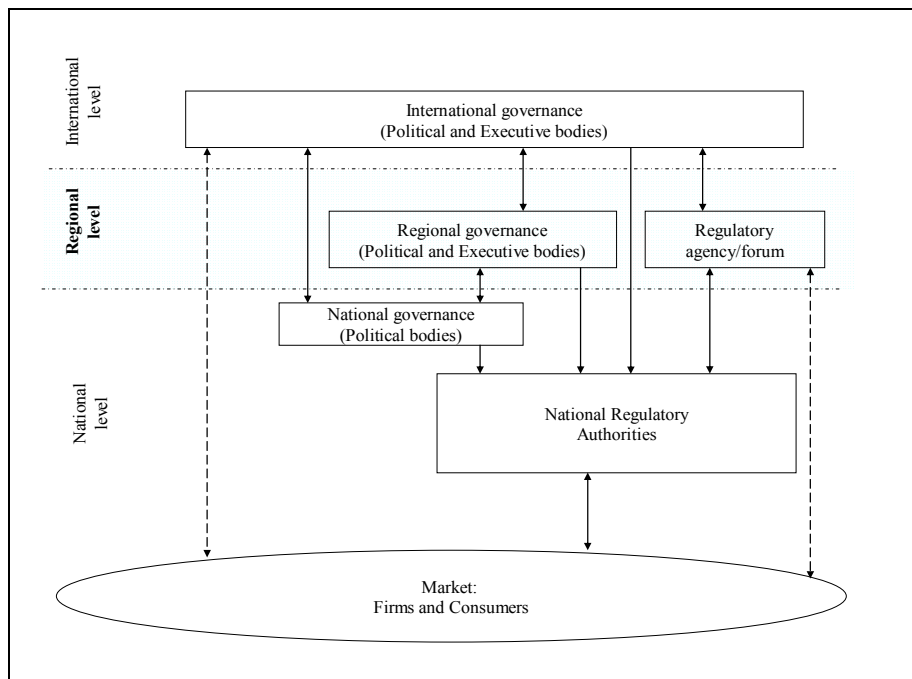
- The national level - includes national regulatory authorities as key implementing agents of all national, regional and international policies and regulations. For example, the Onafhankelijke Post en Telecommunicatie Autoriteit (OPTA) in The Netherlands, the Office of Communications (Ofcom) in the United Kingdom and the Federal Communications Commission (FCC) in the United States.
- The regional level - includes regional organizations like the European Commission (EC), Organization of Eastern Caribbean States Authority (OECS) and the Southern Africa Transport and Communications Commission (SATCC). These organizations provide a forum for formulating regional telecom policy frameworks. Also included on this level are the regional organizations of telecom regulators like the European Regulators Group

(ERG), Eastern Caribbean Telecommunications Authority (ECTEL) and the Telecommunications Regulators' Association of Southern Africa (TRASA). They provide a forum for essentially harmonizing the regulatory practices associated with their respective regional policy frameworks.

- The international level - includes international organizations like the ITU, World Bank and World Trade Organization (WTO), such agencies influence various aspects of telecom to a greater or lesser degree.

The essential relations amongst the various actors across the three levels are shown in Figure 1.2. The complex relations among the layers are indicated by arrows. It is anticipated that the clarity with which these relations are defined, and the specific functions allocated to a relation will have a significant impact on the growth of the telecom sector across all levels. The focus of the research reported in this thesis was the regional level and the effectiveness, of its institutional design for implementing policies.

**Figure 1.2: The global structure of telecom reform**



In many respects these developments have raised questions as to the appropriateness of the existing system of governance to deal effectively with the aforementioned challenges. The existing system may thus require an assessment of its ability to address these dynamic changes. In areas where it is found wanting it may require a revision and a transition path to a system where the full benefits of regional market reform initiatives are realized. To reiterate the words of our opening quotation “A new structure of private/public institutional arrangements will be required if economic efficiency, growth and other public policy objectives are to be achieved”

#### **1.4 Research objective**

Above we have described the emergence of regional organizations of telecom regulators as a regional market reform initiative. While a reform of national and international markets has been underway for a quarter century or longer, the emergence of these new institutional structures as mechanisms of regional coordination and policy implementation is a more recent phenomenon. In our view this has received relatively little attention in terms of understanding its contribution to the overall picture of telecom governance.

A key objective of this study, was to describe and analyze the early experiences of regional regulation as a new institution in the ongoing telecom sector reform and to assess its implications for regulatory performance and industry development. The period 1995 to 2004 represents an important learning phase in the process of regional regulation in telecom. Thus with this research we present a first effort at investigating this institutional experiment. The objective of the research was:

To describe and analyze the early experiences of regional regulation as a new institution in the ongoing reform of the telecom sector and to assess its implications for regulatory effectiveness and sector performance.

An attempt to assess the extent to which regional regulation has made a significant difference to telecom sector performance will form a major part of the research investigation. Has regional regulation in any way contributed towards a more efficient and effective means of arranging the coordination of economic activities in the telecom sector? If so, what have been the common and regional specific regulatory issues that have enabled or constrained these developments?

In order to address this broad objective more specifically, it is necessary to examine the characteristics of the institutional environment in which regional regulation is embedded. To do this it is necessary to identify the benefits and challenges of the institutional setting<sup>23</sup> for regional

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<sup>2</sup> By regional regulatory issues we mean the objectives of regional policy frameworks, the role regional organizations of telecom regulators and market power. These issues and others will be elaborated in subsequent chapters.

regulation. At the same time the underlying substantive regional regulatory issues need to be included and set apart. How the regional policymakers have responded to and treated these regulatory issues needs to be examined.

## **1.5 Research methodology**

As this study deals with the issue of institutional change and the role of new governance in the telecom sector, there will be more reliance on “qualitative” analysis, in the empirical chapters (5, 6 and 7). We chose to use case studies, interviews and surveys, coupling these techniques with an extensive experience of working in the telecom industry. In addition we undertook a review of the relevant academic and industry literature.

The research design includes a general and case level analysis. At the general level, the relationship between the institutional setting and sector performance is examined. At the case level concepts relating to the institutional setting are operationalized for purposes of analyzing the specific relationships. According to our model features of the institutional setting affect regional regulation in fundamental ways and create benefits and challenges for regional policymakers and regulators. The treatment of the substantive regulatory issues examined has had implications for sector performance in each of the regions.

Three case studies were used to make a comparative cross national analysis, viz – the EU, the OECS and the SADC cases. The EU was chosen because it represents a developed economy with a history of regional telecom sector development. The SADC in contrast was chosen because it comprises an under-developed economic region that contrasts with the situation in the EU. The OECS was chosen because it falls somewhere between these two levels of development. In addition the OECS represents small islands that have specifically created a regional regulator with legal authority in member countries. The selection of cases is further explained in Chapter 4.

## **1.6 Theoretical framework**

The purpose of this study was to apply existing theories and concepts to a new phenomenon, regional regulation, with a view to obtaining a better understanding of the effects of this phenomenon. While the point of departure is that of economics, studying regional regulation meant that we also needed to take into consideration other social sciences, particularly political science, and apply the insights obtained from these perspectives. Important aspects of regional regulation like the institutional setting, the system of governance and the problem of market power of incumbents can best be analyzed from an institutional economics perspective, which provides for the incorporation of insights and concepts from a number of other social sciences. This makes the

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<sup>3</sup> By institutional setting we mean formal and informal institutions, institutional arrangements, technologies and the interactions between actors involved in the process. These institutional elements will be elaborated in later chapters.

theoretical approach inherently pluralistic<sup>4</sup>. The need for such an approach is further supported by the increasing complexity of regional regulation as a multi-actor, multi-level and multi-faceted system. In such instances the use of multiple theoretical models in the course of scientific research is considered to be legitimate (Dow 1996). In our study the different theoretical models are considered to be complementary, since they address different aspects of the same phenomenon, regional regulation, they are used as ‘lenses’ through which we can view the different cases under different conditions (Groenewegen and Vromen 1996).

The theoretical frameworks used here are drawn from neoclassical market theory, industrial organization theory, institutional economics, political science and public administration. Our theoretical discussion is directed to insights and concepts that have a direct bearing on the phenomenon under consideration, regional regulation and its implications. As a point of departure, we applied a layered model adopted from Groenewegen (2005) and inspired by Williamson (2000). This allowed us to conceptualize institutions and other concepts under each of the levels and to use them in a parsimonious manner.

## **1.7 Policy contributions**

The research reported in this thesis is expected to contribute to our understanding of the effectiveness of regional regulation as a new form of governance for the telecom sector, and on that basis may produce policy recommendations that can be used to improve the new institution of regional telecom regulation. In the discussion it will be made clear that the structure of the specific organization in which regional regulation is embedded will have implications for the effectiveness of regional regulation. Further, the particular manner in which regional policymakers and regulators treat the various regulatory issues that arise will have implications on sector performance.

The recommendations made in this thesis will be largely directed towards improving the regional systems of governance in each of the case study regions.

This study will have implications for national telecom regulators, the key agents of national, regional and international regulatory implementation; regional organizations of telecom regulators, the key agents of harmonizing implementation of regional telecom policies and regional policymakers, the key agents of formulating regional telecom policies.

## **1.8 Guiding questions**

The following questions were formulated and used to guide our research.

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<sup>4</sup>Here theoretical pluralism refers to the use of different theories to study a phenomenon rather than the use of a single theory. This represents an approach (amongst many other approaches) on which much has already been written regarding its use as a relevant methodology. Authors that have written on aspects of pluralism include Dow (1996) and Groenewegen and Vromen (1996).

### **Research questions**

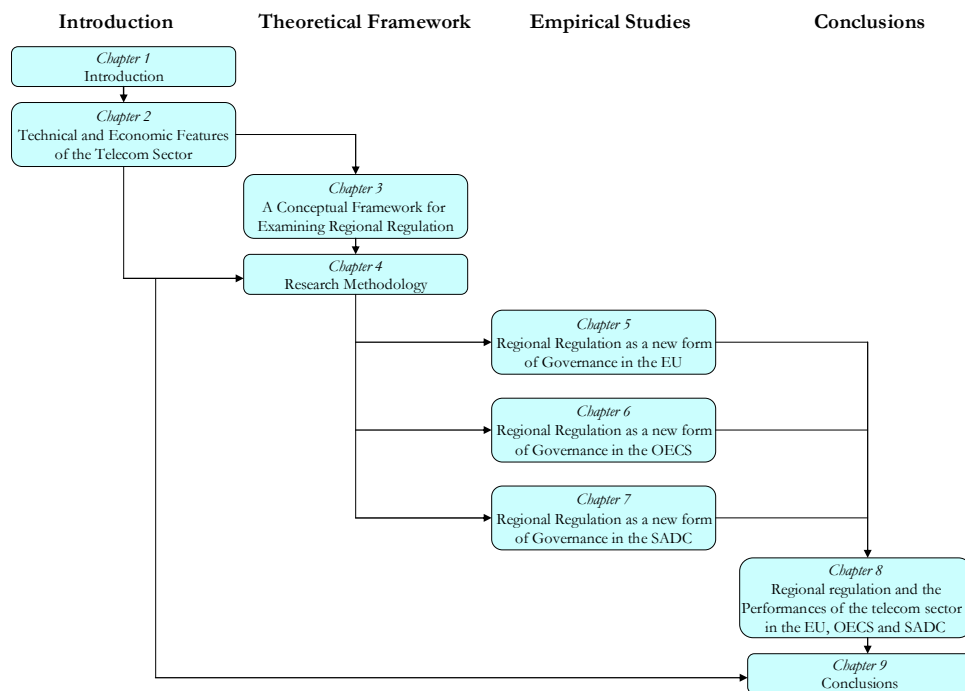
1. What are the specificities of telecom systems with respect to their economic and technical features? (Chapter 2).
2. What kind of theoretical framework should be developed to use to identify developments in regional markets? (Chapter 3).
3. How should the theoretical concepts be operationalized, and how might this be incorporated into a research model? The central research question is also presented here. (Chapter 4).
4. What effects has the technological socio-economic systems had on regional regulation and what are the implications for sector performances in the selected case study regions? (Chapter 5, 6 7).
5. What are the comparisons to be made between the three case study regions and what can we learn from them with respect to technological socio-economic systems and treatment of substantive regulatory issues? (Chapter 8).
6. What are the implications of this study for theory and practice? (Chapter 9).

In summary we will examine the implications of the technological socio-economic systems for regional regulation and the impact of the treatment by regional policymakers and regulators of regional regulatory issues on sector performance.

## 1.9 Organization of thesis

This thesis is organized as follows; In Chapter 2 we elaborate on the specificities of the telecom system with respect to those economic and technical features that are considered relevant for our investigation. We then proceed to our conceptual framework, Chapter 3, and a literature review. Our approach is eclectic in the sense that we borrowed concepts from various scientific fields, i.e. general economics, institutional economics and policy science, and use these to advance our own approach to analyzing the problems of regional telecom regulation. The conceptual framework for our analysis, our chosen research methodologies and the research questions are given in chapter 4. In chapters 5-7, building on chapter 4, we describe the conceptual methodological foundation and develop three case studies on regional regulation in the EU, the OECS and the SADC respectively. A comparative analysis of the respective approaches to regional regulation is presented in chapter 8 plus a discussion of the implications for telecom sector performance. A synthesis of the results from the cases and the previous analysis provides the foundation for conclusions and recommendations.

**Figure 1.3: Thesis outline**







## **2. Technical and economic features of the telecom sector**

### **2.1 Introduction**

In Chapter 1 we discussed the extent to which markets have grown beyond national boundaries and the emergence of regional regulation to assist, supplement and in some cases replace, certain elements of national regulation. It is evident from these developments that telecom markets are not “normal” markets and hence “normal” market behavior, i.e. regular supply and demand functions, price competition, etc. in many instances does not occur. For the purpose of this study it is therefore necessary to discuss the specificities of the telecom industry with respect to its economic and technical features and as the implications of this for policymakers.

### **2.2 Telecom as a regulated monopoly**

Here we discuss the dominant approach by governments to the monopoly problem and highlight some of the key economic specificities inherent in telecom technologies and markets. For most of its history, telecom has been regarded as a natural monopoly. The “natural monopoly” theory, which was constructed in the beginning of the 20th century, describes a situation for which it is socially efficient to have only one firm as the supplier of a given product or service. Loosely defined a natural monopoly exists when the cost of production are such that it is less expensive for market demand to be supplied by one operator than by several. In the past it was believed that a vertically integrated monopoly structure was essential for the provision of nation-wide telecom services and the development of capital intensive technologies, such as telecom systems.

Economies of scale (Kahn 1970, 1971), economies of scope (Baumol et al. 1986) and economies of density became important justifications for maintaining the early telephone network as a natural monopoly power. Economies of scale reflect the opportunities for reduced unit costs with increased output. It is also referred to as increasing return to scale. Conversely, diseconomies of scale exist when average costs increase with the volume of production. Scale economies provide efficiency advantages for large volumes of production, and new entrants will find it difficult to compete with already established firms with large scale production.

Economies of scope exist if a given quantity of each of two or more goods can be produced by one operator at a lower total cost than if each good were produced separately by different operators. It provides a cost advantage of one firm supplying two or more products or services compared to different firms each providing one. Different types of economies of scope have been distinguished; economies of horizontal integration, e.g. telephony and data, economies of vertical integration within the network, e.g. local and long distance and economies of vertical integration beyond the network, e.g. information production and distribution.

Economies of density relate to the fact that unit cost, that is costs per telephone connection, decreases with higher telephone density (Falch 2002). This implies that it is difficult for new entrants, in a given area where telephone connections are dense, to compete with an incumbent monopolist, where local networks with high penetration have already been established. The costs of infrastructure required to provide the service is lower for the incumbent.

In the past government policymakers generally believed that the societal interests would be best served by a single monopolist that could exploit these economies of scale, scope and density. Monopoly provided a socially optimal market structure. The problem was that unregulated monopolists could be expected to exploit their position by charging excessive prices and restricting output leading to a failure to provide universal access and losses of efficiency and social welfare.

The government's response in most states was to establish a government monopoly over the provision of public services with natural monopoly characteristics, including telecom and other infrastructure or public services. In a few countries, particularly the US where the telephone was developed as private enterprise, governments adopted policies and imposed regulations intended to prevent the monopolists from exercising monopoly market power and require them to meet public service objectives. In most instances it turned the natural monopoly into a legal monopoly in the process creating regulatory barriers to entry in monopoly markets. As outlined in Chapter 1, starting in the 1990's many states have privatized their incumbent telecom monopolies and established regulatory authorities.

These regulatory authorities now face the challenge of addressing the problem of monopoly power that can result in excessive prices and restriction of supply, unjustified barriers to entry and a failure to provide universal access. Regulation has tended to focus primarily on price regulation since it is perceived to be closely tied to a firm's production level. This in itself provided a major challenge. For example, if a profit maximizing price is set by a natural monopoly, monopoly profits will be realized. If the price is set equal to average cost, total cost will be covered, but consumers willing to pay a price equal to the marginal cost of additional production will be denied service. If price is set equal to marginal cost, the conditions of optimal efficiency, from neoclassical market theory, are satisfied but firms will not recover their total costs. They will suffer losses, will not be capable of continuing to innovate will eventually be forced into bankruptcy. Recommended solutions to this problem have ranged from public ownership with government subsidies to permit optimal marginal cost pricing, to average cost pricing, to a range of systems for adding differential price mark ups to a variety of marginal costs estimates.

Telecoms regulation has also been based on recognition of positive network externality benefits, i.e. benefits in addition to those recognized in market transactions, including benefits to others not directly involved in a telecom exchange. Regulation was advocated as a means to bring certain kinds of broad social benefits which would not otherwise be available. The model for telecoms

included regulation to encompass universal service as a basic telephone service was seen not just to be an ordinary service, but a substantial benefit for a population. To facilitate the growth of networks, the industry needed to be regulated to prevent any incentive for reduced output of monopoly services and predatory prices in the absence of competition. A telephone monopoly was argued to be more efficient and 'fair' if a government granted exclusivity to one company, rather than letting market forces dominate. The key to building a universal service has been pricing. Regulated pricing strategies have focused on establishing uniform national pricing structures designed to ensure affordable connection to as large a number of subscribers as possible. In addition in some states creating cross-subsidies between residential and business services facilitates monopoly providers ability to maintain more affordable residential rates.

In the US and a few other states the regulated monopoly model was implemented through privately owned operators. In most other countries, the same economic principles were implemented directly through publicly owned operators. These monopolies were granted exclusive authority over all network services. Vertical and quasi-vertical integration between these organizations and their equipment suppliers were common place, and the relatively closed relationships made new entry legally impossible. The monopolies tended to enter long term contracts with their favored equipment suppliers. The monopolies argued these long-term linkages were required to guarantee high standards and compatibility among the components of the public network. Thus, the need for a single operator to retain the integrity and protect the quality of the public switched telephone network (PSTN) was promoted. These telephone monopolies were in a position to cross-subsidize in favor of residential as against business users, in favor of local calls as against long-distance calls, and in favor of rural as against urban areas. These practices were intended to allow prices for local services and in rural areas to be kept at a somewhat lower level, making the goal of universal service more achievable.

### **2.3 The dismantling of the regulated monopoly model**

Although the regulated monopoly model worked well in a few countries, principally the Nordic countries, Australia and Canada, in many states it performed badly (Melody 1999). The reasons for poor performance vary from country to country and region to region and include failure to provide universal services; low levels of economic efficiency; a poor response to customer needs, especially business customers, an inability to keep up with technology change, and in some instances runaway bureaucracies. In general this has led to high prices, lack of innovation and poor services or lack of services in certain areas. The result has been a shift from regulating telecom as monopolies towards a more competitive approach to the provision of services.

As a result of major technological changes, the development of new telecom service possibilities, and the increasing importance of telecom for economic development, economists now generally agree that many segments of the telecom sector are not characterized by natural monopoly. Economists have generally come to accept that the theoretical benefits of natural monopoly cannot

be realized in a legal monopoly environment. While there may be some loss of economies of scale, scope and density these losses are offset by the gains in improved efficiency, innovation and responsiveness to market demand in face of competition.

Exogenous pressures like technological advancements may have contributed most to the dismantling of the regulated monopoly model. In the telecom industry these have included the convergence of technologies and the digitalization of content. While convergence generally refers to technological developments that blur the boundaries between the computer/consumer electronic industry, telecom and media/publishing industry it can also be taken to mean the convergence between voice and data and other telecom services.

Prior to convergence, for example, a dichotomy existed between voice and data services. Most public data networks used separate switching facilities to handle data traffic and different types to handle voice traffic. Many policymakers felt voice and data merited different regulatory treatment, partly because voice was the traditional domain of regulation, and data was not. As a result the provision of voice services was linked to social objectives like universal service requirements. In contrast data services were almost always limited to commercial ventures and hence outside the regulators' traditional scope of authority. In addition data services were provided over private networks, which were often unregulated.

Generic technology advances like digitalization of Internet protocol have now made the technological distinction between voice and data increasingly obsolete. In most cases, voice and data networks use the same physical facilities. For example, integrated digital services network (ISDN) provides the mechanism for delivering voice and data to a customer's location over the same facility and services network. In addition competition now exists between public and private networks. Competitors for the delivery of services now include a host of access mediums including cable television (CaTv) operators, Internet service providers (ISP's), terrestrial broadcasting and satellite operators, etc.

## **2.4 Telecom value chain**

One of the major results of the dismantlement of the regulated model was a vertical disintegration of the telecom industry. Recall that with the regulated model the monopolist was responsible for all stages of production. The coordination between the various stages of production was simply internalized within the public telecommunications operator (PTO). From a technical perspective, this arrangement provided the most economically efficient way of coordinating the various production stages (Joskow 1996, 2000). In a sense the monopoly arrangements allowed the technical system to function properly. In addition it allowed the following four relevant technical functions to be performed (Finger, Künneke and Groenewegen 2005).

- Interoperability: which refers to the technical compatibility of the elements, i.e. nodes and links of the system. For example, seamless connectivity between fixed and mobile networks, including exchange switches, base stations, backhaul links, etc.
- Interconnection: which refers to the physical linkages between the different networks, i.e. pertains to the system's boundaries. For example, the ability to connect subscribers on one network to the subscribers on a rivals network.
- Capacity management: because the physical capacity of nodes and links is limited, such capacity needs to be managed. For example, the ability to build redundancy and alternative routing capabilities to support critical links.
- System management: refers to the management of all nodes and links in the overall system, i.e. pertains to the system's boundaries. For example, the ability to ensure seamless end to end management of the nodes and links of a particular network.

With vertical disintegration came the unbundling of the various production stages and some of the sub-stages. For example, separating equipment supply for the provision of the telecom infrastructure and separating the latter from the developing of services. From a technical perspective this unbundling brought the issue of coordination to the fore.

Technical functions need to be adapted to the changing institutional regimes in order to safeguard the proper functioning of the system. Vertical restructuring must therefore confront a tradeoff between the potential benefits of market forces replacing inefficient regulated monopolies, i.e. internal coordination, and coordination by market forces and the potential costs associated with coordination problems arising from vertical disintegration (Joskow 2000). It brings to the fore the question of how coordination should be undertaken and by whom, i.e. market or regulation, or a mixture of both.

For purposes of our study we divided the production of telecom into three separate vertical stages, with sub stages and horizontal market divisions. The three distinct vertical stages with respective sub stages and horizontal markets are shown in Table 2.1

**Table 2.1: The basic telecom value chain**

<b>Production stage</b>	<b>Description</b>	<b>Sub-stages</b>	<b>Horizontal divisions</b>
Supply of equipment	Manufacture and provision of telecom equipment, computer hardware, software and consumer electronics	<ul style="list-style-type: none"> <li>• Customer Premises Equipment</li> </ul>	Fixed vs. mobile Telephone vs. Private Branch Exchanges
Provision of telecom infrastructure	Provision of switching and transmission infrastructure	<ul style="list-style-type: none"> <li>• Local access</li> <li>• National long distance</li> <li>• Regional long distance</li> </ul>	Fixed vs. mobile Business vs. residential

		<ul style="list-style-type: none"> <li>• International long distance</li> </ul>	Narrowband vs. broadband
Development of services	Provision of additional infrastructure and technical support to operate service over infrastructure	<ul style="list-style-type: none"> <li>• Internet</li> <li>• Value Added Services</li> <li>• Database</li> <li>• Network management</li> </ul>	Voice vs. VANS vs. broadcast Fixed vs. mobile Business vs. residential National long distance vs. regional long distance vs. international long distance Narrowband vs. broadband Business vs. residential

*Adopted from Hodge and Theopold (2001) and Melody (1999)*

Within telecom network infrastructures are becoming increasingly horizontal, i.e. physical platforms, logical layers, applications and services, while competition at higher levels of the value chain is dependent on appropriate decisions being made at lower levels. Thus we need to evaluate vertical and horizontal relations in the value chain before designing an overall regulatory approach. What follows is a brief discussion of the three stages of the unbundling of telecom networks and its accompanying network features. The three stages are: one, the outsourcing of equipment, two, the provision of a network infrastructure and three, deciding which types of fixed and mobile networks will be used.

#### **2.4.1 Supply of equipment**

This stage consists of the manufacturing and retail supply of the equipment. The former consists of the manufacturing of telecom equipment, computer hardware, software and consumer electronics. The latter stage refers to the supply of this equipment to interface with the PSTN. These two components of the telecom network were the first components to be unbundled, since then further unbundling has been left to the market by the policymakers and regulators. This stage is generally seen as competitive.

In terms of a horizontal division it is useful to distinguish between residential and business users. This distinction is important for purposes of price discrimination and setting tariffs. Residential users typically use fixed telephone sets; cordless telephone, increasingly mobile telephones; and computers, connected via modem. Business users in addition use fax, with built in modems, private branch exchanges (PBX) and advanced data and converged services.

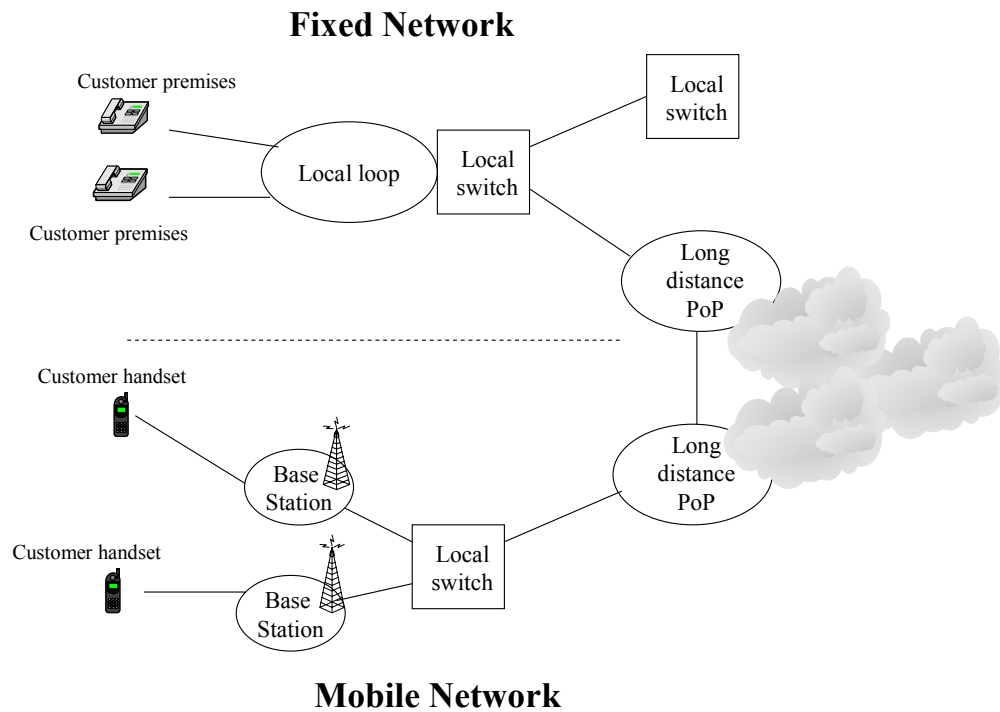
### 2.4.2 Provision of telecom infrastructure

Telecom network providers operate the physical infrastructure on which various telecom services are run. For purposes of our study four distinct kinds of services have traditionally been identified:

- local access
- national long distance
- regional long distance
- international access

These components are interconnected to form a complete international telecom network, see Figure 2.1 below.

**Figure 2.1: A basic telecom network**



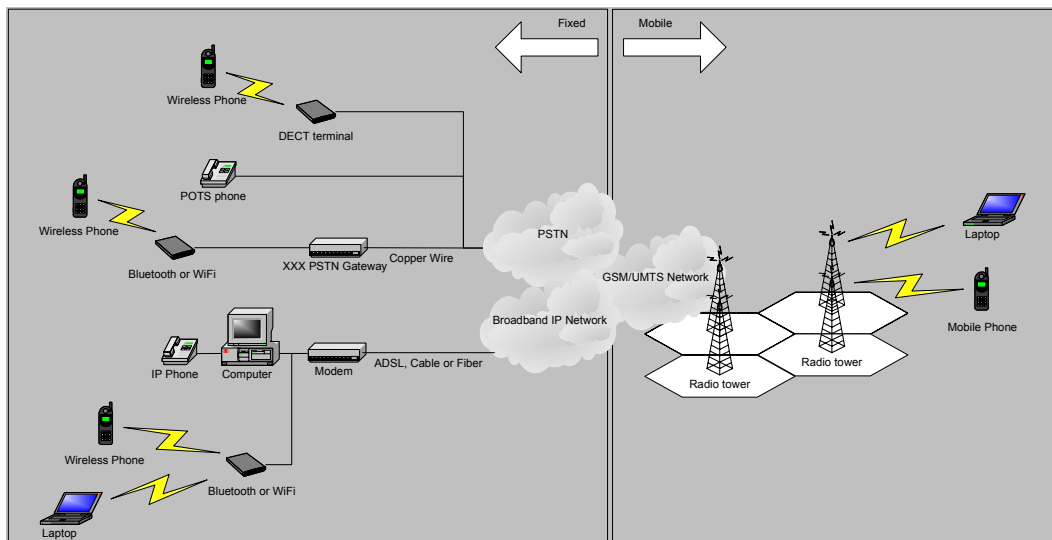
*Adopted from Hodge and Theopold (2001) and Pardijs (2005)*

### 2.4.2.1 Fixed and mobile networks

A fixed network is either a public switch telecommunications network (PSTN) or a broadband Internet Protocol (IP) network such as the internet, to which a connection can be made using copper wire, cable, asymmetrical digital subscriber line (ADSL) or optic fiber. With wireless access used to connect technologies, for example, digital enhanced cordless telecommunications (DECT), bluetooth or wireless fidelity (WiFi). Although access to the network is wireless, this type of technology is still considered to be fixed, because to be used a fixed line has to be present.

A mobile network is synonymous with the cellular network, by this we mean a cellular network or infrastructure such as global systems for mobile communications (GSM) or universal mobile telecommunications system (UMTS). Mobile telecommunications is also taken to include satellite personal communications services. A satellite system makes use of more powerful devices to transmit to an earth station, which in turn is linked to other earth stations via satellites. Given the greater distances that the receiving equipment must transmit to, satellites at present require greater capital investment to set up connecting systems and the communication devices used are expensive compared to cellular systems. However, the use of satellites enables network owners to reduce the number of earth based transmission stations. In time, once the high start-up costs have been recovered, i.e. launching costs, satellite networks are expected to become more competitive.

**Figure 2.2: Demarcation of fixed and mobile network**



Source: Pardijs 2005



Digitalization of content and the convergence of technologies have fundamentally altered the provisioning of fixed and mobile infrastructures. More recent technologies like Bluetooth and WiFi have further blurred the division between fixed and mobile using both GSM and the PSTN to establish phone calls. These developments in turn have had implications for terminating tariffs for fixed and mobile, handset subsidies, bundling of products and quality of services (Pardijs 2005).

While both fixed and mobile cost structures are characterized by high initial fixed investment costs, the investment requirements for fixed are considerably higher than those for mobile, excluding satellite. In mobile the spacing of the base stations, and therefore the number of base stations required is dependant on the traffic volumes. The result is that the initial investment required to establish a local access infrastructure is lower for mobile than that of fixed lines, and can be built up on a modular basis as demand develops. It also means that there are lower economies of scale making more network providers viable.

For regulators the extent to which the two services can be considered as substitutes are important. Mobile is cheaper at lower densities due to low fixed costs, while fixed line is cheaper at higher densities. This makes mobile more expensive in urban and metropolitan areas with high subscriber rates. However, in many developing countries with a low telephony density, cellular is proving to be a good substitute for fixed line.

#### **2.4.2.2 Local access**

Local access networks connect the customer's premises (house/business) to a local switch through a local loop. At the local switch there will be an interoffice transmission facility to either other local switches or to long-distance, national regional or international, points-of-presence (PoP) where data is distributed to a local switch and on to the end customer's premises.

Mobile networks differ from fixed line in their use of the radio frequency spectrum for transmission. The local access process involves a user's handset transmitting to and from a base station using the specific spectrum that the network provider is licensed to use. The base stations are usually connected to each other or to another network through a fixed infrastructure.

The cost structures of operating local access are influenced by economies of scale and scope. In terms of scale economies the significant fixed costs of providing local access and the negligible variable costs of connecting new users allow operators to decrease their average costs with increasing the volume of production. In terms of economies of scope the ability of operators to interconnect local access and long distance switches allows them to provide local access as well as long distance services to users. In addition local access can be provided by a number of different technologies, each with its different costs, and therefore different degrees of substitutability within the traditional public switched telephone network.

The presence of significant scale and economies of scope is thought to place limits on the extent and nature of competition that is possible. This is particularly relevant in local access fixed networks where natural monopoly conditions may be prevalent in many localities. While technological innovation is thought to have eliminated most natural monopoly conditions, fixed local access networks remain dominated by incumbent operators in most countries.

#### **2.4.2.3 National long distance**

National long distance networks are made up of PoP exchanges, or switching nodes, and a transmission network. The PoP exchanges include transmitters and receivers for setting up voice circuits. The switching nodes can be subdivided into three main categories: local exchanges, transit exchanges and international exchanges. Local exchanges are used to connect subscribers. Transit exchanges switch traffic within and between different geographical areas. International exchanges, and other gateway-type exchanges, switch traffic to telecommunications networks that belong to other operators. The transmission network defines the cable and / or wireless infrastructure used to transmit signals. Transmission media can be either guided or unguided. With guided transmission the signal is sent through some sort of cable usually copper or optic fiber. With unguided transmission information is usually transmitted either by radio or microwave transmission. Voice can be transmitted in both analogue and digital transmission.

While economies of scale and economies of scope are considered more prevalent in local access, the deployment of different technologies like optic fiber, satellite and microwave over a wide geographic area provide cost advantages and opportunities for diverse routine of telecom signals. Thus, although long distance is greatly influenced by high fixed cost, low variable costs and large initial investments, competitive suppliers of long distance facility networks are possible in many countries, especially those with large geographical areas and populations.

#### **2.4.2.4 Regional long distance and international**

As with national long distance, regional long distance networks are made up of multiple switching nodes and transmission links. Other than national long distance this stage includes the crossing of neighboring jurisdictions (regional) and foreign jurisdictions (international). With this comes the added challenge of engaging different policies, practices and regulatory regimes with respect to access, interconnection, tariffs, services conditions and other factors.

Regional long distance brings along with it bi-lateral or regional agreements between national governments with regards to the setting up regional hubs and backbone networks. For example, the setting up of a regional submarine network cable network (SAT-3/WASC/SAFE) used to connect the SADC members and other states in Africa.

International long distance brings along with it the issue of international settlement rates between states and increased compliance to the ITU recommended technical, operational and regulatory standards. As in the case of national long distance, the deployment of the different technologies provides cost advantages for managing traffic flows. Here also, operations tend not to be traffic sensitive in the short run as, fixed costs are high, variable costs are low and large initial investments are required, but as the possible diversity for routing traffic internationally is even greater, there is a competitive supply of international transmission capacity.

### **2.4.3 Development of services**

In nearly all states some form(s) of authorization(s) is required to provide the services. These services are typically provided to the existing PSTN by telecom operators and increasingly new telecom service providers, that is telephone service retailers and value added network companies like internet service providers and data management specialists. In most instances regulatory oversight is provided in the form of tariffs setting and quality of service provided by incumbent operators. Regulatory authorities tend to be more directly involved when new competitive services are bundled with traditional monopoly services. Competition authorities and courts tend to become involved to resolve disputes between new telecom service providers and the incumbent telecom operators that still have a monopoly on customer access to all fixed network services.

The dependency of new telecom service providers on telecom incumbent operators has generally resulted in a contentious relationship. On the one hand telecom service providers are significant wholesale customers of incumbent operators with respect to network usage and traffic volumes. On the other hand they are viewed as competitors since they compete with telecom operators, especially in the more lucrative value added services.

This brings to the fore the question of reviewing market definitions in the light of technological innovations and opportunities for providing new services. For example, new services like Fixed Mobile Convergence, Bluetooth, voice over internet protocol (VoIP), WiFi, etc. are challenging the relevance of the inherited regulatory regimes in the new environment. The question now is how the regulators should respond to these challenges.

## **2.5 Telecom regulatory objectives**

The technology and market changes discussed above require an assessment of the reasons for, and the interests driving, regulation. Here we review the generally accepted regulatory objectives. Later we will discuss the regulatory tools available to accomplish these objectives.

From the preceding discussion and from the research literature, three broad sets of reasons can be advanced to explain why regulation is needed, these are: economic, social and technical rationale. Economic regulation is required primarily to maximize economic efficiency by controlling the

market power of incumbents. Social regulation is required to ensure the provision of universal service obligations and the enforcement of consumer and environmental protection rights. Technical regulation is directed to reducing forms of coordination failure that might occur if stakeholders make decentralized decisions, for example, on standards. Although these reasons are interrelated and influence one another in application they co-exist separately in the sense that regulation cannot be exclusively tied to any one of them. For example, even if markets are fully competitive so that economic regulation is not required, social and technical regulatory functions may still be required, and may be necessary, for markets to function efficiently.

In addition, these functional rationales are thought to be driven by two broad sets of interests, public and private interests. Public interest theories are used to outline responses to market failures, while private interest theories are used to describe the dynamics at play between policy makers and recipients of regulation.

In the public interest strand of literature, regulation is viewed as an efficient response to market failures. This is taken to mean a situation in which the market does not produce socially optimal results. In the case of telecom, it refers to the misallocation of resources or inefficiency in resource allocation. This waste, or lost value, is usually seen in excessive prices, inefficiency, poor quality and lack of services and reduced innovation.

Various sources for market failures are identified like asymmetric information, externalities, natural monopoly, economies of scale/scope and density, large specific investment, etc. In this context regulation exists to alleviate the negative effects of market failures. Several types of efficiency must be recognized as important to policy and regulation in attempting to achieve its broad objectives. These are classified in the economic literature as allocative efficiency, dynamic efficiency and distributional efficiency.

Government, with its public interest mandate, must make decisions regarding optimal regulatory instruments in circumstances where imperfect information availability amongst agents constrains the available choices of the regulatory agency (Laffont and Tirole, 1993). Public interest theory is applied to explain regulation as a means to promote economic efficiency, and to promote socially efficient use of scarce resources.

In the private interest strand of literature, regulation is not directed at the correction of market failures but at preserving the interests of specific groups, mostly taken to include regulated firms. In the extreme case, regulation is thought to lead to socially sub-optimal outcomes with inefficient bargaining over potential utility rents (Laffont 1999). In the Chicago tradition (Stigler 1971, Peltzman 1976) regulators are assumed to favor producer interests because of the concentration of regulatory benefits and diffusion of regulatory costs, which enriches the power of lobby groups as rent seekers (Reagan 1987). Stigler (1971) observes that companies demand regulation in an attempt to earn abnormal profits at the expense of consumers. If the regulated groups are the only

interest groups that are effectively organized and active, the result will be the capture of the regulatory process by the regulated firms. The idea of regulatory capture was later expanded to include the executive branch of government and, where regulatory goals are distorted, the pursuit of politically driven private interests (Stiglitz 1998). What is clear is the capability of firms to influence public policy and regulation as an important source of competitive advantage (Barendse and Gordon 2000).

Some experts view the two groups, as not necessarily mutually exclusive but as “extremes on a gradual scale in which market circumstances determined the type and impact of regulation” (Correljé, 1994). Others (Stevenson 2002) recognize that the distinction between the two is more blurred than previously assumed (Bauer 2003). It can be viewed as a trade-off between public interest and private interest as a consequence of political and economic circumstances. Governments, in their quest to create the conditions for encouraging economic activity, will adopt economic regulation, while they will adopt social regulation as the quest to provide protection for consumer and general public interests. Governments, however, in addition to performing these two essential functions, will also develop their own institutional interest and at times appear to act in contradiction to broad economic and social objectives. This apparent contradiction is further amplified by the respective institutional interests and autonomy of the various agencies of which governments are composed. However, “both bodies of literature have significantly contributed to the shaping of government and governance structure” (Bauer 2003).

## **2.6 Forms of regulation**

Various types of regulation have been identified with respect to what exactly must be regulated. Here we briefly discuss the types of regulation that will be considered in the empirical chapters, namely, access regulation, interconnection regulation, price cap regulation and local loop regulation. We conclude with a brief discussion of the methods used to calculate costs, these are used as major benchmarks for determining regulated prices.

### **2.6.1 Access regulation**

Access regulation refers to the rules of market entry. Firms may be prohibited from entering the market to provide services or subsequently firms may be enabled to enter markets. The granting of access rights is considered to be key when reforming a telecom sector. Its significance lies in the fact that it removes an important regulatory barrier to market. The manner in which market access is granted is considered to be important for the effectiveness of competition. The number of new entrants can either be determined by a licensing or authorization regime.

The licensing of telecom operators and service providers was the instrument of choice for telecom market liberalization during the first phase of telecom market reforms. Licenses were used to define the scope and limitations for using technologies and providing services, and required payments to

governments for the privileges associated with the license. Although the licensing process has been a mechanism for liberalizing markets to a certain degree, it has also been one that has controlled and restricted entry, coupled in many cases with raising large amounts of money for governments in the form of license fees. Licensing has provided an absolute barrier to entry for unsuccessful license bidders and other potential market participants. IP convergence in particular has begun to erode the justification for these license restrictions, both the service limitations in existing licenses and entry barriers preventing new players from entering the market.

In our three case studies we discuss the steps taken to unify policy and regulation relating to access in the case study regions. We also discuss the extent to which the three regional licensing regimes in the case study regions have, and are affecting, the conditions for market participation by potential new players. We also discuss how the regimes have been used to minimize barriers to participation in network infrastructure and services provision by all players.

### **2.6.2 Price regulation**

In competitive markets, prices are forced down to match the cost of producing and delivering product and services, however, where competition is not fully effective, the market may not set prices equal to cost. Such a situation results in prices being set above cost and the amount of goods that are produced and consumed are reduced. When this happens regulators have a role in ensuring that prices are not excessive. Price regulation is therefore intended to mimic the results of competition in setting prices as close as possible to the cost of efficient production. This ensures that economic welfare is maximized while industry is able to finance its activities on a sustainable basis.

Price cap is the most widely used form of price regulation in the telecom sector. A formula is used to determine the maximum allowable price increases for regulated operator's services. The formula is designed to permit an operator to recover its unavoidable cost increases through price increases. The formula also requires that an operator lower their prices regularly to reflect productivity increases that an efficient operator would be expected to experience. With price cap regulation the regulator allows firms to set individual prices while requiring that the weighted average of the prices set by the regulated firm does not exceed a certain level. If the weights and the level of the cap are set correctly, the regulated firm will use the information that it has to set an efficient level of regulated prices.

In practice, price caps are applied where services are considered to be monopoly services; where services are more competitive, tariff regulation applies and a firm will be simply required to notify the regulator of its tariffs, and in some cases notification is not required. Examples include value added services and mobile services. In two of our case studies we examine the regional adoption of price cap regulation in the OECS and the SADC. (Chapters 6 and 7)

### **2.6.3 Interconnection regulation**

Interconnection rules are designed to make incumbents unbundle their network functions and offer interconnection services at a reasonable price. Interconnection<sup>5</sup> refers to the physical connection of telephone networks between operators by which service providers, often new entrants, are able to connect with the network of any other service provider, typically an incumbent. The provision of ubiquitous communications services often requires access to another company's network to provide communication services to users attached to that network. This is especially important for mobile network operators who require connection to fixed network operators and vice versa and where fixed network operators in one country require connection to fixed network operators in neighboring states or distant states and vice versa.

The principle of interconnection is significant for competition, since it ensures that a consumer of one network is able to successfully complete a call to a subscriber of a competitor. Regulators are expected to take measures to ensure rights to a feasible point in the network and resolve interconnection disputes between operators. Widely accepted principles stipulate that the terms, conditions and quality of interconnection must be non-discriminatory, that is, not less favorable to any one supplier, transparent, that is, publicly available, and reasonable, that is, provided on a timely basis. In Chapter 4 we further elaborate on interconnection when we consider how regulators in the SADC approached the issue of harmonizing the regulatory principles around interconnection.

### **2.6.4 Local Loop Unbundling**

Local loop unbundling arises when the incumbent leases the local loop at a wholesale price to a rival to enable the rival to provide a range of telecom services to the end customers. In practice it mostly refers to the provision of the copper twisted pair, between the local exchange and the subscriber by an incumbent to an alternative operator. In Chapter 5 we further elaborate on how regulators in the EU approached the issue of harmonizing the regulatory principles around local loop unbundling.

This principle of unbundling is significant for competition since it permits competitive operators to access end customers directly by connecting their infrastructure to the incumbent's local switch and by attaching equipment at the customer's premises. The two most common forms of unbundling involves the incumbent leasing inactivated or bare copper wires to new entrants and line sharing, which involves shared use of the copper line for the incumbent to provide telephony and the new entrant to provide high speed data services. The latter is particularly relevant in the telecom

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<sup>5</sup> The EU for example, defines interconnection as "the physical and logical linking of telecom networks used by the same or different organizations in order to allow users of one organization to communicate with users of the same or another organization or to access services provided by another organization. Services may be provided by the parties who have access to the network". Within the OECS Telecom bill defines interconnection as the connection of two or more separate telecommunications systems, networks, links, nodes, equipments, circuits and devise involving a physical link or interface.

industry given the monopoly positions of incumbents. Competition would require that new interconnecting operators obtain access to the local loop without an obligation to build their own local loop facility networks.

Regulators are expected to regulate access to unbundled network capacity elements according to generally accepted principles like non-discrimination and transparency and to address disputes that may arise. The principle guideline for determining appropriate prices to be charged access to unbundled capacity elements in monopoly local exchange networks is the cost of providing them.

### **2.6.5 Costing approach and methodologies**

In liberalized environments, new entrants compete with incumbents. Within this context the regulatory challenge is to set prices for network access and interconnection that reflect the costs of providing it in a competitive environment.

When determining costs either historic costs, based on accounting and other historic records from the operators, or forward-looking costs, based on costs estimates to build the operators network, are used by regulators. Those using historic costs essentially accept the incumbents operator's actual experienced costs based on their original investments and current mode of operating, while regulators, using forward looking costs to set access prices based on estimates of the cost of providing efficient access during the most efficient technologies and performance standards today.

Since the historic costs of the incumbent often do not reflect the costs which would be incurred under an efficient service provision today, access pricing based on forward looking long run average incremental cost (FL-LRAIC) is often preferred because it prevents the incumbent from passing on its inefficiency cost to its competitors. One such forward looking approach that we examine in Chapter 5 is a variation of the economic concept of long run incremental costs (LRIC) called long run average incremental costs (LRAIC). LRAIC can be used to calculate cost-based prices for different services like access, fixed interconnection or mobile interconnection services.

There are different methodologies for calculating FL-LRAIC. This includes a bottom-up methodology or a top down methodology. Bottom up models build on the network structure to obtain the assets which would result from an efficient service provision. Starting with actual demand and current best practice available technology a network is built to estimate the FL-LRAIC in providing a specific service. As bottom up models simulate the production process of any network operator, often only publicly available data is needed.

Top-down methodology starts with the incumbent's actual asset portfolio which is needed to provide a specific service. The assets are evaluated using historic costs or current costs.



There is general consensus, amongst academics and industry experts on the key issues that must be addressed with respect to LRIC. These include the following: defining the output increment, selecting the data source, defining the time period for which incremental costs are being measured, selecting the elements of costs that will be included in the incremental costs study and the costs valuations that will be assigned to each element or group of elements. Other considerations include the choice between the parameters of network design developing appropriate costs-volume relationships and the allocation of common costs. As this cost methodology requires informed judgments at almost every stage, it is susceptible to wide variations in the cost calculations depending upon who is making the judgments. Thus regulators generally employ independent experts to perform the calculations, such experts need to be very well informed about the process to ensure satisfactory results.

## **2.7 Summary and Conclusions**

The purpose of this chapter was to elaborate on the specificities of the telecom system with respect to the economic and technical features that are considered relevant for our investigation, particularly the case studies of regional regulation. From a technical perspective we showed that the telecom network is a highly sophisticated and complex technical system that involves the performing of distinct technical functions like interoperability, interconnection, capacity management and systems management.

From an economic perspective we have shown that telecom is characterized by economies of scale, scope and density and network externalities. These became important justifications for preserving the early telephone network as a natural monopoly power and remain important considerations in developing policy and regulation today.

A combination of internal and external pressures like changes in technologies, markets and services have resulted in a degree of disintegration of the formerly highly integrated telecom industry. As a consequence the telecom value chain has become divided into three separate vertical stages with sub-stages and horizontal market divisions.

In the second part of the chapter we discussed the rationales for regulation, in the light of the economics and technical characteristics of the system. In addition we elaborated on the three functions performed by economic regulation, economic, technical and social regulation and on the interests driving regulation, i.e. public and private. With the forms of regulations we briefly discussed important concepts relating to access regulation, price, interconnection, local loop unbundling and cost methodologies regulations. The concepts, issues and analysis in this chapter provide a foundation for our later case studies (Chapters 5, 6 and 7) and our analysis of these early experiences in regional regulation.



### **3. A Conceptual Framework for Examining Regional Regulation**

#### **3.1 Introduction**

In this chapter we provide an overview of the key theoretical concepts used in our study of regional telecom regulation and discuss an approach to institutional design based on neoclassical market theory, institutional economics<sup>6</sup> and political science. Since the focus of this study concerns issues of institutional structure, change and design, the foundations for this analysis are drawn primarily from institutional economics.

The focus of this investigation is to analyze the implications of particular technological socio-economic systems for the development of regional regulation of the telecom industry. These systems create benefits and challenges for regional policymakers and regulators. We are interested in the specific institutions designed for regional regulation and the substantive regulatory issues that it brings to the fore and how each of our case study economic regions has approached the treatment of these issues, and the implications this has for effective regulation and sector development.

#### **3.2 Institutions and (regional) regulation**

The research here concerns the design of new institutions for regional regulation as a new form of governance for the telecom sector, an area considered to be largely under-researched (Melody 1999). The importance of regulation can be seen by examining its specific role as an institution within the larger environmental context of the technology and the socio-economic system of the telecom sector.

As an institution, regulation can take the form of formal rules, for example, access, price or interconnection regulations, or a form of arranging the coordination of economic activities in the telecom sector, for example, interconnection agreements between rival operators. In either case, although the regulations are designed to create benefits, their creation, maintenance, use and change also incurs costs. These include the costs of adopting telecom policies, including negotiations amongst policymakers, implementing them, including the contributions by regulatory agencies, and enforcing them, including monitoring compliance by judiciaries and regulators.

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<sup>6</sup> Institutional economics literature is a relatively large field of research. This school of economics is purported to go beyond the usual economic focus on markets, to look more closely at human-made institutions. The original school was initiated at the turn of the 20<sup>th</sup> century by diverse economists like Thorstein Veblen, Wesley Mitchell, and John R. Commons followed by Gunnar Myrdal, John K. Galbraith and others. More recent contributions have included the works of Ronald Coase, Douglass North and Oliver Williamson, which is nowadays known as the new institutional economics (Rutherford 1994).

These costs play an important role in telecom sector performance. Their minimization is considered to be an important feature of institutions and key to efficient markets (North 1993). The transaction costs are largely determined by features of the institutional environment, i.e. the technology and socio-economic system, and the specific governance institution that is established as part of that system. Policy and regulation are used to attempt to create an economic environment conducive to efficient performance, they establish and are used to implement the rules of the game. The important question for our study was to determine how regional regulation as an institution enables and constrain the development of the telecom sector in a region.

The term institution is generic and used in several ways with the specific choice often influenced by the problem at hand (Bauer 2003). Some authors have used the term “institution” as a broad concept primarily to denote what they considered missing from the abstraction of neoclassical economic theory (Nelson and Sampat 2001). Definitions have tended to vary according to the extent to which authors have emphasized a positive or negative relation to neoclassical economics. The interpretation proposed by North, i.e., taking into consideration societal and organizational implications, is considered by many to be the most widely used.

“Institutions are the humanly-devised constraints that structure political, economic and social interaction” (North 1991 p.97).

Institutions have been compared to rules of the game comprising written codes of conduct and unwritten norms of behavior. These rules can be of a formal nature, like telecom policy, or an informal nature, such as norms and attitudes in the telecom industry, and can consist of political rules, like a constitution, economic rules, like property rights, and contractual agreement between actors, like an interconnection contract. They can also be created by legislated act, or they can simply emerge from repeated interactions.

“Although the rules are the same, the enforcement mechanisms, the way enforcement occurs, the norms of behavior and the subjective models of the actors are not. Hence, both the real incentive structures and the perceived consequences of policies will differ as well” (North 1990a p.101).

In essence institutions develop or are devised, to reduce uncertainty, to make human interaction more transparent, stable and predictable and to create order.

In addition Davis and North (1971) distinguish between institutions as environments and institutions as arrangements.

“The institutional environment refers to a set of fundamentally political, social and legal ground rules that govern economic and political activity” (Davis and North 1970 p.133).

“An institutional arrangement is an arrangement between economic units that governs the ways in which its members can co-operate and or compete.” (Davis and North 1971 p.5-6).

Institutional arrangements are influenced by the institutional environment and refer to governance structures designed to enable certain kinds of economic relationships and inhibit others. The former focuses on the analysis of the impact of the rules of the game on behavior and economic performance. The latter focuses on the analysis of governance mechanisms, or the play of the game. While the distinction may not always be so clear, the development of the institutional environment is considered to be central to economic development, through its effects on exchange relations, incentives, transaction costs and risks, and hence in our case, on telecom sector performance. In addition the continuous interaction between the two institutional levels is considered key to the process of institutional change. For our design, analyzing this process is important. In distinguishing these different perspectives on institutions, we wish to better operationalize an institutional framework for examining regional regulation.

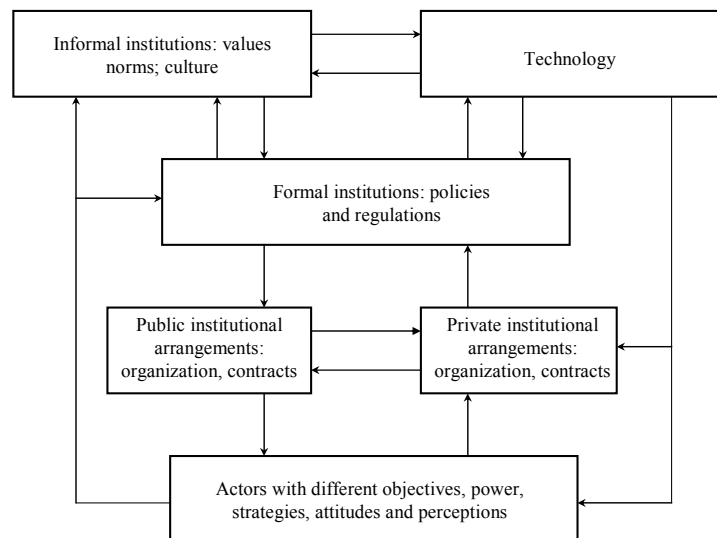
### **3.3 A framework for regional regulation**

To analyze the implications of institutions for regional regulation we adopted a model that allows for the treatment of different types of institutions in an integrated fashion<sup>7</sup>. In addition to the two levels of environment and arrangements, the model also allows for the incorporation of technology and interactions among the actors, two elements that are considered essential for our investigation of regional telecom regulation.

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<sup>7</sup> For an application of this model in the network infrastructure sector see Groenewegen (2005).

**Figure 3.1: A dynamic layer model of technological, socio-economic systems**



*Adapted from Groenewegen 2005*

Our dynamic 4 layered model, adopted from Groenewegen 2005 and inspired by Williamson 2000 is presented in Figure 3.1. In decomposing regional regulation into layers it became clear that the roles of institutions are important at various layers. The first layer comprises the “informal institutions”, i.e. culture: values and norms, and the “technologies”. The second layer comprises, the “formal institutions”, i.e. the types of telecom policies and regulation. The third layer represents, the “institutional arrangements”, i.e. organizational forms, contracts, etc. Here we found it necessary to distinguish between public and private systems of governance. The fourth layer of “actors” shows regulatory behavior that is embedded in habits and routines. Particular, attention is paid to the strategic behavior and the power base of the main actors, which can affect regulatory and market developments.

The layers are connected by arrows, which indicate that higher layers constrain the lower ones, and that lower layers within a certain range can influence higher ones. The model explicitly recognizes

the reverse causality from the lower layers to the higher layers. Informal institutions (layer 1) are not merely viewed as constraints that define exchange relations among alternative formal institutions; they are also seen as sources of motivation for, and justification of, alternative formal institutions. Institutions provide the basic foundations and together with technology drive changes on the formal and arrangements levels and in the mental maps of the actors. Over time these changes in turn are changed by interaction with the lower layers.

The view towards competition serves to illustrate this. When competition is highly valued by a society (layer 1) it may affect the policy and regulations in such a way that competition objectives are advanced (layer 2). It may also affect the systems of governance in such a way that transactions are increasingly left to private ordering as opposed to public ordering (layer 3). Lastly, it may affect the strategies of incumbent firms by compelling them to consider revising their market development plans (layer 4). According to our model, however, the lower layers in turn influence the higher layers. For example, incumbents with considerable influence (layer 4) could lobby policymakers and by so doing change the rules of the game to protect their operations (layer 2). In addition the incumbents could also abuse their market power when negotiating private arrangements with rivals (layer 3) resulting in policymakers setting new rules for private ordering amongst firms (layer 2).

Technology is endogenous within our model and is able to influence all layers below it<sup>8</sup>. For example, the deployment of a new technology such as GSM can render some of the regulations (layer 2) pertaining to fixed infrastructure obsolete. An ensuing migration of users from fixed to new mobile technologies may then shift the power from fixed operators to mobile operators. This in turn may have an impact on the private negotiations between the two parties (layer 3). With interconnection, for example, negotiating power tends to be associated with the higher traffic volumes. Technology can also be influenced by the lower layers. For example, the decision as to when to introduce new technologies is often made, in the first instance by incumbent operators (layer 1), but they are able to delay deployment of new technologies to maximize the use of existing technologies. In addition, governments, through policy and regulation can promote specific technologies, e.g. broadband in the case of the EU and basic services in the case of the SADC.

The system of arrangements does not function in a vacuum. It is embedded in a larger context and as a result it is difficult to influence and characterized mostly by incremental change (Aoki 2000). For the purpose of our investigation it was important that institutions were “appropriate” in the sense that they were congruent with other institutions at other levels. Where institutional inconsistencies exist institutions will tend to be unstable and not function properly (Koppenjan and Groenewegen 2005).

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<sup>8</sup> Williamson calls attention to the fact that technology has largely been “neglected” by the NIE. While NIE has addressed the issue of organizational innovation, it has not yet done so for technological innovation. “We cannot, fail, however, to be awed by the profound importance of technological innovation (Robert Fogel). Inasmuch as these two work in tandem, we need to find ways to treat technical and organizational innovation in a combined manner”. (Williamson 2000 p. 600). Our model attempts to rectify this by making technology endogenous and incorporating it more closely in the analysis.

Finally, in any analysis of regional telecom regulation the dynamic environment in which it is being established must be taken into account. This requires that attention be paid to path dependent processes leading to the establishment of regional regulation, and numerous inherited inefficiencies due to monopoly market power, that have significant influences in shaping regional regulation. Our structured framework of analysis allowed us to incorporate dynamic factors into our case study examinations of regional regulation in the telecom sector.

We now turn to the key concepts that will be applied using the analytical framework described above.

### **3.3.1 Level 1: Informal institutions and Technology**

#### **3.3.1.1 Informal institutions**

The highest level of our institutional hierarchy encompasses informal institutions, values, norms and culture. These are the informal rules of the game and provide an important influence on the mindset of agents in networks at level 4. This level influences the perceptions of agents with respect to the problems they identify and the solutions they consider feasible. It determines what kinds of incentive structures are acceptable and what will be effective (Denzau and North 1994; Groenewegen 2004). Examples are the values attached to competition or the cultures of incumbent telecom operators that remain dominant even after market entry by rivals.

While definitions of culture are numerous<sup>9</sup>, its operationalization in practice has proven difficult. The incorporation of culture as a variable is considered by some to be a neglected cornerstone of global economic theories (Hofstede 2004). Cultural differences are important and in this research they have been taken into account.

Some authors have presented culture as a multi-level system (Hofstede 1994; Hampden-Turner and Trompenaars 1997; Spencer-Oatey 2000), such layers range from the easily observable outer layers i.e. behavioral conventions to the increasingly more difficult to grasp inner layers, those of assumptions and values. Culture has an interpretative function for group members, nationalities, companies, etc. What was important for our study was the view that culture is learned and can therefore also be unlearned, if need be. For example, telecom policymakers have had to adjust to the reality that not all segments of the telecom value chain are a natural monopoly since many segments can be made competitive. This required that policymakers unlearn the idea of a natural monopoly model while taking on board the idea of the competition model.

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<sup>9</sup> Dahl (2004) for example, defines culture as “a shared set of basic assumptions and values with resultant behavioral norms, attitudes and beliefs which manifest themselves in systems and institutions and behavioral patterns and non-behavioral patterns.”



The concept of value is another difficult concept to operationalize. From Bush (2001), we learn that values can “hinder” social development but that they can also facilitate it, for example, support for the value of natural monopoly markets, typically by incumbents can be contrasted with the value of support for competitive markets, typically by new entrants. It is now generally accepted that competitive, rather than monopolistic; markets deliver greater economic efficiencies and gains. Values can also be used to explain progress or lack of progress with respect to regulatory reform. For example, from our investigation it seems that regions that value full market liberalization have seen greater economic efficiencies than regions where partial liberalization has been valued.

Notwithstanding these difficulties we operationalize informal institutions in our empirical section (Chapters 5, 6 and 7). The following aspects of culture were deemed important for our investigation of regional regulation; the culture of dominant operators, an attitude of mistrust towards regional authorities, a culture of committing to international organizations, an attitude of dependency upon donor funding and a strong or weak value placed on competition in each of the regions discussed below.<sup>10</sup> We also explore the extent to which these informal institutions have created benefits or challenges for regional policymakers and regulators.

The term incumbent dominance is used to describe the shared expectations of incumbents as they attempt to hold and defend their market share and extend it into new and emerging markets. These firms have bargaining power, and as such, have a crucial stake in perpetuating the system of market dominance (North 1993). Moreover this behavior is greatly influenced by the network characteristics of telecom markets such as economies of scope and network externalities. We discuss the implications of this for regional regulation in particular in the OECS and the SADC case studies (Chapter 2).

The term attitude of mistrust towards regional authorities is used to denote the general lack of confidence arising from suspicion towards regional authorities. In particular on the part of national governments, and national regulation authorities towards the EC in the EU; national governments towards the OECS authority in the OECS and national governments towards the SATCC in the SADC. In instances where mistrust was found to exist regional regulation was largely constrained. In the EU case study, for example, we examined how mistrust has led to the creation of two regional organizations for telecom regulations. In the OECS case study, for example, we examined how the licensing process has been complicated by mistrust. While in the case of the SADC we investigated how meaningful participation in the regulatory process has been minimized in response to inherent mistrust.

We use the term, ‘committing to international organizations’, to describe the tradition of complying with the formal obligations of international organizations like the ITU and the World Bank. For

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<sup>10</sup> The various institutional elements were identified through a combination of industry experience, literary review and interviews with industry experts.

example, it is the custom of the SADC states to commit to the ITU decisions and of OECS states to commit to decisions made by the World Bank.

We use the term culture of dependency on donor funding to describe the tradition within many developing countries of relying on international donor funding. The issue of international funding is of great importance in the SADC, but it is of minor importance for the OECS. In the latter it seems to have taken the form of loan funding as opposed to the practice of donor funding that is commonly found in the SADC.

The term, 'competition as a value', is used to denote the acceptance of value by policymakers as a means to achieve specific private and public goals. For example in the EU, competition is valued as a means of stimulating a knowledge economy based on an EU information society. In the OECS competition is valued as a means of breaking Cable and Wireless's dominance. In the SADC, competition is valued as a means of stimulating network penetration. In all three instances competition is expected to provide better opportunities for regional policymakers and regulators to address the problems they face.

### **3.3.1.2 Technology**

Technology is considered to be a major constituent of contemporary society and it is seen as being closely connected with politics, economics and culture in all forms of social and personal life (Feinberg 1999). Like Williamson (2000) we see technology innovation as something of "profound importance". In the context of this study, the term technology is therefore used to refer to the physical artifacts of the actual telecom system such as copper cables, switches and their accompanying innovations. For example, the technical innovations from copper fiber to optic or from fixed to GSM.

From a broader perspective, policymakers have approached the issue of technology from one of two broad views; the instrumental and substantive views. The instrumental view emphasizes the benefits of technology while the substantive view emphasizes the negative aspects of technology. According to the instrumental view technology is treated as indifferent or subservient to a culture. This socio-political "neutrality" means that its deployment is only inhibited by its costs. As such only the range and efficiency of its applications is up for political debate. For the purpose of our investigation it means that technology applications are universally beneficial and that technology used in the EU can be expected to work just as well in the OECS or the SADC. Many developing countries, for example, Malaysia, have therefore come to believe that by deploying advanced technologies they may 'catch up' or even 'leap frog' the economies of developed countries.

According to the substantive view technology is seen as the vehicle of a culture of domination. Here an autonomous cultural force is attributed to technology overriding all traditional or competing values. For example, developed countries using technology to advance their values and cultures in

under-developed countries. Technology therefore constitutes a new type of cultural system that restructures the entire social world as an object of control. From a policy perspective policymakers are therefore resigned to pursue its advance, at all costs. For example, the pressure faced by policymakers in developing countries to participate in the information society and knowledge based economy initiatives, i.e. to deploy advanced technologies, before a window of opportunity closes forever. In some instances technological transplantation may have negative consequences and result in side effects. The case of the failed attempt by the ITU to rollout ICT multipurpose centers throughout Africa serves as an example. With this approach the government's assistance in the form of national or regional regulation is considered to be necessary to control some of the negative consequences of technology.

Others have proposed a third view of technology that takes into account negative and positive uses and effects. For example, technology can be seen as a contested field that can be reconstructed to serve human needs and goals (Feenberg 1999; Kellner 1999). In this sense it is more productive to focus on technologies positive effects rather than its negative effects. Our technological choices allow us to "become who we are" and they may shape all our future choices (Feenberg 1999). This act of choice is socially embedded and cannot be understood as free use in the sense intended by instrumental theory.

In our empirical section (Chapters 5, 6 and 7) the following aspects of technology were deemed important for our investigation of regional regulation; technology neutrality, the deployment of alternative technologies, and network modernization in each of the three regions. We also explored the extent to which these technology aspects had created benefits or challenges for regional policymakers and regulators.

We use the term 'technology neutrality' to denote any decision by policymakers to leave the choice of technologies to the market (firms), rather than selecting the types of technologies that firms should deploy, for example, TDMA or GSM, etc. Here the telecom industry rather than policymakers become the selection mechanism. In the case of broadband for example, the specific technologies are not specified in regulation (GSM or ISDN) but are allowed to compete for acceptance as the de facto standard or standards.

We use the term alternative technologies to denote the deployment of newer technologies as alternatives to those offered by incumbent operators. For example, the deployment of GSM mobile as opposed to an incumbents copper fixed network. We discuss the implications of these new technologies for new entrants on competition and sector development in the OECS and the SADC cases.

We use the term network modernization to denote the decisions made by incumbents to replace antiquated technologies with newer technologies. In the case of the SADC and the OECS network

modernization was undertaken during periods of exclusivity and just before market entry by rival firms. Later, we will discuss the implication of this on the development of competitive markets.

### **3.3.2 Level 2: Formal institutions**

This second level of the institutional hierarchy encompasses the basic institutional environment or what North calls the “formal rules of the game.” At this level we distinguish constitutions, political systems, property rights and related laws, policies, regulations and directives.

Here we position the “public ordering” of telecom markets. These include the presence of “solid legal foundations” that one uses to define property rights (Williamson 2000). In terms of operationalizing it we follow Levy and Spiller and include “regulatory incentives” like interconnection, access and pricing regulations.

In our empirical section (Chapters 5, 6 and 7) the following aspects of formal institutions were deemed important for our investigation of regional regulation; the regional telecom policy framework, market liberalization, the creation of regional organizations of telecom regulators and the specific regulatory best practices such as access, interconnection, local loop unbundling and tariffs that was adopted in each of the regions. We also explore the extent to which these formal institutions have created benefits or challenges for regional policymakers and regulators.

We use the term regional telecom policy framework, to denote the aims and objectives set down in the policy frameworks in each of the regions. For example, the EU telecom policy framework emphasizes the promotion of competition, improving the functioning of the internal market, guaranteeing basic user interest that cannot be guaranteed by market forces, deregulation, technology neutrality and flexibility to deal with fast changing markets. The OECS policy framework emphasized the promotion of competition, the harmonization of policies on a regional level, universal service, fair pricing and the use of cost based pricing methods by telecom providers. The policy objectives advanced in the SADC telecom policy framework include commercializing and privatizing incumbent operators and the separation between the regulation and operation of telecom services within the respective countries.

We use the term market liberalization to denote the process by which telecom markets have been transformed from monopoly to competitive markets in each of the case study regions. The approaches in the regions differ substantially across the three regions. In the case of the OECS the markets were opened simultaneously while in the SADC the process was tightly managed. Moreover in the EU legal entry requirements were abandoned to the extent that new entrants could simply inform the regulators of their intention to provide services.

We use the term regional organizations of telecom regulators to describe the creation, aims and systems of governance of regional organizations of telecom regulators. These include the IRG and

the ERG in the EU, the ECTEL in the OECS and the TRASA in the SADC. Although set up to essentially harmonize the implementation of regional policy frameworks these regulators differ substantially in powers delegated and functions allocated.

We use the term harmonizing regulatory principles to describe the formulation and implementation of regulatory best practices. For example, the regulatory best practices developed by the IRG, the regulatory remedies developed by the ERG, the regulations developed by the ECTEL and the model regulations developed by the TRASA. We were particularly interested in the implications of these best practices for enhancing regional regulation in the respective case study regions.

### **3.3.3 Level 3: Institutional arrangements**

At this level of analysis, agents in networks design mechanisms to coordinate the transactions between them. Systems of governance are designed to coordinate specific transactions among multiple actors such as firms, consumers, regulators, etc. For the purposes of our investigation we distinguished between private institutional arrangements and public institutional arrangements. The former refers to private organizations and contracts while the latter refers to government organizations and contracts. This distinction was made to help us better explain the notion of regional regulations as a new form of governance for the telecom sector.

The importance of public institutional arrangements features prominently in the work of Levy and Spiller (1994), while drawing on the work of Williamson their efforts are directed towards designing regulatory institutions. Spiller and Levy define public institutional arrangements or “regulatory governance” as the mechanisms that societies use to constrain regulatory discretion and to resolve conflict arising in relation to these constraints. The particular arrangements, setting up a national regulatory authority, for example, are constrained by the institutional environment of each country or region. The key to good regulatory design is therefore to seek the best match between the public institutional arrangements and a country’s institutional environment. Where there is a mismatch between the two, private investors and consumers will not receive adequate protection.

Another important issue with institutional arrangements is the distinction between public ordering and private ordering. In many instances the features of the various transactions determine the most cost effective governance structure.<sup>11</sup> In telecom the higher the transactions costs the more it makes sense to internalize the transactions and to coordinate transactions vertically, for example, by government, rather than via the market. At times government may outsource their activities to the market while at other times they may opt to regulate. For example, in the EU policymakers chose not to support a specific type of technology for broadband deployment as was done in the case of

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<sup>11</sup> For example, spot markets would best suit non-specific transactions; contracting with arbitration would be the appropriate form when transactions demand mixed or idiosyncratic investments; partnership/alliances and vertical integration would be appropriate for recurring transactions that demands high levels of investment and bilateral structures are assigned where asset specialization is less than idiosyncratic but where transactions occur frequently.

GSM mobile. Such decisions are highly influenced by the fact that telecom requires specialized and high level specific investments to provide telecom infrastructure and services (Levy and Spiller 1994). In many instances public contracting is limited to negotiations between two or three operators while monitoring the specifications of the contract is extremely difficult. The available information is asymmetric, in favor of the firm, resulting in regulators having to depend on firms to provide information.

In our empirical section (Chapters 5, 6 and 7) the following aspects of institutional arrangements were deemed important for our investigation of regional regulation: the regulatory process and the distribution of competencies across two levels, i.e. national and regional. We also explore the extent to which these institutional arrangements have created benefits or challenges for regional policymakers and regulators.

We use the term distribution of competencies to denote the allocation of regulatory tasks across national and regional levels of government. For example, what are the regulatory tasks undertaken at a regional level? What are the regulatory tasks delegated to national regulators? In the OECS case, for example, we discuss the decision taken to make some regulatory tasks a dual competence that is spread over the national and regional authorities. This is compared to the situation in the EU where the same regulatory function was simply made redundant.

We use the term, 'distribution of tasks' between private and public orderings to denote the tasks managed by regulators and those left to the market. In the case studies we discuss the decision to withdraw regulation in the case of licensing, technologies choice and interconnection contracting and to leave such choices to the telecom firms.

We use the term actual regulatory process to denote the process of adoption, implementation and enforcing regulations in each of the case study regions. In the cases we discuss regulatory and supporting institutional structures, i.e. regional parliaments, regional judiciaries, etc., and we discuss the implications of these comparisons on regional regulation.

#### **3.3.4 Level 4: Actors**

The fourth level of the institutional hierarchy encompasses the level of individual actors and their interactions in the context of a complex regulatory setting. The actors, national regulators, incumbent's operators, new entrants, etc., have different objectives, power, strategies, attitudes and perceptions.

The notion of mental maps (North and Denzau 1994) was useful for our case study research. Denzau and North use this term to denote mechanisms by which people learn and how preconceptions shared by people are expressed (Dolfsma 1999). While learning or changes in mental models take place in periods or spurts ("punctuated equilibria"), many issues relating to what

causes mental models to change and why they persist and are supported by people who suffer from these, are unclear (Fiori 2002).

In our study this notion of mental maps was used to help us examine how groups of actors with shared perceptions approach and respond to certain situations. For example, the attitude of incumbents towards new entrants or the perception of trust or mistrust held by national regulators towards regional authorities. Part of the regulatory challenge is to understand the mental models of the actors with the view to devising incentives that may help to change some of the mental models seen as detrimental to developing competitive markets.

The notion of power is equally useful to our study. This notion of power or influence (North 1990; Emmett 1992) is considered to be important; people that are empowered can change their environment. Dolfmsa (1999) extends Dahl's (1957) characterization of power and explains it as follows; power is used whenever A gets B to do something by threatening to use the means provided by its position regardless of whether or not the intended results of this use of power are achieved. In the context of telecom, market share is a typical means, amongst others, by which incumbents exert power. Those with market power are considered more influential and will seek to influence and try to change the institutional environment to receive even greater benefits (Dolfmsa 1999). This may take the form of advocating policies and regulation that could potentially maintain or further extend their power.

Following North these actors or decision makers are the "agents of change" while their mental models determine the choices they make. North's explanation of institutional change is considered useful for the purpose of operationalizing the concept of mental maps and the decision-making choices of actors.

Levels 4 and 1 are closely related in the sense that the mental models of actors and their culture contribute to the process by which human beings interpret and order their environment.

In our empirical section (Chapters 5, 6 and 7) the following aspects of actors were deemed important for our investigation of regional regulation; the interaction between incumbents and rivals, the interaction between governments and incumbents and the interaction between national and regional authorities. We also explore the extent to which these aspects have created benefits or challenges for regional policymakers and regulators.

We use the term interaction between incumbent operators and rival operators to denote the perception of incumbent operators that rival operators are threats to their existing customer base. In the telecom industry we have seen how this has created an attitude of hostility towards new entrants and how market power has been abused by incumbents to maintain their customer bases. In the case studies we discuss the anti-competitive behaviors of the C&W in the OECS, and incumbent operators in general in the SADC and the EU.

We use the term interaction between national governments and incumbents to denote the strategies used by incumbents to lobby government to advance their interests. This typically includes maintaining their interest in existing markets and extending their interest in new markets. In the SADC case we discuss how this relation may be shaped by the degree of state ownership of incumbents across the three case study regions.

We use the term interactions between national and regional actors to denote the attitudes and strategies of national authorities towards regional authorities. In the case of the EU we discuss in our case study the response of the harmonization process to the EC control. In the OECS case the attitude of mistrust towards the OECS authority with regards to regulating the OECS market, while in the case of the SADC we discuss the general attitude of mistrust towards the SATCC in a developing regional market.

**Table 3.1: Summary of technological socio-economic systems**

Types of technological socio-economic systems	Elements of technological socio-economic systems
Culture	<ul style="list-style-type: none"> <li>• Culture of dominant operators</li> <li>• Attitude of mistrust towards regional authorities</li> <li>• Culture of committing to international organizations</li> <li>• Attitude of dependency upon donor organizations</li> <li>• Value of competition</li> </ul>
Technology	<ul style="list-style-type: none"> <li>• Adoption of technology neutrality</li> <li>• Deployment of alternative technologies</li> <li>• Network modernization</li> </ul>
Formal	<ul style="list-style-type: none"> <li>• Regional telecom policy frameworks</li> <li>• Market liberalization</li> <li>• Creating regional organizations of telecom operators</li> <li>• Harmonizing regulatory principles</li> </ul>
Institutional arrangements	<ul style="list-style-type: none"> <li>• Regional regulatory process</li> <li>• Distribution of competencies across national and regional levels</li> </ul>
Actors	<ul style="list-style-type: none"> <li>• Interaction between incumbents and rivals</li> <li>• Interaction between governments and incumbents</li> <li>• Interaction between national and regional authorities</li> <li>• Allowing industry actors greater choice</li> </ul>

### 3.4 Interactions between the levels



The interaction between the four levels of our model encompasses an assessment of the consistency across all levels and the “fit” between the various institutions and technology as it relates to regional regulation.

In North’s (1990) analysis, the dominance of informal institutions (layers 1 and 4) is such that the formal institutions (layers 2 and 3) can be considered to be extensions of the informal; formal institutions are manifestations of underlying values and norms. However, the relationships between the layers are not uni-directional; informal institutions can gradually evolve as extensions of formal institutions (North 1990).

The model is thus dynamic in the sense that the telecom market is conceptualized as an evolving institution. In this regard change is considered to be cumulative<sup>12</sup>, path dependent and incremental. All the markets, firms, contracts and the behavioral characteristics of actors of the telecom industry co-evolve (Groenewegen 2005). Concepts drawn from the fields of cumulative causation, path dependency and change are considered relevant as a means to explain this phenomenon.

In cumulative causation theory,<sup>13</sup> sector growth is thought to generate its own momentum via mechanisms such as economies of scale and technological progress in response to increased output and population growth (Peters 2005). Once a region, for example, attains an advantage, it tends to sustain that advantage: the process of circular and cumulative causation leads to vicious circles of growth, at the expense of other regions. Cumulative causation theories have also been used to explain the process whereby one region, for example, is able to increasingly gain on others.

If true, this holds huge implications for telecom sector performance. Each reform initiative e.g., creating a regional policy framework, liberalizing markets and creating regional organizations of telecom regulators, alters the context within which subsequent reforms decisions were made, hopefully, in ways that make additional and subsequent competition more likely. It also implies that a developed region like the EU will increasingly sustain its competitive advantage with respect to its knowledge economy, while an underdeveloped region like the SADC will increasingly lag behind. In this scenario the potential to “catch up” is severely reduced.

With path dependency events that have taken place will affect the possible outcomes of sequences of events occurring at a later point in time. Various aspects of path dependency are highlighted in the literature. Selected examples include technological path dependency (David 1985), increasing returns to path dependency (Arthur 1994), path dependent technological trajectories (Mario and Dosi 1995) and path dependency of corporate capabilities and routines (Nelson and Sampat 1982).

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<sup>12</sup> Experts differ on the relationship between cumulative causation and path-dependency. Yalcintas (2003) for example, sees the two as highly related with each other in the sense that explaining path dependency requires taking cumulative causation into consideration, yet not necessarily vice versa. Our purpose here is merely to refer to these concepts in order to illustrate the dynamic nature of the model.

<sup>13</sup> This view of cumulative causation represents that of Gunnar Myrdal. Other variants have been advanced by Veblen, Young, Kaldor and Wickse. See article by Fujita (2004) for a comparison on different theories of cumulative causation.

In telecom, path dependency determines the direction, or trajectory, of institutional change. Following North, this is often seen as being due to the stake that the existing political and economic organizations have in perpetuating the status quo (North 1993). Path dependency can also be due to the high start up costs new institutions face and to coordination effects. The example of telecom has shown the difficulties actors face when they attempt to change institutional frameworks. This implies that institutional development is self reinforcing and subject to increasing returns.

In terms of the process of change reform can be incremental (gradual) or radical. The former refers to the practice of making incremental adjustments to practices and routines while the latter refers to making a complete break from past routines or practices (Groenewegen and Künneke, 2005). According to North, though, institutional change is essentially incremental. This perspective he explains by showing that an existing framework favors reduced costs and produces benefits as a results of economies of scope, complementarities and network externalities. The larger the number of rule changes in a sector, the greater the number of losers, and hence the amount of opposition. Revolutionary change can occur, but according to North, it is never as revolutionary might first seem, the case given that informal constraints do not change overnight. So, within our cases we emphasized the incremental acceptance of regional regulation as a new form of governance for the telecom sector.

### **3.5 Implications of key economic concepts for regional regulation**

In Chapter 2 we briefly introduced some economic concepts taken from economic theory and the theory of markets that we considered to be important for our investigation. Recall that market imperfections in the form of natural monopolies and network externalities in the telecom sector have led to monopoly and oligopoly structures. Government intervention in the form of regulation has therefore been required to advance public interests. Here we wish to emphasize the market structural conditions that are assumed to affect the conduct of operators and to drive the performances of the industries.

#### **3.5.1 Structure-Conduct-Performance**

With the Structure Conduct Performance (SCP) paradigm, each market has three main categories of conditions that can be used to determine the extent of competition and monopoly. (Scherer 1970) The term structure is used to describe market characteristics that determine the economic environment in which a firm operates such as the number of firms, market share of firms, the industry concentration and entry barriers. The term conduct covers behavior of firms, measured by their ability to move away from competitive prices, i.e. pricing decisions, strategies against competitors, integration and merger activity, and advertising strategy. While the term performance is used to describe the performance of a firm or industry in a market measured against specified criteria such as profits, efficiencies and equity in distribution.

The SCP paradigm assumes a relationship between market structure and performance. Causation is thought to flow from structure to conduct to performance. According to Shepherd (1997), a concentrated structure, tends to encourage collusion, and its subsequent detrimental effects on sector development, i.e. performance.

In the case of telecom the actual market conditions are close to the monopoly and oligopoly markets structures. The various types of telecom markets are illustrated in Figure 3.2. These markets incorporate varying degrees of competition and monopoly and move along a continuum from effective competition to pure monopoly. The markets in-between, tight oligopoly and dominant firm, generally characterize telecom markets. These markets have historically included one operator or a small number of operators with dominance in the industry.

**Figure 3.2: Types of markets from pure monopoly to effective competition.**

<b>Effective competition</b>	<b>Tight oligopoly</b>	<b>Dominant firm</b>	<b>Pure monopoly</b>
Four firms hold less than 40%. Value Added Services market	Four firms hold over 60% Mobile telecom market	One firm has 40% to 99% Fixed telecom market	One firm has 100% Cable TV market

*Modified from Shepherd 1997*

### 3.5.2 Contributions from market theory

The primary contribution of market theory as it relates to the telecom industry is that government intervention is necessary given the inherent presence of market failures in this industry.

The theory informs us that even competitive markets are unable to fully resolve problems of network externalities and natural monopoly. All of which are characteristics of the telecom industry. As such government intervention in the form of regulation is only necessary when markets fail to coordinate efficiently. When markets do fail, regulation can be directed towards transforming market structure and market conduct.

When there is clear evidence that regulatory barriers to market entry exist, regulation can be directed towards removing artificial barriers to entry by allowing new entrants to enter the market and compete. This in turn is expected to decrease the market share of dominant operators, and is assumed to result in efficient markets.

When there is clear evidence that price exceeds marginal cost, regulation can be directed towards changing the behavior of the operators. The effects of this are assumed to result in efficient markets.

In terms of the market theory such regulatory intervention will result in efficient market performance. This form of efficiency has generally been divided into internal efficiency and allocative efficiency. Market performance will also result in innovation, also called technology progress, and equity in distribution here taken to mean in line with society's standards of fairness.<sup>14</sup>

A neoclassical economic prescription promotes the importance of competition as a desirable market structure. Any form of regulatory intervention should therefore pursue competition as a goal, and the regulatory instruments and tools adopted should be directed towards this competition objective. From neoclassical economics, we learn that the presence of market failures for example, externalities and public goods, constrains the ability of the "invisible hand" to equalize marginal benefit and marginal costs. In such instances government may have a role in organizing the coordination of economic activities in a regional context. For our framework government intervenes by acting through regulation that is used across, participating countries. Depending on the source of economic efficiency government may regulate some telecom activities while choosing to leave other telecom activities to competitive forces. However, since government and its regulatory agencies too are prone to failure, i.e. to regulatory failure, their involvement should be kept to a minimum. Government should act to resolve the divergence between marginal costs and marginal benefits and in the process increase net benefits for society. Within the telecom industry this has mainly taken the form of price regulation. This initially took the form of governments requiring incumbent operators to set their prices equal to their marginal costs and to meet the quantity demanded i.e. marginal cost pricing policy.

### **3.5.3 Market concentration and power**

Market concentration is often indicated using the summed shares of the four largest firms in a given market (Trebing 1997). Such concentration ratios help us to describe the degree of horizontal market power held by the leading firms in the market (Shepherd 1997).

The issue of market concentration is treated differently by institutional economists. While some have insisted on its ability to facilitate efficiency, others have highlighted its constraining influence.

For Williamson (1985) the abuse of private power is exaggerated. The potential for government failure is large. Inefficiencies are attributed to government failure rather than market failure. The use of sophisticated contracting will provide for most market contingencies (Williamson 1985). Private negotiation is therefore favored between actors until an efficient solution is reached. For example, using interconnection contracting between incumbent operators and new entrants should allow the two parties to arrive at a mutually acceptable result. Private rather than public institutional arrangements are required to order society. This reliance on individual negotiation and transacting ensures efficiency in the telecom industry and maximizes social welfare.

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<sup>14</sup> Shepherd (1996) further includes broad values like the competition process, freedom of choice, avoidance of insecurity, support for democracy and social diversity.

Accordingly, the efficiency criterion, i.e. transaction cost minimization, justifies maintaining the status quo and any private vertical integration that may have evolved (Miller 2002). Profitable firms, whether monopoly or oligopoly, are assumed to have survived because of their efficiency. Any form of regulatory intervention to promote competition must therefore confront a tradeoff between the private benefits and social benefits. It is often best to leave things as they are (Joskow 2000).

Regulation is therefore implicitly condemned (Miller 2002). Only in the event of high transaction costs is intervention considered to be appropriate. Such departures from the private ordering norm require justification where the burden of proof rests on those advocating intervention. When intervention is inevitable it should be designed to mimic the outcome of a competitive market by preventing the exercise of market power.

For Trebing and Melody, however, the amassing of private power permits its possessors, e.g. firms with dominance, to make and change the rules of the game. Market power gives the firm discretionary control over markets, prices and investment. More specifically market power can reduce demand and leaves customers, who are willing to pay, unable to obtain services. At the same time, profits are linked to market share and there is a strong incentive to capture market share, thereby further increasing the concentration of market share in the hands of larger operators (Gorak 2002).

Trebing shows an interrelation between network economies, concentration and profitability (1994b). According to Trebing (2003) a reduction of economic regulation often results in a growth in market concentration (tight oligopoly), which in turn leads to manipulation of pricing and results in bad industry performances. For example, prices will no longer necessarily track costs and profits will be higher than those that would have prevailed under either traditional, stringent, rate base regulation or competition (Gorak 2002). Thus concentration should be avoided, controlled and regulated.

### **3.5.4 Competition**

Effective competition exists where there are at least five or six comparable rivals with no significant barriers to entry and where no single firm exercises dominance, defined by Trebing as controlling more than 40% of the market (Trebing 1998). This “competitive parity” should prevent any firm from raising prices above costs except in the event of superior efficiency (Shepherd 1997).

Competitive telecom markets are assumed to provide several economic benefits.<sup>15</sup> The problem of market concentration and power (discussed above) means that an effective competitive market needs to be reestablished (Melody 2002). In this respect the value of competition as a reform goal is

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<sup>15</sup> The general benefits of competition include the following lower prices to telecom users, more variety of and faster innovation in service offerings, increased investment in and modernization of the telecom sector. See Shepherd (1997).

an important determinant of how reform measures like privatization, liberalization and deregulation have succeeded. Many institutional economists<sup>16</sup> have worked at developing a workable alternative of telecom competition. Trebing (1969), for example, has called for a systematic, multi-disciplinary and policy orientation approach to regulation.

“Systems planning would seek to interrelate all variables pertaining to the common carrier service, and general communications, in such a fashion that they can be treated sequentially and cross-sectionally. Systems analysis must interrelate (1) the overall- all system integrity of common carriers communications; (2) coexistence of monopoly and competition; (3) the need to assure an inducement to superior performance and freedom of consumer choice; and (4) efficient use of public resources” (Trebing 1969 p.326).

According to this model, integrated policies on competition, interconnection, cost and pricing standards, become important for national regulators and competition authorities. For example, coherent telecom regulations on interconnection or pricing should form part of a larger policy framework. In addition, competition should be viewed as an important tool for regulation, as opposed to the view of regulation as a substitute for competition. From this perspective competition, is thought to strengthen regulation and becomes an effective vehicle, for achieving efficiency and social policy objectives such as effective competition. This necessitates, ongoing monitoring and periodic regulatory intervention by government to minimize entry barriers and to provide open access for new competitors.

### **3.5.5 Regulatory content**

Spiller and Levy (1996) define regulatory content or incentives as “specific laws and policies towards pricing, competition, access and investment that shape incentives facing firms and consumers” for analytical purposes. These factors are expected to provide the necessary regulatory predictability necessary for sector investments that produce stable prices and sustainable profits.

These regulatory issues are treated differently by mainstream economics where regulation is reduced to a set of efficient pricing rules (Loube 2002). Regulatory agencies are mandated to set prices that will stimulate competitive markets. However, reducing the problem of monopoly to one of pricing raises the question as to which formula best stimulates competitive results. This is particularly important in telecom given the existence of highly specific investment needs and the need to determine how these costs should be recovered from the price of services. Should marginal cost pricing be used to provide the telecom service, i.e. using forward looking costs, or fully allocated pricing, i.e. using historical costs? Decentralized markets are proposed as means to

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<sup>16</sup> In the field of public policy many prominent institutional economists have applied insights from institutional economics to the study regulation. These have included the likes of Harry Trebing and William Melody, John Commons, Martin Glaeser, Dallas Smythe, Edythe, Robert Babe, Thomas Gorak, Robert Loube, William Shepherd, Warren Samuels, Mark Jamison, Robin Mansell, Johannes Bauer and others (Mansell, et el 2002)).

‘spontaneously or non-deliberately generate and diffuse price information in an appropriate quantity and of sufficient quality’ (Babe 2002). Some neoclassical economists have even called for the use of formal regulation to be discontinued (Loube 2002).

The new dynamism introduced by rapid technology changes, however, has highlighted the severe limitations of these neoclassical prescriptions. This was especially evident in the behavior of telecom incumbents, with dominance, who could exploit incompatibilities by pursuing anti-competitive practices, like predatory pricing and the use of anti-competitive cross subsidies.

The institutional treatments of these regulatory issues are therefore fundamentally different. For example, rigorous regulation rather than “light handed” regulation is considered to be essential to identify monopoly markets, establish and supervise interconnection policy, tie incentive systems to performance and to develop cost based caps on rates to constrain cross-subsidization and price discrimination (Loube 2002). “Light regulation” will either be ineffective or irrelevant in dealing with oligopoly as a means to assure levels of industry performance that maximizes their contribution to the national infrastructure. “Light regulation” will either be ineffectual or irrelevant in dealing with oligopoly (Gorak 2002).

The creation of regional organizations of telecom regulators is therefore considered to be a key factor contributing towards regulatory effectiveness and market efficiencies. On a national level regulatory agencies are viewed as key institutions “who serve on the frontier of shaping and directing markets in the information economy” (Melody 1999). On a regional level regulatory agencies can be instrumental in developing and applying the governance necessary to redress market failures. They form an essential part of the new institutional restructuring which includes “clarification of the roles for national and regional regulation and for international governance” (ibid).

In this respect regional regulation, i.e. regional policy framework objectives, reform initiatives, forms of regulations, regulatory process, etc., represents a new form of arranging the coordination of economic activities in the telecom sector, and its effectiveness is an essential part of the new global governance system.

### **3.6 Conclusions**

In this chapter we have discussed the conceptual framework of our study on regional regulation. We are essentially interested in the design or redesign of a regional system of governance that is capable of being used to coordinate telecom activities in complex regional markets.

Our chosen theoretical perspective was pluralistic based around a theoretical core of institutional economics. This perspective has allowed us to incorporate insights and concepts drawn from

economics, i.e. general economic theory as well as the theory of markets, institutional economics and from political science.

Our approach is based on the 4 layer model of Groenewegen (2005), inspired by Williamson (2000). This approach has allowed us to operationalize institutions and to examine the role of social, cultural, political and economic institutions on economic behavior and the performance of regional markets.



## 4. Research methodology

### 4.1 Introduction

In the preceding chapters we discussed the objective of this research (Chapter 1), the economic and technical features of the telecom system (Chapter 2) and the conceptual framework for our analysis. In essence this study is about designing efficient and effective institutions for a multi-level, multi-actor and complex regional regulatory system (Chapter 3). More specifically it concerns the design of regional regulation as a new form of governance for the telecom sector.

### 4.2 Research Questions

Our questions were designed to help us determine the important aspects of our conceptual framework; the technological socio-economic system, regional regulation and market performance in our case study areas.

#### Research questions

- What effect has technological, socio-economic systems, such as informal institutions, technologies, formal institutions, institutional arrangements and actors, had on regional regulation in the European Union, the Organization of the Eastern Caribbean States and the South African Development Community?
- How has regional policymakers and regulators responded to the regulatory issues raised in the European Union, the Organization of Eastern Caribbean States and the South African Development Community?
- What has been the implication of the response for sector performances in the European Union, the Organization of Eastern Caribbean States and the South African Development Community?
- How has the various technological, socio-economic systems and treatment of substantive regulatory issues, by regional policymakers and regulators compared within the European Union, the Organization of Eastern Caribbean States and the South African Development Community?

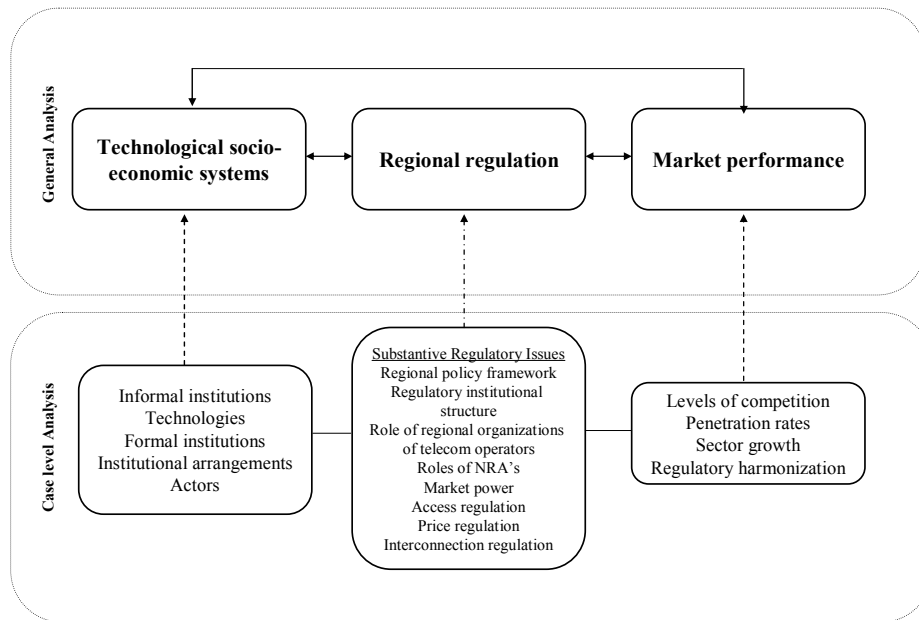
Using these questions, and three case studies, we investigated the relationships between technological, socio-economic systems, regional regulation and sector performance resulting from (effective) regulation.

### **4.3 Research design**

The research design includes both a general and case level analysis. At the general level we broadly examined the impact of technological, socio-economic systems on regional regulation and its subsequent impact on sector performance. At the case level, these concepts were operationalized for purposes of analyzing inherent relationships. The institutions are operationalized in terms of our 4 layered model. Regional regulation is operationalized in terms of regulatory substantive issues that have emerged as a consequence of the institutional environment, institutional arrangements and technologies. Sector performance is operationalized in terms of indicators generally used by the World Bank and the OECD.

Our research model (Figure 4.1) assumes an interrelation between technological, socio-economic systems, regional regulation and sector performance. According to our model, technological, socio-economic systems affect regional regulation in fundamental ways; they create benefits and challenges for regional policymakers and regulators. The responses of regional regulators and policymakers to the substantive regulatory issues raised have had implications for telecom sector performance in each of the regions. In some instance these have stimulated sector growth; in other instances these have constrained sector growth.

**Figure 4.1: Research model**



The purpose of this section is to outline the approach we used to collect and analyze data and to present the limits of the chosen approach. This section is organized around two main sections, methodology and methods.

### 4.3.1 Methodological choices

Studies in standard economic and institutional research are characterized by quantitative and qualitative research methods. While we made use of both methods, our investigation was essentially qualitative. In making this choice we were motivated by the research objective, research questions and theoretical contributions. Our research questions and theoretical orientations required an approach that involved ‘the study of things in their natural settings’, attempting to make sense of or interpret this phenomena in terms of the meanings people bring to them” (Denzin and Lincoln, 1994).

### 4.3.2 Research strategies

A research strategy can be defined as the ‘distinct way of collecting and analyzing empirical evidence’ (Yin 1994 p.3; 19) that ‘researchers employ as they move from their paradigm to the

empirical world' (Denzin 1998). This leads to researchers choosing those specific methods to collect and analyze empirical material. In the social sciences, research strategies appear to be bountiful, and include grounded theory, clinical methods, experiments, surveys, analysis of archival information, histories, case studies, etc. Qualitative methodology does not prescribe any single method. Our choice of research strategy was largely driven by our research objective, our research questions and our theoretical framework. Given this we chose to use case studies, interviews and surveys. In combination, these strategies can be used to answer "who, what, where, how and why questions" (Yin 1994).

### **4.3.3 Case studies**

Case study research has evolved into a distinctive approach to scientific inquiry and is considered to be appropriate to use when a holistic, in depth investigation is needed (Feagin, Orum & Sjoberg, 1991). Case studies also allow for comparative cross-national analysis (Ebbinghaus 2003); this was an important feature of our investigation as we used small case-oriented comparison (see King, Keohane and Verba 1994). Yin (1994) defines case study in terms of the research process as "...an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomena and context are not clearly evident". Our main reason to select a case approach was the exploratory nature of our main and sub-questions. Our questions were aimed at providing an in depth understanding of the institutional environment and arrangements in telecom regulation and how these contribute towards efficient coordination of regional telecom markets.

#### **4.3.3.1 Research design and purpose**

Case studies can have different designs and purposes. First, a case study may consist of a single case. Single cases may have sub-units or sub-cases embedded within one case, and will contain data drawn from a multiplicity of sources, interviews, field observations, documents, etc. Second, a case study may consist of multiple cases, when using multiple cases, each case is treated as a single case. Our case study consisted of multiple cases, three regional case studies to be precise, presented in three distinct chapters (5, 6 & 7). In addition the conclusions from the three regional case studies were used as the basis for comparison in Chapter 8.

The use of multiple cases typically requires two stages of analysis, the "within case" analysis and the "cross-case" analysis (Mahoney 2003b; Ebbinghaus 2003; Yin, 1994). In the first stage each case is treated as a comprehensive unit in and of itself and the data analyzed and triangulated within the integrity of that case. For example, our three case studies provided for "within case" analysis of the particular relations between the technological, socio-economic systems, regional regulation and sector performance in the EU, the OECS and the SADC regions. Here, we were interested in the impact of the technological, socio-economic systems on regional regulation and the effects of this on market performance *in* each of the economic regions. In the second stage, cross case analysis,

abstractions were built across the cases. For example, our three case studies allowed cross-national analysis of the relations between technological, socio-economic systems, regional regulation and sector performances in the EU, the OECS and the SADC regions. Here, we were interested in the similarities and differences of the impact of the technological, socio-economic systems on regional regulation and the effects of this on market performance *across* the economic regions. In this way within-case analysis provides a crucial test of patterns found inductively using cross-case analysis.

Other authors have commented on the value of this approach. For example, Miles and Huberman (1994) explain cross-case analysis as an attempt to see processes and outcomes that occur across many cases, and a method that can be used to help us understand how such processes and outcomes are qualified by local conditions. Thus we are able to develop more sophisticated descriptions and more powerful explanations. Cross-case analysis is considered to be complex and as such simply summarizing superficially across some themes or main variables is of little use. We are therefore compelled to look carefully at the complex configuration of processes within each case, understand the local dynamics, before we can begin to see a pattern of variables that transcend particular cases (Miles and Huberman, 1994). This combination of cross-case analysis and within-case analyses using multiple case studies supports the use of a more complex design (Yin 1994).

Our case study design follows such complex case design structure where cases were chosen to produce contrasting results which could then be explained theoretically (Yin 1994). The extreme variation in some aspects of telecom regulation and the similarities of other aspects in the cases were used to present a strong case for the impact of technological, socio-economic systems and the subsequent treatment of regulatory issues by regional regulators and policymakers.

#### **4.3.3.2 Data collection and analysis**

Here we discuss methods used for data collection, the variety of data sources we used and the way in which we analyzed the data. The methods used to collect empirical material can be diverse. Yin (1994) identifies various primary sources of evidence for each form of case study research. Not all sources are essential for every case study. No single source has a complete advantage over the others; rather each source is complemented by others and may be used in tandem. For this research, three main techniques were combined and used to gather empirical data: interviews, semi-structured with actors of the telecom field, survey questionnaires, with national regulatory authorities; and documentation, reading company documents, annual reports, etc. These data sources, however, are not without their strengths and weaknesses. For example, the strength of interviews is that they allowed for targeted discussions, in our case on the approach to regional regulation, and they can be used to provide insights into causal inferences, technological, socio-economic systems on regional regulatory efficiencies. Interviews can also lead to biased responses and provide information on what, the interviewee in our case regulators, feels the interviewer wants to hear (Yin 1994). For example, the regional organizations of telecom regulators tended to accentuate their contributions towards enabling a more efficient means of regional regulation. In our case using questionnaires as

a means of data collection was complemented with extensive work experience in the industry and participation in regional conferences and workshops.

Methods with respect to analyzing case study evidence can be equally diverse<sup>17</sup>. Yin (1994) suggests that every investigator should first have a general analytical strategy that he / she can use to guide the decision making and that will help him / her come to conclusions. Yin presents various possible techniques including pattern matching, explanation building, time series analysis and the use of logic models.<sup>18</sup> According to Ebbinghaus (2003), the use of cross-case analysis and within-case analyses should provide more insights using pattern matching, process tracing or event sequencing. So, using pattern matching determined whether assumed relationships held within each of our cases: for example, we looked at the specific treatment of a regulatory issue such as access regulation and the impact of sector performance such as increased competition. Using process tracing we identified social mechanisms by looking at actors and processes over time: for example, we looked at the role of the World Bank and international donors in driving the reform processes in the OECS and SADC respectively. Using event sequencing we analyzed sequences of events in our case studies: for example, we looked at the timing of the introduction of reform such as liberalization, setting up regional organizations of telecom regulators, etc. and its impact on sector performance on new entrants and sector growth.

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<sup>17</sup> For example, Miles and Huberman, (1994) includes rearranging the arrays, placing the evidence in a matrix of categories, creating flowcharts, using means, etc.

<sup>18</sup> Pattern matching compares an empirically based pattern with a predicted one; in an explanatory study, the patterns may be related to the dependent or the independent variables or both. Explanation building means stipulating of a set of causal links about a phenomenon, which can include a consideration of alternative or rival explanations. Time series analysis involves tracking multiple indicators of a phenomenon over time. A logic model combines pattern matching and time series analysis. It stipulates a complex chain of events (pattern) over time (time series) and covers the causal relationship among independent, intervening and dependent variables. Of all these Trochim (1989) considered pattern matching as one of the most desirable strategies for analysis.

#### 4.3.3.3 Case studies also have limitations

First we discuss some of the limitations of case studies before proceeding to how we addressed some of these limitations in our investigation. Questions have been raised of the extent to which small cases can be directly compared and the extent to which generalizations can be drawn from the results. This is related to external validity criteria where for example, the results from case studies cannot be considered to be widely applicable in real life. Yin refutes the criticism by presenting an explanation of the difference between analytic generalization and statistical generalization. In analytic generalization, previously developed theory is used as a template against which to compare the empirical results of a case study (Yin 1984). The manner of generalizing in case studies assumes that some sample cases have been drawn from a large universe of cases. Thus the incorrect terminology such as ‘small sample’ arises as though a single case study were a single respondent. Stake (1995) argues for generalizations to be more intuitive or “naturalistic”, meaning that data used for, and generated by, case studies should resonate with the experiences of a broad cross section of readers and facilitate greater understanding of the phenomenon at hand (Snow and Anderson, 1991).

A second important limitation related to case studies is the issue of validity, the construct validity<sup>19</sup> criteria. To increase internal validity in a case study one can make use of triangulation of data collection methods, which entail combining various methods and data sources to compensate for weakness of one method using the strength of another. Yin (1994) suggests using multiple sources of evidence as the way to ensure construct validity. Multiple sources of evidence essentially provide multiple measures of the same phenomena. The advantage of multiple sources is that they allow for triangulation or the development of converging lines of inquiry. In this regard any conclusion in a case study is likely to be much more convincing if it is based on several different sources of triangulated information.

A third limitation of case studies is, the amount of time required to carry out good case study research. One has to design the case study, possibly a preceding pilot study, carryout the case study (studies) and analyze the case study results, eventually using these results to support argumentation and conclusions (Bakker 2001). Case studies researched can be very time consuming. Initial contacts with people who might be willing to have a case study carried out have to be made, access must be gained to relevant information and data collected. In addition the numbers of case studies that researchers perform are often limited.

Given the abovementioned limitations, we selected our cases with care using our experience in the telecom industry and our research framework.

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<sup>19</sup> Construct validity relates to the question whether we measure what we intend to measure.

We chose the EU because it represents a developed economy with a history of regional telecom sector development. The SADC in contrast was chosen because it comprises an under-developed economic region that contrasts with the situation in the EU. The OECS was chosen because it falls somewhere between these two levels of development. In addition the OECS represents a group of small island states that have specifically created a regional regulator with legal authority in the member countries.

Additionally we applied a combination of the “most similar design” and the “most dissimilar design” to select cases for the macro-level comparison (Ebbinghaus 2003). The “most similar” approach allowed us to consider economic regions in which at least some aspects of the regional institutional environment and regional institutional arrangements were *similar*, for example, the presence of a regional policy framework with supporting institutional structures like a regional organization of telecom regulators. The “most dissimilar” approach allowed us to consider economic regions in which at least some aspects of the regional institutional environment and regional institutional arrangements were *dissimilar*, for example, the difference in the legal status of the regional policy framework and the absence of supporting institutional structures like a regional judiciary.

The varying institutional environment and arrangements also meant that in some instances we had to choose different variables for comparison. The example of technological socio-economic systems at the general and case level analysis illustrates this. While the elements of the technological socio-economic systems, i.e. informal institutions, technologies, formal institutions, etc., were similar at the general level of each case study, the manner in which they were operationalized at the case level differed. For example, in the EU the following informal institutions were deemed important; a strong culture of incumbent dominance, an attitude of mistrust towards the EC and a strong value of competition in the EU. In the SADC, however, different informal institutions were deemed important for our investigation of regional regulation. Here we considered the following informal institutions; a strong culture of public ordering, submitting to pressure from international organizations and a dependency on donor funding. This approach was also followed with respect to elements relating to regional regulation and market performance. At the various case level analysis (the EU, the OECS and the SADC) different aspect of these elements were deemed important for our investigation of regional regulation.

To test the extent to which regional organizations of telecom regulators impacted the behavior of national regulatory agencies, surveys were conducted in the EU and the SADC. We wanted to determine the extent to which regulatory practices across states were consistent with the regulatory principles espoused in regional regulations. Therefore we undertook further “mini-case studies” in each of the case studies we looked at the regulatory best practices developed by the regional



organizations of telecom regulators and implemented by the participating regulators<sup>20</sup>. Brief outlines of these practices are given in Table 4.1.

**Table 4.1: Regulatory best practices developed**

Organization	Best practices
Independent Regulators Group	Local Loop Unbundling (Nov 2000), Forward Looking Long Run Average Incremental Costs (Nov 2000), Effective competition (2000), Accounting separation (2003), Call barring (May 2003), bill itemization (July 2003), disconnect (May 2003), Mobile termination (2003).
European Regulators Group	Remedies guidelines
Telecommunications Regulators Association of Southern Africa	Tariff, Interconnection, Numbering
Eastern Caribbean Telecommunications Authority	Licensing, Tariffs

The relationships between technological, socio-economic systems, regional regulation and sector performance were described for each case study and the studies were then compared. The results of this comparison are discussed in Chapter 9.

This type of analysis is known as comparative static analysis and is often used in policy and institutional analysis (Alston 1996). It is also consistent with the comparative institutional approach outlined by Greif (1997). Focusing on a single point in time facilitates comparison but there are some drawbacks to suppressing the dynamic aspects of relationships. To counter this we incorporated some aspects of dynamics into our analysis, primarily in the form of feedbacks (see Chapter 3, Figure 3.1).

To overcome the problem of external validity we conducted three multiple case studies. Our aim was to provide a rich picture of how technological, socio-economic systems, regional regulation and sector performances are related. Each of the cases was first treated as a separate case, and then the conclusions from each were used to provide the empirical foundations of the study.

To overcome the problem of constructive validity we followed several tactics suggested by Yin (1994). Multiple sources of evidence were used where possible. This took the form of studying

<sup>20</sup> In the case of IRG – PIB's on LLU and FLRIC; In the case of ERG - Remedies guidelines; in the case of TRASA – model regulation on Interconnection and Tariffs and in the case of ECTEL – regulations on Licensing and Tariffs.

professional literature, previous studies, statistics and conducting interviews with organization officials and regulators.

Our involvement with industry players also allowed us access to the regional organizations of telecom regulators. This took the form of participating in the workshops with the IRG, the ERG and the OECS. This in addition to contact with players in the field was valuable for overcoming some of the limitations of case studies.

We overcame some of the problems of time that are associated with case study research by using prior experience as an observer at the TRASA during the period before we began this research, we were thus familiar with the working of the TRASA.

#### **4.3.4 Interviews**

##### **4.3.4.1 Introduction**

Interviews are an important source of case study data and they can take many forms to serve a wide variety of uses. Interview techniques can be categorized as: open-ended, focused and formal (Yin 1994); structured, unstructured and semi-structured (Junker, 1960); and individual and group interviews (Junker, 1960). Overall interviews are considered to be an essential source of case study evidence because most case studies deal with human affairs. We opted to use focused and semi structured interviews with practitioners and experts drawn from the regional organizations of telecom regulators. Focused interviews are interviews in which respondents are interviewed for short periods of time, the interview may still be open-ended but the interviewee is more likely to follow a set of predefined questions.

##### **4.3.4.2 Organization of interviews**

We decided to focus on the top managers, chairpersons, program managers, etc. of the four regional organizations of telecom regulators of the case studies. The interviews were staggered; they were done in stages one in May 2002 in South Africa and Botswana and one in February 2004 in Egypt. The ECTEL interviews were done in May 2002 in St Lucia. The IRG and the ERG interviews were carried out between January 2004 and April 2004 in Brussels, Belgium and The Hague in the Netherlands.

#### **4.3.4.2.1 Interview set up**

Formal letters of request were forwarded via email to prospective, interviewees asking them to participate and stating the purpose of the interview, the expected duration of an interview and explaining how the results of the interview would be used. This was followed up with a telephone call in which the request was further elaborated upon and, if the person was willing to participate a date for an interview was set.

#### **4.3.4.2.2 Selection of interviewees**

Interviewees were selected on the following criteria:

- knowledge of their history of their organization
- knowledge of the operations of their organizations
- knowledge of the effectiveness of their organization

Given that the organizations were all relatively young we attempted to interview the ‘founding fathers’, top managers and working groups, where possible. The past chairs and existing chairs of the IRG, the ERG, the ECTEL and the TRASA were interviewed. To overcome any bias introduced by relying solely on the “founding fathers” other experts and practitioners were contacted, especially those who were expected to have in depth knowledge of their organizations. For example, in January 2004, I conducted a three-hour interview with a seasoned lobbyist who knew the inner working of the IRG and the ERG, this occasion helped me to understand issues and to formulate interview questions for interviews carried out later in the year in these organizations. In total 20 formal semi-structured interviews were conducted (see tables 4.2 and 4.3).

**Table 4.2: Groups Interviewed**

<b>Groups</b>	<b>ECTEL<sup>21</sup></b>	<b>IRG</b>	<b>ERG</b>	<b>TRASA</b>
Top management	1	2	2	1
Secretariat staffing	1	2	1	2
Working Groups	NA	2 <sup>22</sup>	2	1
Regulatory authorities	1	- <sup>23</sup>	-	2
Sector experts	1	1 <sup>24</sup>	1	1

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<sup>21</sup> Informal discussions were also held with Clifford Davy (telecom commissioner, St Vincent), Glenroy Dear (telecom commissioner, St Kitts) and George Jones (telecom commissioner, Dominique) during a workshop in Grenada in 2002.

<sup>22</sup> The work groups of IRG and ERG were comprised of the same people.

<sup>23</sup> The top managers and secretariat were interviewed in their capacities as representatives of both IRG/ERG and their national regulatory agencies. In the interview they were requested to respond in a specific capacity depending on question. For example, the IRG/ERG chair was questioned as on what he saw as biggest challenges faced by IRG/ERG, later he was asked which IRG/ERG service he valued most as the chair of the national regulatory agency.

<sup>24</sup> The sector expert was one and the same person.

**Table 4.3: Interview schedule**

<b>Organization</b>	<b>Function</b>	<b>Name</b>	<b>Place</b>	<b>Date</b>
TRASA	Working group	Mkuli Wuoko	South Africa	8 May 2002
TRASA	Secretariat	Thapelo Magopa	South Africa	8 May 2002
TRASA	Chair	Cuthbert Lekaukau	Botswana	10 May 2002
ECTEL	Secretariat	Perry Mason	St Lucia	21 May 2002
ECTEL	Advisor	Mr. Manchester	St Lucia	21 May 2002
ECTEL	NTRC	Eldon Mathuran	St Lucia	21 May 2002
ECTEL	Chair	Donnie de Frietas	St Lucia	22 May 2002
IRG/ERG	Telecom operators lobbyist	Ewan Sutherland	Brussels	30 January 2004
IRG	Program Manager	Guido Poullon	Brussels	6 February 2004
IRG/ERG	Chair	Eric van Heesvelde	Brussels	6 February 2004, 6 April 2004
IRG/ERG	Working group member	Robert Stil (OPTA)	Netherlands	15 March 2004
IRG	Secretariat member	Annegret Groebel	Brussels	6 April 2004
IRG/ERG	Past Chair	Jens Arnbak	The Hague	8 April 2004
IRG/ERG	Working Group	Roel Polemans (OPTA)	Netherlands	15 April 2004
ERG	Secretariat	Hendrik Ortruba	Brussels	16 April 2004
ERG	European Commission	Richard Cawley	Brussels	16 April 2004
TRASA	Past program manager	Simon Mashiro	Egypt	2 May 2004
TRASA	International donor	Brian Goulden	Egypt	2 May 2004
TRASA	National regulator (Mauritius)	Mr. Radhakissoon	Egypt	2 May 2004
TRASA	National regulator (South Africa)	Mandla Langa	Egypt	5 May 2004

**4.3.4.2.3 Questionnaire**

The questionnaire for the semi-structured interview addressed questions relating to the emergence of the organizations, the day-to-day functioning of the organizations and the effectiveness of the organizations.

In terms of generalizing the conclusions of the interviews the outcomes were not necessarily representative of the telecom sector as a whole. Given the time and budget constraints on our research only four organizations in three regions were assessed, such a sample is not representative of telecom organizations and other regions as a whole. We also mostly interviewed representatives from the regional organizations, top managers, and not other actors like regional or national policymakers, consumer groups, etc.

### **4.3.5 Surveys**

#### **4.3.5.1 Introduction**

A survey questionnaire was selected to explore the similarity between the regulatory practices recommended by the national regulators and their consistency with the regional regulations. Survey questionnaires were sent via email to the secretariats of the IRG/ the ERG and the TRASA who in turn facilitated the participation of the national regulators. In terms of strengths the use of surveys allowed us to obtain statistically viable findings on the use of regulatory best practices by national regulators. In terms of weaknesses our results were affected by a low response rate (Yin 1994).

##### **4.3.5.1.1 Data collection technique**

Given the expense of conducting face-to-face interviews with regulators a decision was made to supplement interview data with data collected using ‘postal’ surveys. The surveys were sent and returned using a combination of email and fax. A disadvantage of postal surveys is that one cannot ask follow up questions without a time lag. Then there is also the difficulty of clarifying the purpose of one’s research at a distance, of explaining questions and dealing with unrealistic answers. We tried to address these problems by requesting permission to hold follow up telephonic interviews to clarify responses. We also tried to include as much information with the survey to clarify our purpose for carrying out the survey and to try and preempt possible questions a distant respondent might have about the survey.

##### **4.3.5.1.2 The Independent Regulators Group and the European Regulators Group**

In total the Secretariat of the IRG sent the questionnaire to 29 of its participating members. The procedure followed was as follows: first, we extended a request to conduct a survey questionnaire to the chair of the IRG/ the ERG.<sup>25</sup> Second, the chair facilitated requested through the IRG secretariat. Third, the IRG Secretariat informed the contact network about our survey’s, and of the Chair’s support for the surveys and requested them to assist us by answering our survey. Fourth, the

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<sup>25</sup> During the time of the interview the chair and deputy chair of the IRG became the chair and deputy chair of the ERG respectively.

regulators were requested to respond to us individually. Most members did not respond within the time period provided. Each of these members were then sent email reminders and followed up by phone. In the case of IRG permission was requested in February 2004 and the last of the responses were received in June 2004. By June 2004, 12 national regulators had responded: Estonia, Denmark, The United Kingdom, Finland, Slovak, Spain, Belgium, Sweden, The Netherlands, Ireland, Switzerland and Italy. Some respondents did not answer all of the survey questions. Given that response to the questions was voluntary, the regulators varied in which sections and what specific questions they chose to answer.

#### **4.3.5.1.3 The Telecommunications Regulators Association of Southern Africa**

The secretariat of the TRASA sent the questionnaire to 16 of its participating members. The same protocol was followed as that outlined for the IRG case. As before most members did not respond in the time period provided and we followed the procedure described in the IRG case. Permission was request in June 2004 for the TRASA case and the last of the responses were received in October 2004, by which time eight national regulators had responded. Not all the members answered all the survey questions in their entirety, as in the IRG case, the response was voluntary.

#### **4.3.5.1.4 Questionnaire**

In the case of the IRG/ the ERG, the survey questionnaire consisted of three parts. Part A addressed questions relating to the IRG and the ERG aims, objectives tasks and services. Part B addressed questions relating to the PIB's on local loop unbundling while part C addressed questions relating to the PIB on FL-RAIC.

In part A regulators were asked whether, in their opinion, the IRG and the ERG could meet its specific objectives. The answers were intended as a means to assess the effectiveness of these organizations from the individual regulators perspective. The regulators were also asked to rank the services provided by the IRG and the ERG in terms of useful, of some use and of little use. The answers were used to assess which services regulators found most useful.

In parts B and C regulators were asked to indicate the recommendations they had made with respect to specific regulatory measures. The questions were designed to determine such things as the forms of unbundling and costing models adopted by regulators. Given that best practice rules are used to provide guidelines and recommended practices for regulators. Their regulators were also provided with an opportunity to list any benefits received from applying best practice rules to outline major difficulties encountered. These answers allowed us to assess the consistency of practices against best practices and to determine the similarity of practice across states with regard to best practices.

In the case of the TRASA the questions consisted of two parts; part A and part B, each addressing a specific regulatory best practice.<sup>26</sup> For example, in the case of the TRASA Part A addressed questions relating to the model regulation on interconnection while part B addressed questions relating to the model regulation on tariffs.

The regulators were asked to indicate their recommendation with respect to specific guidelines in the regulatory best practices. For instance, had interconnection agreements between operators been made public and if so, 'how has the interconnection agreements been made public?' The rationale for us to identify recommendations was to assess the extent to which the regulators found the regulatory guidelines useful and relevant.

The respondents were also given the opportunity to specify responses and to make any additional comments.

In terms of generalizing the conclusions of the survey the outcomes are not necessarily representative of the telecom sector as a whole. The best practices selected were only a sample of all best practices developed by the regional organizations. Here in particular we were constrained by practical considerations and could only take into consideration two best practices in each case. In the case of the ERG we were only able to examine one since this was all that had been developed at the time (2004). In terms of wanting to assess the effectiveness of regional organizations, best practices guidelines were only one of many other services provided by regional organizations. Given the time constraints and the difficulty of measuring the outcome of other services we limited ourselves to best practices.

#### **4.4 Conclusions**

In this chapter we outlined the research questions and provided argumentation for our choice of research methodologies.

In terms of our main question we sought to explain the effects of technological, socio-economic systems on regional regulation and its impact on sector performance. The research questions were designed to allow us to investigate the institutional setting in which regional telecom regulation is embedded. In addition the questions were designed to help us highlight underlying, substantive regional regulatory issues and investigate how they were treated in the three case study regions.

A qualitative rather than quantitative research approach was deemed more appropriate for our exploratory research, which consisted of gathering information on telecom regulatory practices

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<sup>26</sup> TRASA was not questioned on how regulators perceived its objectives and services since this has been done as part of an earlier study.



across three regions with the aim of being able to make recommendations for future telecom regulation practices. The research strategies and methods of collecting and analyzing empirical evidence adopted for this study included case studies, interviews and surveys.

The research design included a case and general level analysis. The relationship between the institutional elements and regional regulation was examined at the case level. Each of these elements plays a significant role in telecom regulation and was expected to shape the benefits and challenges for regional regulation. Substantive regulatory issues were identified in our case studies and our research was designed to try and determine how regional policymakers choose or, had chosen, to treat these issues.

At the general level, the research was designed to determine and compare how different regions have treated regulatory issues in the telecom field. Additionally an attempt was made to assess the extent to which the similarities and differences in treatment might explain the effects of telecom regional regulation across a region, i.e. we attempted to determine what has worked across a regions and what had not.

The relationships between technological, socio-economic systems, regional regulation and sector performance were investigated using evidence drawn from three cases studies. The case studies were designed to embody, and highlight, different institutional environments and the different institutional arrangements of the regional organizations of telecom regulators. The case studies covered three geographic regions namely the EU, the OECS and the SADC. The EU is a highly developed economic region, the SADC is one of the worlds least developed regions while the OECS is a region that sits somewhere towards the middle of this continuum. In total four regional regulatory organizations were considered, namely the two in the EU, one in the SADC and one in the OECS. The institutional arrangements of the regional organizations, can be viewed as a continuum ranging from the IRG (in the EU), the TRASA (in the SADC), and the ERG (in the EU) to the ECTEL (in the OECS).



## **5. Regional regulation as a new form of governance in the European Union**

### **5.1 Introduction**

In this our first case study, we describe and analyze early experiences of regional regulation as a new institution in the European Union (EU), and assess the implications of this for regulatory effectiveness and sector performances in the EU. The period 1998 to 2004 represented an important learning phase for the process of regional regulation in the EU telecom sector.

#### **5.1.1 Background to the European Union**

The EU was established as the European Economic Community (EEC) under the 1957 Treaty of Rome. The Maastricht Treaty (1993) saw it renamed as the European Union. The original six EU were; Belgium, France, the Federal Republic of Germany, Italy, Luxembourg, and The Netherlands, followed by the United Kingdom, Ireland, and Denmark (1973); Greece (1981); Spain and Portugal (1986); and Austria, Finland, and Sweden (1995).

Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, and Slovenia joined the EU in 2004. Romania and Bulgaria are expected to join in 2007, and in October 2004, the EU Commission gave the green light for accession negotiations to be started with Turkey some time in October or November of 2005. We focused our case study on the EU15 i.e. that is the founding members of the EU and all those members, plus those states joining the EU before 1996.

Figure 5.1: Location of the states that make up the European Union



The EU is a highly developed and industrialized region; its combined economies are roughly equal the U.S. economy with similar \$11.0 trillion purchasing power parity (PPP) and gross domestic product (GDP) for the two areas in 2003. The real EU, GDP growth rate increased from 2.4 in 2003 to 3.4 in 2004. The average GDP per capita within the EU was 21,789 in 2004; Germany, GDP 2,405, France, GDP 1,760, the UK, GDP 1,801, and Italy, GDP 1,470. The EU has a population of 456 million. See Table 5.1 below.

**Table 5.1: Economic and Demographic Indicators for the EU15 States used in the European Union case study compared to totals for the USA**

	Gross Domestic Product (GDP) (Purchasing Power Parity)			Population 2004E (Millions)	
	2003E (Billions of U.S. Dollars)*	Real GDP Growth Rate			
		2003E	2004F		Per Capita, 2003E (U.S. Dollars)*
Austria	253	0.7	1.8	31,342	8.2
Belgium	302	1.1	2.6	29,147	10.3
Cyprus	13	2	3.5	15,826	0.8
Czech Republic	90	3.1	3.6	8,786	10.2
Denmark	213	0.5	2	39,877	5.4
Estonia	9	5.1	6.4	6,700	1.3
Finland	162	2	2.9	31,052	5.2
France	1,760	0.5	2.5	29,424	60.4
Germany	2,405	-0.1	1.4	29,150	82.4
Greece	173	4.5	3.7	15,528	10.6
Hungary	83	3	4	8,196	10
Ireland	152	3.7	5	38,490	4
Italy	1,470	0.4	1.1	25,573	58.1
Latvia	11	7.5	7.4	4,756	2.3
Lithuania	18	9.7	6.6	5,302	3.6
Luxembourg	26	2.1	3.3	57,603	0.5
Malta	5	0.2	1.5	12,286	0.4
Netherlands	513	-0.9	1.3	31,775	16.3
Poland	210	3.8	6	5,441	38.6
Portugal	147	-1.2	1.4	14,115	10.5
Slovakia	33	4.2	4.8	6,044	5.4
Slovenia	28	2.3	3.9	13,846	2
Spain	841	2.5	2.6	20,631	40.3
Sweden	302	1.6	3.3	33,662	9
United Kingdom	1,801	2.2	3.2	30,165	60.3
Total/Average	11,017	2.4	3.4	21,789	456.1
United States	11,004	3	4.4	37,764	293

Source EIEA 2004

## **5.1.2 Performance indicators of the European Union's telecom industry**

We will now briefly review the EU telecom industry for the period 2000 – 2004 looking at network growth and prices of telecom services.

### **5.1.2.1 Network growth in the European Union**

The EU telecom market has grown steadily over the last five years with an average growth rate of 6.62% since liberalization. The total market was valued at 226 billion in 2000, and 277 billion in 2004.

The four initial key market segments were mobile telephony services, fixed voice telephony services and cable television (CaTv) services. Today mobile and fixed data services have become the main drivers of growth while fixed voice revenues are declining. According to the EC specific trends can be seen with respect to services, mobile and fixed data services are increasing, fixed voice has declined and broadband penetration has increased dramatically by 72% for 2004.

The EU lags behind some regions in terms of broadband penetration, e.g. South Korea and the US; however, individual EU states like Belgium, Denmark, Finland, the Netherlands and Sweden have comparable penetration. For the EU15 this amounted to 7.6% of the EU population in 2004. Across the EU, broadband penetration ranged from 0.2% in Greece to 15.6% in Denmark in 2004. This suggests the emergence of a widening gap across member states with respect to penetration and growth rates.

### **5.1.2.2 Prices of telecom services in the European Union**

In terms of line rental, residential and business, the weighted average variation has increased steadily over the period 1998 to 2004;

- The residential monthly rental price increased from €11.7 in 1998 to €15,3 in 2004
- The business monthly rental price increased from €12,03 in 1998 to €15.04 in 2004
- The weighted average call charge (3 minutes) for local calls increased marginally while that for national calls decreased over the period 2000 – 2004
- The local call charge was €12.4 in 2000 and increased to €12.5 in 2004
- The national call charge was €41.3 in 2000 and decreased to €29.4 in 2004
- The monthly charge for residential telephony increased, from €28.8 to €29 in 2004 while that for business decreased, from €62.4 in 2000 and to €59.8 in 2004
- The charge per call for residential and business callers decreased over the period 2000 – 2004
- The residential charge was €1.5 per call in 2000 and decreased to €0.9 in 2004, while the business charge was €1.1 in 2000 and €0.7 in 2004

### 5.1.3 Case Objectives

In the context of the overall study the objective of this case study was to provide evidence that could be used to answer the following research question:

*What effect has technological socio-economic systems had on the regional regulation of the telecom industry in the EU, how have regional policymakers and regulators responded to the subsequent regulatory issues raised, and what are the implications of the response for effective regulation and sector development within the EU?*

## 5.2 Technological and socio-economic systems in the European Union

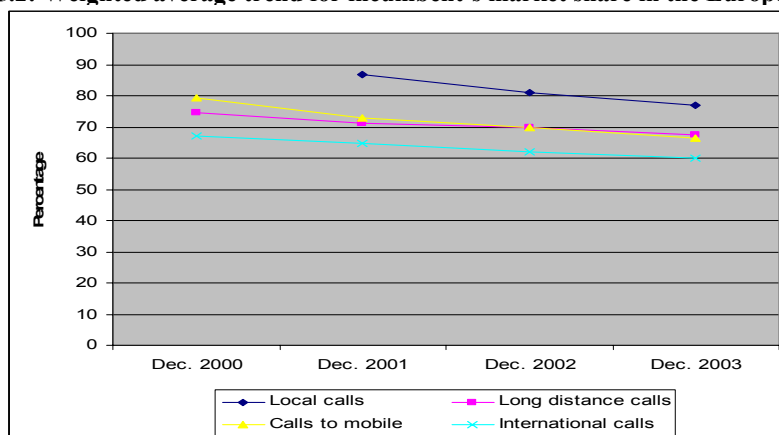
In this section we describe the technological and socio-economic system of the EU, each of which creates benefits and challenges for regional regulation within the EU region.

### 5.2.1 Informal institutions in the European Union

The following informal institutions were deemed important for our investigation of regional regulation in the EU; a strong culture of incumbent dominance, an attitude of mistrust towards the EC and a strong value of competition in the EU.

Despite all reform efforts to date (2006) the EU telecom sector is still characterized by incumbent operators with significant market power. In many EU states fixed incumbents still dominate the telecom markets. The weighted average trend for the incumbent's market share in the major segments of the voice market since 2001, based on retail revenues is shown in Table 5.2. While there is a slight downward trend, in many instances the culture of incumbent domination prevails.

**Figure 5.2: Weighted average trend for incumbent's market share in the European Union**



Source European Commission 2004

The number of competing players in the fixed telephony market is shown in Table 5.2, often the traditional monopoly markets have been replaced by oligopoly markets, tight and loose. For example, 4 countries, i.e. Denmark, Germany, Sweden and the UK have more than 5 competing operators, including the incumbent, with a combined market share of at least 90%.

**Table 5.2: Number of competing players in the fixed telephony market within the European Union**

<b>Member State</b>	<b>Number of major competing players in the fixed telephony market</b>
Belgium	4
Denmark	6
Finland	3
France	5
Germany	9
Greece	1
Ireland	2
Italy	4
Luxembourg	1
Netherlands	2
Portugal	2
Sweden	11
UK	9

*Source European Commission 2004*

Many dominant incumbents are still partially owned by their respective governments, unlike the model of private monopolies developed in the US and Canada, the tradition in the EU has been that of public monopolies. In the big economies like Germany and France, liberalization of telecom services was not preceded by privatization and as a result their governments remain owners and regulators, through their relevant ministries.

The only exception to public monopolies were Italy and Spain, where mixed public-private or fully private firms offered services before liberalization (Bauer 2004).

The EU did not stipulate any particular ownership regime for telecom liberalization leaving the choice of regime to national governments, reflecting the pragmatic stance that competition was more important than ownership for sector efficiency (Bauer 2004). The move towards privatization of telecom (and other services) was often preceded by national struggles between proponents and opponents of privatization; these resulted in different patterns and outcomes for privatization within the EU (Levy-Fauer 1999, Bauer 2004). By 2004 only one fully state owned Post and Telecommunication Organization remained (PTO), Luxembourg, which supplied only 0,2% of the European access lines. In contrasts in 2000 government owned PTO's provided 62%, and mixed PTO's 38% of all fixed access lines in 2000 (Bauer 2004).



In some EU countries, support for “national champions” still exists. Despite efforts by member states and the European Court of Justice (ECJ) to pressure national governments into selling their shares, national governments have by and large kept their shares, in some instances “golden shares”, in these operators.

**Table 5.3: Selected European Union states - government shares of incumbents**

EU country	Incumbent PTO	PTO Mobile subsidiary	Government. share in PTO	Government share in mobile	Government share in mobile subsidiary
France	France Telecom	Orange	42.2%	100%	42.2%
Germany	Deutsche Telekom	T-Mobile	38%	100%	38%
UK	BT	None	0%	None	None
Italy	Telecom Italia	Telecom Italia	0%	100%	0%

*Source Bauer 2004*

Within the EU an attitude of mistrust towards the EC exists. While a strong culture of regional cooperation exists within the EU, member states are becoming increasingly wary of Brussels extending its control over member states. This apparent contradiction of cooperation and conflict has been extended to the domain of telecom with the application of the EU rules throughout the single internal market.

Various views exist in the literature on political economy and the relationship between the EC and its member states, ranging from conflict to cooperation between the EC and member states. At one extreme the EC is viewed as the driving force behind the EU policy and is held responsible for obliging national governments to accept their roles<sup>27</sup>, as laid out in ECJ interpretation of the various treaties.

Some commentators<sup>28</sup> have viewed telecom as an example of the EC’s power and its ability to expand its role. Thatcher (1998) challenges these views and argues that the development of EC telecom regulation has occurred mainly through cooperation and partnership between the EC and national governments. Thatcher argues that the two share common agreements on the expansion of the EC’s role, and on most substantive issues, and that the EC regulation developed incrementally. Suffice to say, both models claim that there is a struggle for power between the EC and the member states.

<sup>27</sup> Schneider and Werle 1990).

<sup>28</sup> Fuchs 1994.

Facility based infrastructure competition rather than service competition is a declared policy goal of the EU. The directive for dealing with the implementation of full competition in telecom markets was amended as early as 1996.<sup>29</sup> Additionally the liberalization framework put in place in 1998 was designed to abolish all market barriers to infrastructure and service competition within national and international markets. The EU highly values the pursuit of competition within a market sector. In this context competition is seen as a means to achieve an information society founded in an EU knowledge economy, i.e. with high political value. Opening up the telecom sector, formed part of a broader economic regional effort towards creating a common market within the EU member states.

### **5.2.2 Technology in the European Union**

We will now discuss the adoption of the following technology issues within the EU; the adoption of technology neutrality, the deployment of alternative technologies and the ability of incumbents to “capture” the alternative technologies.

The EU has traditionally been more specific about which technologies operators should use.<sup>30</sup> The advent of GSM for example, was strictly coordinated at the EU level. While this turned out to be a success for the EU some now feel that the telecom industry should have been left to continue to develop without further interference. According to Vesa and van Heck (2005) “the technical evolution in the telecom industry may have come to a point where the industry should make decisions about which technologies to use”.

The EU’s response to the technological challenges was to formalize the notion of “technology neutrality”. In this approach the policymakers allow the industry players to decide which technologies they wish to use in their business. This form of neutrality is typically reflected in the licensing terms set by the NRAs, e.g. 3G spectrum allocation. Thus, in the EU context, policymakers do not discriminate in favor of the use of a particular type of technology; rather they ensure that similar services are regulated in an equivalent manner, irrespective of the means used to deliver the service. Technology neutral regulation was also seen as an important way to stimulate and support the development of a European knowledge economy and information society.

“Convergence between different electronic communication networks and services and their technologies requires the establishment of an authorization system covering all comparable services in a similar way regardless of the technologies used.” Authorization Directive of 7 March 2002.

The European approach differs from those used in other states and regions of the world. In many Asian states governments aggressively support specific technologies, this type of support helps to explain the extraordinary growth in broadband use in countries like South Korea and Japan.

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<sup>29</sup> Commission of the European Communities, Directive 13 of 13 March 1996b amending Directive 90/388/EEC.

<sup>30</sup> The rapid development of the (tele) communications sector and recent technological advances have brought about new challenges for regulators globally. In the EU with its developed economies and matured telecom markets its policy framework has had to address the issues of technology design as early as 2000.

The drive towards an EU knowledge economy has been coupled with the provision of an increasing variety of Internet services and increasing bandwidth. These new and alternative access technologies included ISDN, DSL and cable modem, Digital TV, Fiber to the Home (FTTH), Fixed wireless access, broadband mobile services and satellite. These developments have been driven by the new technologies introduced by new entrants to the telecom market which in turn forced market incumbents to pursue broadband technologies to offset their eroding voice revenues.

Take for example, the Netherlands, where the introduction of alternative infrastructure competition has greatly advanced competition in broadband. The aggressive deployment of CaTv and ADSL has stimulated broadband penetration, lowered prices, and improved service offerings in general.

### **5.2.3 Formal institutions in the European Union**

The following formal institutions were deemed important for our investigation of regional regulation in the EU; the policy framework, liberalizing telecom markets, creating IRG and the ERG as regional regulatory forums and harmonizing regulatory principles across the EU.

#### **5.2.3.1 The European Union policy framework**

The EU telecom framework currently consists of two separate frameworks. The sector specific Open Network Provision is operated by the EC, member states and the NRAs while competition law is upheld by the EC, national competition authorities, national court systems and the ECJ.<sup>31</sup> These parallel, and sometimes overlapping, approaches to regulation have had a considerable impact on the development of regional regulatory cooperation within the EU. We will now discuss the details of the EU policy framework, see also Table 5.4 below: note we will not deal further with matters pertaining to EU competition law within the telecom sector.

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<sup>31</sup> In addition there is also national competition law that is not derived from the EC Treaty.

**Table 5.4: The objectives and instruments for the European Union policy framework.**

The EU policy framework for electronic communications comprises a series of legal texts and associated measures that apply throughout the EU member states. The goals of the new framework are to encourage competition in the electronic communications markets, to improve the functioning of the internal market and to guarantee basic user interests that would not be guaranteed by market forces. The framework provides a set of rules that are simple, aimed at deregulation, technology neutral and sufficiently flexible to deal with fast changing markets in the electronic communications sector.

**Main instruments:**

The EU policy framework consists of the following instruments:

- A framework directive setting out the main principles, objectives and procedures for an EU regulatory policy regarding the provision of electronic communications services and networks.
- An access and interconnection directive stipulating procedures and principles for imposing pro-competitive obligations, regarding access to and interconnection of networks on operators with significant market power.
- An authorization directive introducing a system of general authorization, instead of individual or class licenses, to facilitate entry in the market and reduce administrative burdens on operators.
- A universal service directive requiring a minimum level of availability and affordability of basic electronic communications services and guaranteeing a set of basic rights for users and consumers of electronic communications services.
- A privacy and electronic communications directive setting out rules for the protection of privacy and of personal data processed in relation to communications over public communication networks.
- A radio spectrum decision establishing principles and procedures for the development and implementation of an internal and external EU radio spectrum policy.
- A commission competition directive consolidating legal measures and based on Article 86 of the EC Treaty (was **Article** 90 in the Treaty of Rome, 1957), this Treaty has liberalized the telecommunications sector over the years.

In addition to these basic instruments, the European Commission has adopted other measures that play an important role in the functioning of the EU framework:

- Commission guidelines on market analysis and the assessment of significant market power, setting out a common methodology and principles for the national regulatory authorities charged with these tasks.
- Commission recommendations on relevant markets defining a list of 18 sub-markets, to be examined by national regulatory authorities.

*Source the European Commission*<sup>32</sup>

The EU telecom “rules of the game” (North 1991) have evolved over a number of years commencing in 1983 and culminating in a new policy framework in 2003.

<sup>32</sup> See ([http://europa.eu.int/information\\_society/topics/ecom/all\\_about/todays\\_framework/overview/index\\_en.htm](http://europa.eu.int/information_society/topics/ecom/all_about/todays_framework/overview/index_en.htm))

### 5.2.3.2 Liberalizing telecom markets in the European Union

In the EU the move from monopoly to competition was characterized by a series of incremental steps which culminated in the simultaneous opening up of all telecom markets across the EU in 1998.

#### 5.2.3.2.1 Key steps in the development of a liberalized telecom market in the European Union

Liberalization of the sector within the EU is the result of anti-monopoly legislation enacted at the EU level and carried out incrementally by the EU member states.<sup>33</sup> The liberalization measures were adopted by the European Commission in parallel with the introduction of sector specific regulation at EU and member state level.

**Table 5.5: Key steps in the European Union liberalization process.**

<i>Date</i>	<i>Important event</i>
1983	The first key act was the publication of policy concepts for the sector.
1987	The Green Paper provided for progressive liberalization of the market which accelerated the opening up of the following markets.
1988	The opening up of the market for terminal equipment.
1990	The opening up of the market for value added services.
1993	The opening up of the market for switched data services.
1994	The opening up of the market for satellite communications.
1995	The opening up of the market for cable television networks.
1996	The opening up of the market for mobile communications.
1998	The opening up of the market for voice and infrastructure.

This period<sup>34</sup> also saw the development of a comprehensive framework for sector specific regulation. The application of the EU treaty articles played a central role in reforming the regulatory conditions with full deregulation achieved in 1998.

An EU commission's review in 1999 identified a number of fundamental problems with the telecom framework. These included long and complex individual licensing procedures in some countries, poor flexibility for coping with rapidly changing markets and inconsistencies as to how rules were

<sup>33</sup> Here we refer to European Commission Directives based on the Treaty, which includes the liberalization directives under EU competition law (presently Article 86 and previously Article 81), the harmonizing directives under Article 95 and the full competition directives (1998).

<sup>34</sup> The goal of the telecom policy for the period 1987-1998 was to create a flourishing single market for telecom services and equipment in Europe that would provide users with choice, quality and value for money.

applied in member states. The EC felt that a telecom framework should be designed to attract investment, promote choice and competition and to safeguard user's interests where market forces do not. The Lisbon European Council (March 2000) called for the building of a competitive and dynamic knowledge-based economy within the EU, stating that this required the EU to have an inexpensive world-class communications infrastructure.

#### **5.2.3.2.2 Granting access to competitive operators in the European Union**

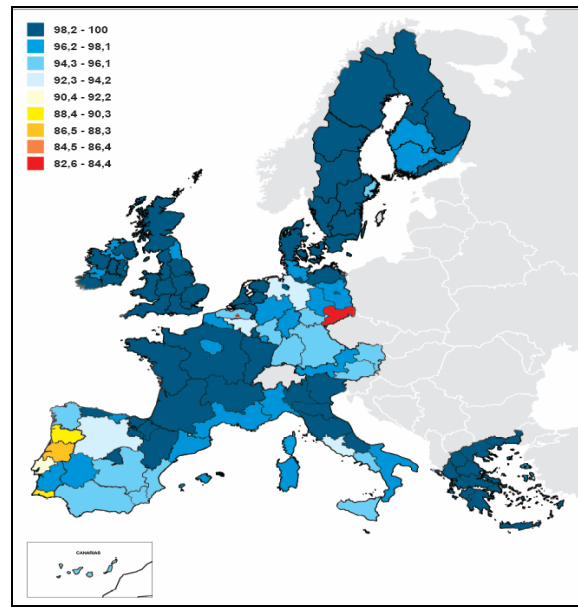
Granting access to competitors refers to the removal of regulatory barriers to entry and issuing operators with legal rights to provide services. In the EU this access was regulated using an authorization regime. Under the recent policy framework (2004) operators are only subject to a general authorization regime, individual rights of use are only required for scarce resources such as spectrum and numbers.

In general the level of competition has increased in the EU (EC 2004). The period 1998 – 2001 saw an average increase of 352 operators per year. In the next two years, 2001-2003, the total number of fixed operators decreased by 100. The period 2003 – 2004 saw a greater increase in new entrants, from 1848 to 2141. While all these entrants were authorized to provide services many remained inactive, but those entrants that did start up focused on local area and business markets.

In terms of competition within fixed services the EC only provides estimates for competitive operators since some the NRAs have more accurate information than others. The estimated number of network operators licensed to establish and operate network services within the EU was 2141 in July 2004. The number of operators varies across the EU; with the big four states accounting for 1094 of the services, i.e. Germany, 422, Spain and Sweden, 252 a piece, and the UK, 168. The lowest number of operators is found in Malta, 1 and Cyprus, 2. Actual competition, however, can be determined from the number of operators that are active in the market as opposed to merely being authorized to offer public fixed services see Figure 5.2. Only 5 states have more than 5 major competing operators, i.e. operators that along with the incumbent operators have a combined market share of at least 90% of the global telephony market.

In terms of competition in mobile services, the estimated number of network operators licensed to establish and operate network services in July 2004 was 80 network operators and 166 service providers. With regards to 3G, by September 2004, some 51 operators had launched 3G trial or commercial services in the EU; here the states with 4 operators or more were the UK (5), Finland (4) and Sweden (4). The 2G market is characterized by duopoly or tight oligopoly markets. The leading operators tend to hold a significant share of the market followed by a main competitor. The subsidiary operators of the incumbent fixed operators also tend to have significant market power. The average market share of leading operators dropped from 46,58% in 2003 to 43.21% in 2004, see figure 5.3

**Figure 5.3: The European Union telecom services indicators 2004 fixed and/or mobile in %**



*Source European Commission 2004*

### **5.2.3.3 Creating the Independent Regulators Group and the European Regulators Group as regional organizations of telecom regulators**

We will now discuss the emergence of the Independent Regulatory Group (IRG) and the European Regulatory Group (ERG) before discussing the aims and objectives of these organizations and their functioning.

#### **5.2.3.3.1 Emergence of the Independent Regulators Group and the European Regulators Group**

In the EU, the IRG emerged as a bottom up, NRA-driven organization while the ERG emerged as a top down EC-driven organization.

##### **5.2.3.3.1.1 Emergence of the Independent Regulators Group**

The IRG emerged out of the EU NRAs. The idea of a regional organization was conceived during informal meetings held amongst the member states' NRAs. On the 23/24 November 1997, and under the "direction" of the French regulator Jean-Michel Hubert, a small group of the NRAs met in Paris primarily to "get acquainted" and to explore the scope for informal co-operation" (Arnbak

2004). This sharing of information in a more structured manner between the NRAs further evolved into the IRG in 1997.

The main drivers of a more formalized cooperation and much needed coordination between member state the NRAs were; the new EU liberalized telecom framework, the challenges from transnational operators and the NRA resistance to perceived EC dominance. With regards to the new telecom framework the liberalization measures adopted by the EU in 1987 – 1998 went hand in hand with the introduction of sector specific regulation within the EU and within member states. Since 1990, the political agreements on liberalization and open network provision (ONP) in European telecom have gradually evolved in Europe and have been laid down in Community law. By 1997 there was an impending “big bang”, this included the abolition of the last exclusive rights of incumbent operators, and a transfer of regulatory powers to the NRAs. With the liberalized market of 1998 transnational operators took advantage of deregulation, and challenged the interpretations of the new rules and decisions made in the EU states. As a result of this the NRAs were obliged to look into the different interpretations, given by the different NRAs in different member states, of the rules for liberalization of the telecom sector within the EU with regards to EC perceived dominance. The NRAs found themselves being picked off, by transnational operators and by the EC with its increased powers. As a result the NRAs felt obligated to provide mutual support for the positions they held in common with respect to advancing and defending their different national interests.

The first plenary meeting of IRG leaders was hosted by the Danish regulator in Copenhagen. Since its inception, membership to the IRG has been open to independent NRAs from all European countries, not just the EU member states. Norway, Iceland, Liechtenstein and Switzerland are members, and in 2003 the 10 NRAs, from the then accession states joining the EU in May 2004, were welcomed into the IRG. The NRAs from Bulgaria and Romania were invited to join the IRG in 2004. Today (2006) the IRG is made up of 29 European NRAs.

#### **5.2.3.3.1.2 Emergence of European Regulatory Group**

The European Regulatory Group (ERG) emerged as a top down initiative driven by the European Commission. The emergence of ERG can best be explained as a quest for a formal regional telecom regulatory mechanism in the EU. A first, EC mandated, study was released in March 1997.<sup>35</sup> The study offered some degree of support for a European regulatory authority instead but members disagreed on the extent of the competencies to be entrusted. No firm decision was taken but it was agreed to assess when the Interconnection Directive was to be reviewed.

A second study was released in 1999.<sup>36</sup> It found support for greater EC involvement in regulatory matters, but did not recommend the creation of an ERA. Instead a higher degree of cooperation between existing EU organizations and institutions was recommended. This report was followed by a commission review study (1999). The EC had earlier confirmed, using a public hearing, that there was no political support for an ERA. The 1999 review also rejected the idea of creating an ERA on the grounds that an ERA would not provide sufficient added value to justify its likely costs. The

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<sup>35</sup> A report by NERA and Denton Hall for the European Commission (March 1997).

<sup>36</sup> A report prepared by Eurostrategies/Cullen International for the European Commission (October 1999).



central goal of the ERA was to improve the consistency of NRA decisions and the effectiveness of the corrective mechanisms available to the NRAs. The weaknesses inherent in the system would be addressed by using a new framework that would set out clear and explicit objectives for the NRAs. It was felt that there was a need for greater consistency in NRA positions and in decisions made by the NRAs. The Review, the EC proposed the creation of a high level coordination group (HLCG) composed of the NRAs and the EU member(s). This idea got lost in a complex debate among the EU lawyers concerning the constitutionality of such a group and its relation to the communications committee. At the same time it was agreed that the EC would later issue a recommendation to create the ERG, this was subsequently revised, and the scope of the ERG was narrowed significantly. In all, three institutional mechanisms were proposed to accomplish cooperation, 1) a communications committee (a revamped ONP committee known as COCOM) to assist the EC in performing its regulatory function and provide support to the NRAs, 2) a radio spectrum committee (RSC) and, 3) the radio spectrum policy group (RSPG) should be founded. A commission decision defined the European regulators group for electronic communications networks and services one year before the new policy framework (NRF) for the European electronic communications sector entered into force on 25 July 2003.

The ERG was formally created by an EC directive on 20 July 2002 (Decision 2002/627/EC) in Brussels. It was set up as a regional regulatory body comprising NRA heads, or their representatives, and EC officials<sup>37</sup> with its inaugural meeting held on 25 October 2002. A tentative status applied until a qualified majority of the EU member states had notified their NRA regarding their appropriate responsibilities under the new directives to the commission. ERG participants include all the NRAs from the 15 member states and the NRAs from accession states (observer status).

In summary, while the IRG can be viewed as a bottom up initiative, the ERG in contrast can be viewed as a top down initiative. The IRG was set up by the NRAs while the ERG was set up by the EU. The IRG comprises 29 European NRAs some not EI states as full members while the ERG comprises 15<sup>38</sup> the EU member's accession plus states with observer status.

#### **5.2.3.3.2 Aims and objectives of Independent Regulators Group and the European Regulators Group**

We will now discuss the stated objectives of the IRG and the ERG and proceed to examine the services rendered by these organizations to their members.

##### **5.2.3.3.2.1 Aims and objectives of Independent Regulators Group**

The IRG charter<sup>39</sup> includes the following clearly stated aims and objectives.

- to share experience and information

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<sup>37</sup> The inclusion of EC officials was considered to be a crucial and critical condition.

<sup>38</sup> Since May 2004 the number of members had been increased to 25.

<sup>39</sup> IRG Constitution Document.

- to discuss national implementation issues
- to harmonize regulatory practices across Europe
- to ensure consistent application of European Union legislation by issuing principles of implementation and best practices (PIBs)
- to provide horizontal coordination on a voluntary basis

In a survey<sup>40</sup> that we conducted IRG members were asked whether the IRG would be able to meet the above-mentioned objectives given the efforts that had been made up to the time of the survey. The majority of IRG members were fairly confident that their IRG would be able to meet its stated aims and objectives.

#### **5.2.3.3.2.2 Aims and objectives of the European Regulators Group**

In terms of Article 3 of the EC decision the role of the ERG is:

- to advise and assist the Commission in consolidating the internal market
- to provide an interface between the NRAs and the commission in such a way as to contribute to the development of the internal market and to the consistent application in all member states of the policy framework
- to foster cooperation between the NRAs
- to cooperate with regulatory authorities and groups in other regions

As for the IRG, the ERG members were asked if their objectives could be met. The majority of members were again fairly confident that the ERG would be able to meet its aims and objectives.

In summary according to its stated aims and objectives the IRG was created primarily to share information and experience, while the ERG was created to advise and assist the EC in consolidating the internal telecom market. The survey answers indicated that the IRG and ERG members considered both organizations would be able to accomplish their stated aims and objectives.

#### **5.2.3.3.3 Independent Regulators Group and the European Regulators Groups systems of governance**

##### **5.2.3.3.3.1 Independent Regulators Group's system of governance**

The IRG's decisions are contingent upon approval from all participating NRAs, it has no independent formal powers. The services rendered by the IRG, from devising PIBs, to formulating input documents for the EC and maintaining the IRG website require consensus approval from all IRG members. This need for prior approval from members implies with the rationale behind the

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<sup>40</sup> See Appendix for details on the responses.

IRG's inception, which was to provide a mechanism by which NRA's could share expert information.

When the IRG secretariat, comprised of representatives from member states, was set up in 1997 the administrative function was undertaken by the host NRA. The IRG coordinator fulfilled a basic administrative function. With the advent of the ERG a more formalized and structured administrative element was required. The imminent establishment of the ERG in 2002 brought with it, the question of how the IRG should respond to the perceived ERG threat from the ERG i.e.: How would it survive? The IRG was faced with three options; merging with ERG, standing alone and ignoring the ERG or participating with ERG. The setting up of a secretariat function was done in response to the IRG's decision to cooperate with ERG. It was felt that a more structured administrative function would serve to strengthen the IRG and it to have some administrative continuity when relating to the EC.

In mid 2002 a secretariat was set up to co-ordinate IRG's expert work and serve as a contact point for interested parties. It started its operation as a network of officials belonging to several NRAs. While one person was appointed on a permanent basis by the NRA heads, others were nominated by the national NRAs. The secretariat was initially set to change every 6 months with a rotating IRG chair. After a year it was felt that a more continuous function was necessary to allow interaction with the EC, so a permanent secretariat was set up. Initially the NRAs were concerned with ensuring participation by all since not every member could be a member of the secretariat. The NRAs wanted safeguards to ensure that decisions would not be taken in the secretariat but by the association as a whole.

The secretariat staff includes representatives from member countries,<sup>41</sup> regulatory staff, economists, and administrative staff. Appointments are made on the basis of which regulatory organizations have resources to offer and which individuals are interested in serving on the secretariat. Lastly, the funding of the IRG secretariat is carried by the NRA's indirectly as they pursue their normal duties. No membership or other fees are paid to support the IRG. The EU issue of common financing is seen to be a problem and fundamental barrier to such forms of funding. No membership fees are collected.

“The secretariat is responsible for the administrative arrangements and advising the chair on matters of substance<sup>42</sup>”.

We identified the following tasks and responsibilities for the IRG using observations and interviews:

- facilitate information
- coordinate working groups

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<sup>41</sup> IRG By 2004 the Secretariat consisted of 1 permanent person, 2-seconded persons, 1 from past chair and 1 from present chair. The permanent position was filled by Mrs Sylvia Alonso Salterain of the Spanish CMT. 3 others were nominated personally for no fixed term. They include (Danish regulator), Annegret Groebel (German regulatory staff) and Dutch regulatory staff who now support the IRG Secretariat. The remaining staffs consist of Guido Pouillon (representative from the Belgium regulator) and a representative from the past chair.

<sup>42</sup> IRG Annual Report 2003

- monitor working group deliverables

With regards to facilitating information the IRG secretariat sees its primary tasks as shuffling papers/documentation to facilitate the exchange of information. The Secretariat is charged with promoting and coordinating consultation and decision making among the NRAs. For example, facilitating information includes producing the annual work plans and annual review documents.

With regards to coordinating working groups the IRG secretariat sees its primary task as that of strengthening the internal IRG network. In addition the IRG's secretariat actively participates in all working groups as its staff is assigned to monitor and participate in working groups. The IRG secretariat is not tasked to meddle in expert group work, it is rather expected to hold the groups to tasks and timelines.

With regards to monitoring working group deliverables the IRG secretariat sees its primary task as that of “monitoring the progress of working group chairs”. The IRG secretariat keeps the IRG chair informed and keeps chairs to commitments laid out in work plans, etc. The secretariat has no authority to compel compliance by chairs or individual NRAs.

Notwithstanding the fact that the IRG secretariat does not have official sanction or power, it is still able to exercise considerable influence. This is by virtue of the fact that it performs the agenda setting function for the IRG with the chair and has access to enormous amounts of information on member countries. The IRG secretariat has some liberty to handle and address issues. For example, if the IRG chair requests a report the IRG secretariat is asked to help draft the request and facilitate its production. The IRG secretariat considers itself to be a purely functional organization, designed solely to support the IRG chair. No role change is envisaged for the IRG secretariat nor does it expect to be given any increased powers.

#### **5.2.3.3.2 The European Regulatory Group’s system of governance**

The ERG seems to enjoy some discretionary powers when making decisions that are not contingent upon approval by the EC's. For example, it is able to hold public meetings, hold public consultations and publish documents without the prior approval of the EC. With respect to the ERG’s coordinating function, Article 7 of the Treaty on the European Union, the veto rights of the EC have been toned down in subsequent documents. The ERG output, such as documents or statements that are not approved by the EC, is not held to be binding on member states.

The ERG secretariat comprises professional staff nominated by the ERG and appointed by the EC. In terms of background, the ERG’s secretariat functions were included in its founding EC directive, unlike the IRG where the secretariat was formalized 5 years after its creation. The formal secretariat staffing for the ERG was adopted at a meeting held on September 25, 2003 by the EC. Like the IRG secretariat, the ERG secretariat is appointed by its principal – the European Commission.

In terms of article 4 of the EC directive on the ERG “The commission shall be represented at an appropriate level and shall provide the Secretariat to the Group”. According to the rules procedure for ERG (article 8.1) “The Commission shall provide the secretariat to the group”.

The ERG secretariat staff consists of permanent staff that has ceased to be directly affiliated with their respective member countries. After inviting applications from the member countries<sup>43</sup>, the EC appointed an ex national regulator as secretary to the ERG, with effect from 1 August 2003<sup>44</sup>.

More tasks and responsibilities than those performed by the IRG Secretariat, i.e. facilitate information, coordinate working groups and monitor working group deliverables, have been afforded the ERG Secretariat. It has also been given more responsibilities with a greater emphasis on ensuring transparency. In terms of Article 9.1 of the ERG Directive the secretariat shall create the groups’ web-site, with a public area with access for all, and a restricted area with access for the group members and participants and the commissions services. Documents to be dealt with during ERG meetings should be posted on the restricted area site for restricted distribution; all public documents should be made available on the public site. In terms of Article 9.2 of the ERG Directive the ERG shall be required to publish an annual work program, having consulted the interested parties regarding content. Provision must be made for the development and maintenance of decisions, published by the ERG. Article 9.3 of the ERG Directive requires the ERG to publish its agenda and notes on the decisions agreed upon at group meetings as soon as possible after the meeting. Article 9.4 requires the ERG to publish consultative documents, statements of agreed principles, press releases, consultation procedures, summaries of responses to consultations and other documents to assist interested parties to understand the work of the group. Finally the secretariat is required to see that all press releases following ERG meetings and containing main conclusions, are drafted by the chair and the secretariat and approved by the EC before release.

#### **5.2.3.4 Harmonizing regulatory principles across the European Union**

One of the key deliverables by the IRG and ERG was a set of regulatory best practices called Principles of Implementation and Best Practice (PIBs) and regulatory remedies respectively. These policy documents contained high level regulatory principles intended to assist the NRAs to implement their regional policy frameworks. The NRAs were expected to comply with these model regulations and to formulate their own methods of implementation to achieve the espoused regulatory principles. Here two PIBs, Local Loop Unbundling (LLU) and Long Run Average Incremental Cost (LRAIC), and regulatory remedies are discussed.

##### **5.2.3.4.1 The Principles of Implementation and Best Practice regarding Local Loop Unbundling**

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<sup>43</sup> The nominee should also have been Chairman of the IRG.

<sup>44</sup> As a former head of RTR, the Austrian NRA, Professor Otruba was well known to the ERG, in particular for his strong background in economic analysis of market dominance. By 2004 the Secretariat consisted of the following staff; Heinrich Otruba (Secretary), Marcus Boklund (Assistant to Secretary) and Lisa-Maria Nossek (Organizational Support).

The formal legislative process for the telecom liberalization, within the EU culminated in the enactment of regulation which included a requirement to unbundle access to the local loop within member states. This legislation followed the conclusions drawn at the Lisbon European Council (March 2000) and the Feira European Council (June 2000). The latter endorsed a proposed eEurope action plan in which unbundled access to the local loop was identified as a short-term priority. The regulation mandated unbundled access to the metallic local loops only of notified operators. These operators, designated by their NRAs, were seen as having significant market power in the fixed public telephone network supply market under the relevant EC provisions. The types of access were limited to what was within the operators' powers to provide. The regulation entered into direct binding force for all member states on the 5 December 2000, with member states implementation made mandatory from January 2001.

The process of devising PIBs to assist in the process of harmonizing implementation in the EU member states was initiated by the IRG in October 2000 and concluded in November 2000. Steps in the process included: discussion by the NRA heads; establishing a working group, chaired by OPTA; compiling a working document; discussion by the contact network and final decision made by the NRA heads (November 2000). The initial PIBs were amended in October 2001 and additional PIBs added in May 2002.

In the context of LLU the application of the general principles means the following: non-discrimination between an access seeker and a notified operator regarding use of the local loop, transparency in terms of conditions and prices for these services that would enable operators to ensure themselves of the notified operator compliance with the non-discrimination principle; development of competition where notified operators provide a number of services essential for the LLU; and cost orientations that provide sufficient economic information for access seekers to determine whether to buy or not. In total some 44 specific PIBs have been formulated, addressing issues like conditions for unbundled access to the local loop, collation services, information systems and supply conditions.

In general the level of harmonization within the EU telecom sector has been increasing. We initially sought to assess the extent to which the NRAs complied with the best regulatory practices (see Appendix A). We found this difficult, given the nature of PIBs (voluntary) and the fact that their implementation is not monitored. The IRG regulators did refer to a need for informal monitoring instruments like peer pressure, etc. The NRAs, however, did not consider the implementation of PIBs to be crucial. The focus for the NRAs seemed rather to be on learning how other NRAs have interpreted the regional policies and implemented them in their specific national contexts.

The results from our survey suggest that member states failed to harmonize around the generally agreed and legally-binding principles set out in the various PIBs (see Appendix B). The outputs developed by the IRG and the ERG regulatory best practices, are illustrative. The PIBs on LLU and LRAIC represent the IRG's rule-creating and operational functions, while the remedy guidelines represent the functions of the ERG. We sought to determine the extent to which the regulatory practices adopted by the NRAs were in line with the regulatory principles identified in the regulatory guidelines.

We will now provide a snapshot of the actual local loops unbundled in member states.<sup>45</sup> In its 7th report on the telecom sector (2002) the EC found the implementation of LLU to be very disappointing. By October 2002 there were 1 million unbundled lines in the EU, 600 000 by October 2001, out of a potential 187 million subscriber lines. Action was subsequently taken against some member states, because they had not promoted the possibility to access the local loop.

In the 10th implementation report (2004) the EC stated there had been increase of 110% in wholesale unbundled local loops within the EU15, i.e. an increase from 1.8 million unbundled lines in July 2003 to more than 3.8 million unbundled lines in July 2004. This represents almost 2% of the PSTN lines in the EU15. The biggest increases were seen in Italy, Germany, Austria and Finland.

A report by Ovum (2003) suggests some evidence of delays by incumbents with the “fixed cost of backhaul and collocated” cited as main barrier to LLU.

In addition prices for unbundled lines rental and connection have decreased steadily since 2000. In some instances the drop in prices during the period 2002 and 2004 was dramatic. For example in rental in the Netherlands, Italy Finland and the UK, and connection in Greece, Italy, the Netherlands, Finland, Belgium and Germany. Over the period 2003-2004 alone the average EU 15 charge for a fully unbundled monthly rental plus the connection fee amortized over the year, fell from EURO 17.20 to EURO 16.70. While price seems to be moving closer to an EU norm, some countries, like Ireland, Luxembourg, Finland, Sweden and the UK still appear way above the average for rental and connection.

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<sup>45</sup> Remembering that the unbundling Directive was enacted in December 2000 and the IRG PIB published in November 2000.

**Table 5.6: Snapshot of Unbundled Local Loops Lines**

Member Countries	Prices for full unbundling				Unbundled Local Loop Lines		Incumbents main lines (millions 2004)
	Monthly Rental (2002)	Monthly rental (2004)	Connec tion(2002)	Connecti on (2004)	Fully unbundled lines (2002)	Fully unbundle d lines (2004)	
Belgium	13.3	11.6	79.9	57.1	1556	4750	4.50
Denmark	8.3	8.6	45.4	46.4	44061	53602	2.11
Germany	12.5	11.8	70.6	48.0	855404	1627864	37.50
Greece	11.5	10.4	123.4	36.1	93	932	5.60
Spain	12.6	11.4	20.0	22.4	1181	40302	16.88
France	10.5	10.5	78.7	78.7	1043	13066	33.83
Ireland	16.8	16.8	121.5	121.5	26	305	1.59
Italy	11.1	8.3	91.4	37.0	82100	697530	26.60
Luxembourg	15.8	15.8	185.6	185.6	-	2376	0.24
Netherlands	13.5	9.6	79.0	28.8	18629	39625	7.80
Portugal	10.9	10.9	54.5	54.5	7300	4845	3.99
Austria	13.8	12.0	82.9	84.1	20	45862	2.99
Finland	14.7	11.3	216.0	168.4	35000	96600	2.73
Sweden	11.3	11.4	165.2	167.4	2818	10972	5.50
UK	16.2	13.3	140.3	133.3	1509	7466	29.60

*Source European Commission Implementation Report 2002, 2004*

The NRAs have had to intervene most frequently with regard to tariff issues. Various discrepancies exist between retail and wholesale fees and the level of prices imposed by the various NRAs. Variations in the level of unbundling charges seem to suggest inappropriate pricing.

The LLU PIBs provides an illustration of the effectiveness of harmonizing regulatory principles (see Appendix B).<sup>46</sup> As expected the answers to our survey questionnaire confirmed a number of similarities and differences in regulatory practices across countries. The study found some significant differences, for example in the use of service level agreements, whether beneficiaries could choose their own type of collocation, the basis on which space was allocated, and rental fees for collocation space. At the same time we found a high degree of harmonization, for example with the use of reference unbundling offers, physical collocation and the use of an electronic system for ordering. More importantly we also found that in some instances the harmonization did not follow the PIB recommendations. For example, alternative space is supposed to be priced at the same level as physical location, requirements for clearly defining the procedure for verifying unavailability of space also differed. In other instances the harmonized regulatory practices did follow the PIB recommendation, for example, collocation types, rentals charged at market geographic price levels,

<sup>46</sup> We conducted a survey amongst NRAs. The issues under the survey headings are more or less outlined in the PIB's. Although not all IRG regulators responded to our survey, we considered the responses sufficient for the purpose of demonstrating the degree of regulatory harmonization. We measured the impact on regulatory harmonization in terms of low, medium or high. When less than half the respondents adopted an IRG recommendation then regulatory harmonization was said to be low. When half the respondents adopted an IRG recommendation - impact was said to be medium. If more than half of the respondents adopted an IRG recommendation then impact was said to be high.



the use of electronic systems for ordering and the setting of reasonable time range within which to repair faults.

#### **5.2.3.4.2 The Principles of Implementation and Best Practice regarding Forward Looking Long Run Average Incremental Costs**

Varying accounting methodologies are used in the EU to impose cost orientations when regulating fixed networks and to determine the price of telecom services. Member states typically use a different mix of accounting methodologies including current costs accounting (CCA) and long run increment costs (LRIC), for regulating fixed networks, and historical cost (HC) and fully allocated cost (FAC) methodologies, for regulating mobile networks.

While this is in accordance with the 2002 telecom sector policy framework such variety does not promote harmonization. In most instances the debate on accounting systems has been limited to a comparison of the cost base, historical cost versus current costs and the costing methodology (fully distributed cost or long run average incremental cost). According to the IRG telecom working group regulatory accounting (2005) other important considerations include choosing between top-down and bottom-up models, the types of efficiency adjustments those taking into account the implementations of a looking forward approach, definition of increments, choosing an appropriate network typology, etc. In terms of the recent EU framework, the NRAs are required to undertake market reviews of the various accounting systems used in their member states.

The process of devising PIBs principles to assist in the process of harmonizing implementation in the fifteen EU15 member states studied for this research was initiated by the IRG in October 2000 and concluded in November 2000. Steps in the process included: discussions between the NRA heads, establishing a work groups, compiling a work document, discussions in the contact network and a set of final decision made by the heads of NRA in November 2000. The initial PIBs were amended in October 2001 and additional PIBs added in May 2002. A need to review and update the FL-RAIC was identified in the IRG 2003 work program, and the work begun in 2003, including public consultation on the existing PIBs, and completed in 2004.

In the case of mobile voice call termination for example the LRIC will enable mobile national operators (MNOs) to earn back their operation and services costs while stimulating MNOs' to operate as efficiently as possible (IRG 2004). This would prevent MNO's from subsidizing their retail services using excessive profits made from call termination costs and force MNO's to set costs at an efficient level. The fact that MNO's have to recover inefficient costs at the competitive retail level creates a stronger incentive for MNO's to become more efficient.

We will now provide a snapshot of the actual implementation of LRAIC methodologies by member state. We start with an early Anderson consulting report (2002) on membership compliance with the EU recommendation on LRAIC.

**Table 5.7: Membership compliance with the European Union’s recommendation on Forward Looking Long Run Average Incremental Costs**

- Five EU member states, Germany, France, Ireland, Austria and the UK, had implemented LRAIC based costs modeling and were therefore compliant with the EU recommendation.
- Finland’s Sonera had developed models using more advanced cost standards than recommended by their national regulator
- Five EU member states, Belgium, Denmark, Greece, Spain and Italy were developing LRAIC models in 2002 under the lead of their NRA
- Sweden intended to move towards LRAIC but implementation completion was not expected for at least two years; i.e. circa 2003
- Two EU member states, Portugal and Finland, had not expressed an intention to migrate to a LRAIC cost standard

*Source Anderson Consulting Report 2002*

All the models designed to compute the costs of leased lines today (2006) still follow the FDC cost standard. The same is true for voice telephony with the exception of Ireland where a LRAIC model has been implemented. With respect to local loop unbundling, related services a migration from an FDC approach towards LRAIC had been observed, more than a third of the member states were using a LRAIC methodology at the time of the Anderson report (2002)

The initial response to the EU directive and accompanying PIBs was not positive. This low compliance was also confirmed by our survey in which we dealt with the issues in the order more or less outlined in the PIBs (see Appendix A). The issues included defining the increments; scorched earth vs. scorched node; what to do with common costs; defining the long run (FL); asset valuation; and asset depreciation and reasonable rate of return. This allowed us to determine the extent to which the NRAs have adopted the recommendations.

The LRAIC PIBs provides an illustration of the effectiveness of harmonizing regulatory principles (see Appendix B).<sup>47</sup> As expected the survey answers confirmed a number of similarities and differences in regulatory practices across the EU with respect to LRAIC. Our study found some significant differences, for example, with respect to the definition and estimation of common costs; the use of combinatorial tests; defining the long run; and the use of the capital maintenance concepts as a basis for depreciation. At the same time we found that a high degree of harmonization existed, for example, when defining the increments, on the choice of network typology, the use of mark-ups, the use of current cost methodologies, the use of modern equivalent asset (MEA) for asset valuation and the use of weighted average cost of capital (WACC) as a basis for a reasonable rate of return.

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<sup>47</sup> We conducted a survey amongst NRAs. The issues under the survey headings are more or less outlined in the PIB’s. Although not all IRG regulators responded to our survey, we considered the responses sufficient for the purpose of demonstrating the degree of regulatory harmonization. We measured the impact on regulatory harmonization in terms of low, medium or high. When less than half the respondents adopted an IRG recommendation then regulatory harmonization was said to be low. When half the respondents adopted an IRG recommendation - impact was said to be medium. If more than half of the respondents adopted an IRG recommendation then impact was said to be high.

A more recent study by the IRG working group (2005) underscores these variances amongst member states with respect to regulatory accounting in practice.

In terms of setting cost based fixed interconnection charges most states use CCA methodologies (70%) with the remaining states adopting HCA methodologies (15%) and mixed cost base methodologies (15%).

In terms of setting cost base mobile interconnection charges most states have adopted HCA methodologies (59%) followed by CCA (29%) and other mixed cost methodologies (12%).

With respect to the cost base, the IRG study showed that the trend towards the use of CCA methodologies for setting interconnection charges for fixed interconnection. The use of CCA methodologies had increased from 58% in Oct 2004, to 70% in April 2005. The use of HCA methodologies had decreased marginally from 17% to 15% over the same period. For mobile interconnection the use of CCA methodologies increased from 23% in Oct 2004 to 29% in April 2005. The use of HCA methodologies decreased from 69% to 59% over the same period.

A similar trend can be observed for the allocation methodology used by operators in terms of setting allocation fixed interconnection charges. Most member states use LRIC/LRAIC methodologies (48%) with the remaining states using FDC methodologies (30%) and mixed allocation methodologies (22%).

In terms of setting allocation mobile interconnection charges, most EUMS have adopted FDC methodologies (64%) followed by LRIC/LRAIC (24%) and other mixed allocation methodologies (12%). The IRG study showed a trend towards the use of LRIC/LRAIC methodologies, the use of LRIC/LRAIC methodologies for fixed interconnection increased from 38% in Oct 2004, to 48% in April 2005, while the use of FDC methodologies decreased marginally from 33% to 30% over the same period. The use of LRIC/LRAIC methodologies for mobile interconnection increased from 8% in Oct 2004 to 24% in April 2005, while the use of FDC methodologies decreased from 77% to 64% over the same period.

Our study showed that while the mobile sector within the EU telecom is adopting CCA as a cost based methodology and LRIC as an allocation methodology it is doing so at a slower rate than for the case for fixed interconnection. This is in line with the principles and recommendations contained in the EU telecom PIBs.

#### **5.2.3.4.3 Regulatory Remedies**

The remedies document produced by ERG in 2003 sets out, the joint views of the ERG and the EC on ways to remedy situations as set out in the new policy framework. The EU framework is predicated on the goal of promoting competition and limiting regulation to those parts of the market where the replication of the incumbent's assets is unfeasible or economically undesirable. The actual process of creating remedies involves defining the markets where ex-ante regulation can be imposed. Eighteen such markets have been identified by the EC. The NRAs for these markets are then required to determine whether the markets would be susceptible to ex-ante regulations. This the NRAs did by determining the extent to which significant market power exists and whether these powers have been significantly abused. The NRAs must then determine which remedies can best be used to deal with the competition problems that have arisen in the identified markets. For example, obligations can be imposed with respect to access to networks or the control of tariff regulations.

The ERG remedies document is designed to support harmonization of the remedy selection process. Given a set of standard competition problems, the remedy document can be used to enable the NRAs to match standard competition problems to standard remedies. Furthermore a common approach to the application of remedies for competition problems is promoted in the ERG remedies document for example terminating calls on mobile networks.

The new EU telecom policy framework uses various directives. An example of remedies used in the wholesale mobile voice call termination markets can be used to illustrate this approach. The completion problems that were identified included significant market power on terminating calls on the networks of the MNOs and the effect of excessive charges for terminating of calls to mobile networks on wholesale and retail levels. The remedies recommended include price transparency; non discrimination, supported by accounting separation; and charge controls where LRIC is applied.

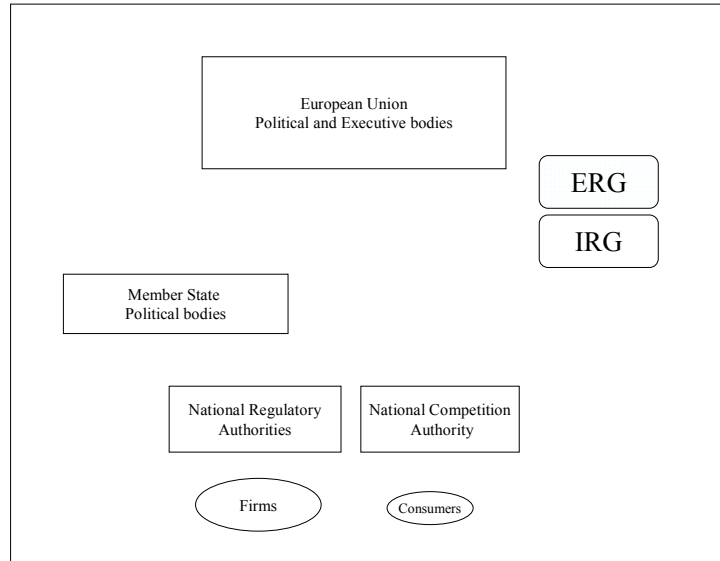
The findings of our interviews with regards to formulating and adopting regulatory remedies showed that there was exceptional cooperation amongst the NRAs. This suggests extraordinary harmonization of the regulatory principles espoused in the framework. Additional benefits have included information sharing between the EC and the NRAs, which should help overcome some information asymmetry problems and contribute towards greater consistency in the use of regulatory tools by the NRAs. The NRAs throughout the EU are now able to apply similar remedies to similar problems. To quote the ERG chair: "The remedies guidelines are expected to become the consulting bible for practitioners, and they are expected to become the reference document for interpreting ECJ and national court decisions."

#### **5.2.4 Institutional arrangements in the European Union**

The following public institutional arrangements were deemed important for our investigation of regional regulation in the EU; the regulatory process and the distribution of competencies across two levels, national and regional.

In Figure 5.4 we show the stakeholders involved in the EU; the executive political bodies, the political bodies of the respective member countries, regional organizations of telecom regulators, the NRAs and national competition authorities and firms and consumers (telecom market).

**Figure 5.4: Public institutional arrangements in the European Union**



#### 5.2.4.1 Process of regulatory decision-making in the European Union

In the context of the EU national ministers adopt telecom regulatory principles on a regional level and they are then expected to transpose these principals into national legislation. The NRAs are tasked with implementing the legislation while the ECJ<sup>48</sup> and national courts are expected to enforce it. In this hybrid model policymakers<sup>49</sup> provide the formal institutions, i.e. directives, decisions, and supporting structures, while firms are allowed to negotiate commercial contracts, for example, interconnection terms, conditions and cost, between themselves pursuant to the formal institutions.

##### 5.2.4.1.1 Adoption of telecom regulation in the European Union

The system of regional regulation functions at the EU level and the national level. Regulations are enacted via participation, by various actors at the EU level and through these actions with actors in the EUMS.

<sup>48</sup> While the European Commission does enforcement of directives and treaties, the presence of a regional court, the ECJ, distinguishes it from key actors in a region like the Southern African Development Community.

<sup>49</sup> While actors in the EU also include a Council of Ministers and parliamentary committees the parliamentary element distinguishes it from these set of key actors in other economic regions like the Southern African Development Community and the Organization of Eastern Caribbean States.

The interaction between the various EU institutions and organizations results in a regional regulatory system. At the EU level the European parliament and various parliamentary committees<sup>50</sup> interact with organizations like the European Commission (EC) and the Council of Ministers (COM) to enact various regulatory decisions. National ministries are represented on the COM and the working groups. In terms of the parliamentary process at the EU level, the COM and the EC, using the competition directorate (CGD) and information society directorates-general (SDG), are expected to cooperate and to enact directives, regulations and decisions. While directives of the EC and EP have to be transposed into national legislation by national parliaments, regulations are enforced immediately. The EC and its services, the ISDG and the CDG, are responsible for the monitoring and enforcement of the EU telecom sector policy framework.

Most of the EC telecom directives have subsequently been adopted under the European Economic Area Treaty, (EEAT) with little scope for European Free Trade Association countries<sup>51</sup> to negotiate, though they can delay adoption of such measures.

EUMS are responsible for transposing regional EU directives, recommendations and decisions into national legislation. Usually the respective communications minister, who participates in the council of ministers, takes the lead in this regard. National governments transpose regional into national laws through using national regulatory processes, national parliaments, committees, ministries, government, etc.

#### **5.2.4.1.2 Implementation of telecom regulation in the European Union**

National telecom ministries<sup>52</sup> and NRAs are expected to implement national and the EU telecom policies. The creation of the NRAs, has been a fairly recent phenomenon. EUMS within the EU were called upon<sup>53</sup> to ensure that specific regulatory tasks were performed by an independent regulatory organization as early as July 1991, while the status and roles of the NRA were more clearly outlined in a subsequent amended framework directive.<sup>54</sup> In many EUMS, the establishment of these regulatory authorities was only undertaken in the mid 1990's, with the exception of the UK in 1984. Substantive differences exist in practice between the EUMS's. The large NRAs were essentially created by national legislation, organized separately from government, headed by unelected officials, given powers over regulation while being subject to controls by their elected principals, both in the executive and the legislature of their states and the EU. The NRAs also differ in terms of their design, i.e. structure and processes, their constitutional positions, i.e. ranging from

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<sup>50</sup> A Communications Committee was established on 24 April 2002 with a view to replace the ONP Committee and the Licensing Committee which were instituted under the 1998 regulatory package for telecommunications. The ONP played a key role in encouraging co-operation between EUMS at a working level. It enabled EUMS to seek guidance and clarification from the EC on particular issues which arise when implementing the directives. For example, interconnection, and local loop unbundling. The licensing committee was involved in the harmonization of conditions for licensing and in the establishment of a one-stop shopping procedure and in discussing the need for the harmonization of spectrum.

<sup>51</sup> The term EFTA States is used to refer to the three EFTA States presently participating in the EEA, which are Iceland, Liechtenstein and Norway.

<sup>52</sup> Ministries remain responsible for a wide range of issues, including primary and secondary legislation and more mundane functions, such as numbering.

<sup>53</sup> Services Directive 90/388. Article 7

<sup>54</sup> Directive 97/5. Article 5.a.2

being non-governmental departments to being legally entitled to be independent, and in areas of delegation and independence. A list of the NRAs in EUMS, and when they became operational is given in Table 5.6 below.

**Table 5.8 National regulators in the European Union countries**

Member State	Telecoms regulator became operational	Market opened to full competition
Belgium	1993	1997
Denmark	1991	1994
Finland	1988	1994
France	1997	1998
Germany	1998	1998
Greece	1992	2001
Ireland	1997	1998
Italy	1997	1998
Luxembourg	1997	1997
Netherlands	1997	1997
Portugal	1981	2000
Sweden	1992	1993
UK	1984	1991

*Source Dabler and Parker 2004*

#### 5.2.4.1.3 Control of telecom regulation in the European Union

All the EU telecom sector regulations are enforced by the European court of justice and the respective national court systems.<sup>55</sup> The Court of First Instance (CFI) and the European Court of Justice (ECJ) provides the safeguards necessary to ensure that the law is observed within the EU regarding the interpretation and application of treaties and in all the activities of the EU. Generally the ECJ hears cases concerning failure to fulfill and transpose treaty obligations and cases dealing with the incorrect or incomplete transposition of an EU or EC measure, i.e. commission against a EUMS. Forms of actions that can be undertaken by the ECJ includes determining whether a EUMS has fulfilled its obligations as set down in a EU treaty determining the legality of EC legislation or reviewing the legal status of a failure to act by an EC institution. While the ECJ rules on what the relevant EC law is, national courts are expected to apply national law, as interpreted by the ECJ. A ruling on interpretation made by the ECJ is also used as a guide for national courts dealing with similar problems or questions. Furthermore, national courts can ask the CFI/ECJ to give rulings on any complex matter of national, international and the EU nature.

The EC has the task of taking action against member states that fail to ensure the implementation of the EU rules. The EC is obliged to notify EUMS, if they fail to comply with, or implement the EU rules. With respect to telecom deregulation the infringement problems dealt with by the EU courts

<sup>55</sup> For the ECJ it is only the Treaty, Directives, Decisions and Recommendations.

have to be issues like the lack of a printed directory covering all fixed and mobile subscribers, in France and Greece, problems with the independence of regulation, in Finland and the number portability in Poland.

Lastly, regarding the development of a single market, the 2002 telecom framework introduced new procedural arrangements, Article 7 of the Framework Directive. This required procedural arrangements to be put in place to ensure efficient use of resources by the NRAs. The NRAs were expected to achieve an EU single market, while taking into account the national specificities. The NRAs were thus required to find a balance between requirements such as the application of transparency, confidentiality and efficiency. Article 7, of the Framework Directive dealt with the consultation between the NRAs and the EC the draft measures that NRAs intend to take at the national level.<sup>56</sup>

### **5.2.5 Actors in the European Union**

The following actor issues were deemed important for our investigation of regional regulation in the EU; the interaction between operators with significant market power (SMP) and new entrants, the NRAs and the EC, and telecom incumbents and national governments.

#### **5.2.5.1 Operators with significant market power and new entrants**

The problem of SMP was an important issue within the EU telecom sector, it was assumed that the dominance enjoyed by incumbents would influence their (strategic) behavior towards rivals. Rivals are generally perceived to be a threat to market position and power, and therefore incumbents are generally assumed to engage in exploitative behavior (Mansell 1993), aimed at lessening competition (EC 2004).

In its remedies document for the EU telecom sector the ERG identified 27 generic competition problems across the EU. These have included vertical leveraging, e.g., denial of access to new entrants, withholding information, delaying tactics, predatory pricing; horizontal leveraging, e.g., cross subsidization, bundling; single market dominance, e.g. exclusive dealing, excessive pricing, excessive costs; termination, tacit collusion, price discrimination. According to the ERG these tactics have immediate effects, first mover advantage, margin squeeze and raising rival's costs, with the ultimate effects of foreclosure of rival operators.

Within the EU telecom sector the aggressive behavior of incumbents was also carried through to the mobile markets. The lack of growth in fixed telecom services encouraged the incumbents to extend their influence to mobile services. Incumbents within the EU own, in varying degrees, CATV networks and mobile subsidiaries. In 2003 (OVUM) the leading mobile operators within the EU were subsidiaries of fixed incumbent in 13 of the 15 EUMS included in our study. Competition in the market for mobile call termination, in particular appears not to be working, some evidence of

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<sup>56</sup> The ERG was expected to work with the EC to establish an efficient and workable mechanism that would allow for more consistency between NRA regulatory practices. The draft proposed Recommendation setting out the procedures to be followed in terms of Article 7 was tabled in April 2004. The Commission adopted the Recommendation in June 2004.



delaying tactics by incumbents was found with respect to local loop unbundling (OVUM 2003). This is especially evident in the area of mobile call termination. In most instances the mobile operator's do not charge others and their own retail business the same prices, leading to price discrimination, and varying levels of retail competition across the EUMS.

Within the current EU telecom sector policy framework the dominance and significant market powers of incumbents are explicitly accepted as a given.

### **5.2.5.2 National Regulatory Authorities and the European Commission**

The attitude of mistrust on behalf of the EUMS's NRAs towards the EC is very evident when one looks at the history of development of regulatory harmonization within the EU. The EC's vision of a single internal market can be contrasted with those of some EUMS's that want to develop strong national markets. Although, in principal, the EUMSs have agreed to a single market treaty for the telecom sector their respective NRAs historically have been perceived as barriers to the creation of such a single market. While the process of determining the institutional mechanism for regulatory cooperation in the telecom sector was underway the EUMSs NRAs came together to create an informal body to provide a forum for the harmonization of regulatory practices. By the time the EC had decided on its own mechanism for the control of the EU telecom sector, the NRA / IRG structure had been in operation for five years. Thus within the EU two groups exist with similar objectives, essentially those of harmonizing regulatory practices within the EU telecom sector. Initially, after the option of the ERG the IRG was criticized for not being accountable to a formal group with EU, and thus it was treated as having no mandated function. Notwithstanding the IRG has grown to become the engine room in which all the ERG decisions are drafted (Arnbak 2004). All ERG decisions are subject to consultation, and some are put up to the EC, which can ignore ERG recommendations.

### **5.2.5.3 Incumbents and national governments**

The relations between incumbents and national governments in leading key EU states like Germany, France, Italy, The United Kingdom and the Netherlands, are still characterized by political support. In these states incumbents are still seen as national champions tasked with ensuing national interests, like employment, security of supply, etc. This was strongly the case in the UK which seems to trust the EU less and less despite formal proceeding by the EC against those EUMs failing to privatize in accordance with the EU rules. In most instances within the EUMS privatization has only been partial. In the aftermath of a wave of poor results with respect to telecom privatization and globalization and license auctions many incumbents have posted huge losses. Incumbents with national governments as major shareholders were able to sustain the losses but the telecom sector became unattractive to new entrants. Anecdotal evidence also exists of a softening stance from governments with respect to acting to force compliance to other EU telecom regulations like LLU, LRIC. In instances where incumbents are still publicly owned, political imperatives, for example setting or keeping local tariffs low and below cost, are said to influence governments in their role as a regulator of the telecom sector.

In addition with deregulation, governments increasingly delegated greater choice to the industry actors. With respect to access, the firms would simply inform NRA's of their decision to participate in the telecom sector. With respect to conduct, the firms could decide what new technologies they would use and to negotiate interconnection agreements. With respect to pricing government would still set the formula by which firms would comply.

### **5.3 Analysis of technological socio-economic affects and regional regulation**

We will now explore the affects of the aforementioned technological socio-economic systems and regional regulation in the EU. The effects of technological socio-economic systems on sector performance will be described according to our 4 levels (informal and technology, formal, institutional arrangements and actors), mode of effect (direct or indirect) and mechanism of effect (enabling or constraining) competition, network growth and regulatory harmonization.

#### **5.3.1 Informal institutions in the European Union**

A strong culture of incumbent dominance and mistrust towards the EC and competition as a value was noted within the EU. Below we discuss the implications of this for regional regulation and its impact on sector performance within the EU.

The prevailing culture of incumbent dominance has created various problems for regional regulation within the EU. In the area of local loops we have shown how competitive access has been restricted by incumbents simply refusing to or delaying the unbundling of local loops. Despite a legally binding mandate, only 2% of local loops had been unbundled throughout the EU by 2004. The EU's response to this lack of compliance highlights the inefficiencies inherent in the EU system. It shows the inability of the EU system to adjust to and deal with a seemingly ineffective rule. It calls in question the agility of the regulatory governance prevalent within the EU with respect to evaluating and adjusting the rules of the game. Incumbents in the telecom sector have been able to delay implementation and take advantage of the inertia within the EU with respect to enforcing legislation and of a lack of proper post implementation evaluations. While the initial numbers with respect to unbundling have been disappointing, a more recent number for unbundling, particularly in broadband seems to be more encouraging. In addition to increased unbundling we have also found an incremental downward movement of prices for rental and connection pricing. In addition despite a record number of new entrants to the EU telecom sector, incumbents have been able to maintain their market share in traditional markets and have even succeeded in extending their influence to new markets.

The culture of mistrust towards the EC within the EU telecom sector has had a negative influence on regulatory inefficiencies. A "lack of political will"(Arnbak 2004) to set up a regional regulator has resulted in the setting up of a high level coordination group the ERG as a political compromise. This has resulted in increased transaction costs with respect to harmonizing regulatory practices: and while waiting for the process of setting up the ERG to be completed, the NRAs set up the IRG as their own internal coordinating group in response to the perceived "threat of EC dominance" (Arnsbak 2004). As a result the EU now has two coordinating mechanisms essentially carrying out the same function. While the IRG has skillfully positioned itself as the "engine room" of the ERG,

questions remain, with respect to the transparency of the IRG and whether there is a need for two organizations within the EU with similar objectives.

The high value attached to competition within the EU telecom sector has had a positive influence on effectiveness. An effective, cutting edge telecom sector is critical for the EU's objectives of pursuing an information society built on an EU knowledge economy. The impact of the deployment of various broadband technologies and the increased penetration of broadband in the sector suggests that considerable progress has been made in this regard. This policy is also supported by a new access regime that permits firms to enter the telecom market by simply notifying the appropriate national regulatory authorities. However, worrying levels of competition due to market concentration have largely constrained the development of effective competition. See table 5.9 below for a summary of the effects of informal institutions in the EU. The impact of informal institutions was assessed using three logical steps (EC 2005).

- Additionally, what has happened over and above what would have happened anyway?
- Displacement, what has not happened which would have happened in the absence of informal institutions?
- Effectiveness, did informal institutions produce the expected result?

**Table 5.9: Summary of informal institutions in the European Union**

<b>Informal institutions</b>	<b>Implications on regional regulation</b>	<b>Mechanism</b>	<b>Impact on sector performance</b>
Culture of incumbent dominance	-	Delayed LLU unbundling. Extended influence to new markets (GSM mobile).	Effectiveness
Culture of mistrust	+	Creation of ERG as a compromise. Creation of IRG against EC dominance.	Additionally Effectiveness
Competition as a value.	+	Increased levels of competition. Increased broadband deployment.	Additionally

### **5.3.2 Technology in the European Union**

The adoption of technology neutrality, the deployment of alternate technologies and the ability of incumbents to “capture” the alternative technologies were noted within the SADC. Below we discuss the implications of this for regional regulation and its impact on sector performance within the EU.

The coordination of GSM technology at the EU level seems to have provided more benefits than its introduction in the US where technology choice was left to each state. The call for industry alone decisions regarding technology choices is counter to what has transpired in leading broadband countries. It should be noted, however, that the success in GSM introduction within the EU was not just a result of private ordering, it was based on a mix based on a private and public ordering. The challenge for the EU policymakers was to find and legislate for a balance between the welfare of consumers and the interests of the industry. The EU policy makers, in particular, assessed the extent to which dominant firms had set technology standards that they could use to sustain or increase their market dominance.

It is not clear from our case study what the impact of “technology neutrality” legislation has been within the EU telecom sector. One obvious result was the diversity of types of broadband access in the EU, DSL, ISDN, Cable and Fiber to the Home (FTTH). This diversity seems to have contributed towards high broadband penetration rates in the Netherlands where cable television companies have entered the traditional telecom markets.

The impact of broadband growth within the EU may be accredited indirectly to the formal drive within the EUMS towards a single market capable of sustaining an information society based on an EU knowledge economy. Here two particular forces have driven growth; the competitive pressures brought about by new entrants, new entrants accounted for 43% of market share in 2004 and the fact that telecom incumbents have aggressively pursued broadband to offset their eroding voice revenues.

Perhaps one of the benefits for the NRAs of the private ordering approach to technological design has been that it considerably reduces the NRAs regulative burden.

The deployment of alternative infrastructure technologies like cable to compete with DSL or mobile GSM to compete with fix technology has resulted in numerous benefits. The Netherlands case shows how broadband penetration has increased and prices have been lowered for the telecom services. The advent of new, alternative technologies that can be used to fix has ably provided telecom services demonstrates the ability of incumbents to capture new and use technologies to their advantage. In the case of mobile, incumbents have been able to leverage their dominance in fix telecom services to roll out mobile networks. In some instances where the local NRA did not allow this, the incumbent acquired mobile operators at a later stage as subsidiaries. See table 5.10 below for a summary of the effects of technologies in the EU region. The impact of technologies was assessed using three logical steps (EC 2005).

- Additionally, what has happened over and above what would have happened anyway?
- Displacement, what has not happened which would have happened in the absence of technologies?
- Effectiveness, did technologies produce the expected result?

**Table 5.10: Summary of technology in the European Union**

<b>Technology</b>	<b>Implications on regional regulation</b>	<b>Mechanism</b>	<b>Impact on sector performance</b>
The adoption of technology neutrality	+/-	Increased diversity in broadband technologies (DSL, ISDN, Cable, FTTH). Dramatic growth in broadband (77% in 2004)	Additionally Displacement
The deployment of alternative technologies (Cable vs. DSL)	+	High broadband penetration in the NL	Additionally Effectiveness
The ability of incumbents to “capture” alternative technologies	-	First technology mover advantage lost	Effectiveness

### **5.3.3 Formal institutions in the European Union**

The EU regulatory objectives, market liberalization, the creation of regional organizations of telecom regulators and the harmonizing of regulatory principles were noted within the EU. Below we discuss the implications of this for regional regulation and its impact on sector performance within the EU.

Two of the objectives of the EU telecom policy framework were deregulation and promoting flexibility to deal with fast changing markets. Experience to date has shown how challenging this has been for the EU region and how elusive these objectives have proved to be.

Deregulation was intended to minimize sector specific regulation and to promote general competition rules within the EU telecom sector. What was seen was an increase in the amount of regulation promulgate in direct contrast to the EC’s goals of reducing the density of regulation in the telecom sector (Piepenbrock and Schuster 2002). In addition the new rules seem to increase the importance of the NRAs rather than minimize their role and influence. For examples the NRAs today (2006) are responsible for determining whether effective competition exists, whether it is characterized by SMP, and if necessary which remedies to impose to improve a situation; and through their participation in the ERG, the NRAs are to control how certain EU rules are implemented.

The new EU telecom policy framework was intended to be the means by which greater flexibility could be introduced in the sector, promoting fast responses to dynamic regulation that its designers had aimed to produce. The case of LLU and LRIC shows the NRAs are unable to assess implementations and to then take remedial and or corrective actions when necessary. All this has been compounded by the complexity of and “built-in inertia” in the EU telecom regulatory process.

Thus the EU and its policy makers in the telecom sector have only slowly adopted the changes in the telecom sector markets, and to technologies used in this sector.

The costs of market reform in the EU have been extraordinarily high, both for administration, 10—12% of GDP and from a perspective of the number of regulations requiring changes to be made, e.g. revising old rules, adopting the new telecom framework.

Telecom, market liberalization, despite this, has created many benefits. The EU has a lot of entrants to the telecom market. The granting of authorizations within the EU instead of licenses meant that regulatory barriers to entry were removed for new entrants and that only technical barriers like spectrum remained. While the level of competition did increase in the EU, especially in mobile markets, market concentration remains a barrier. Currently (2005) the EC and its NRAs are attempting to assess the extent to which dominance is prevalent in 18 telecom markets. In general the impact of liberalization on growth has been positive as can be seen in the figures for year on year's growth within the EU telecom sector.

The creation of the IRG and the ERG has led to benefits and challenges. The coordinated work of the two organizations has not increased the (transaction) cost of regulatory activities in the market. Both organizations work towards adopting, implementing and controlling best practices; while they do have economies of scope with respect to some tasks, the general coordination costs and administrative costs seem to be high, despite this from an effectiveness perspective the IRG and ERG have enhanced regulatory harmonization by providing a forum for discussion in which NRAs can come together to discuss matters relating to the interpretation and implementation of regional telecom policies.

Both the IRG and ERG have succeeded in setting priorities, stimulating awareness, educating the NRAs, increasing understanding on regulatory matters and creating an environment conducive to shared learning. In some instances the regulatory best practices have served to support an existing desire for change and have been able to provide additional arguments to justify reform. The roles of the IRG and ERG within the EU telecom sector have been to reinforce and accelerate moves towards regulatory harmonization and to assist the NRAs in pursuing their strategies of adoption to and of new conditions.

The harmonization of regulatory principles has had a mix effect on effectiveness within the EU telecom sector. The formulation of regulatory best practices, for LLU and LRIC, in particular, did not seem to contribute towards more effective harmonization. The results of our survey with respect to local loop unbundling and LRAIC show that the varying methods of implementation used by NRAs have not achieved the regulatory principles espoused in the regional telecom framework.

The contribution made by the ERG with respect to the remedies document, in contrast, has enabled the EC to speed up implementation and to coordinate participation amongst the NRAs better. We found that the ERG had built on the successes of the IRG and succeeded in advancing harmonization in the EU telecom sector beyond that achieved by the IRG. Where the role of the IRG was to reinforce and accelerate moves towards regulatory harmonization and to assist the

NRAs in pursuing their strategies for the adaptation of new conditions, the role of the ERG's was to coordinate the harmonization of regulatory practices.

We also found an instance where harmonization of methods was achieved without any cooperation from or harmonization efforts made by the IRG and ERG. Authorizations for example were introduced in the new regulatory package and called on NRAs to grant access to competitive operators. Unlike the case for the other EC regulation and or directives, member states simply implemented the new EU general authorization regime via their telecom NRAs. See table 5.11 below for a summary of the effects of formal institutions in the EU. The impact of formal institutions was assessed using three logical steps (EC 2005).

- Additionally, what has happened over and above what would have happened anyway?
- Displacement, what has not happened which would have happened in the absence of formal institutions?
- Effectiveness, did formal institutions produce the expected result?

**Table 5.11: Summary of formal institutions used in the European Union telecom sector**

<b>Formal institutional</b>	<b>Implications on regional regulation</b>	<b>Mechanism</b>	<b>Impact on sector performance</b>
EU regulatory objectives	+/-	Promotion of competition. Functioning of internal market.	Additionally Displacement
Liberalizing markets	-/+	Incremental approach from monopoly to competition Authorization regimes as opposed to licensing access	Displacement Additionally
Creating IRG and ERG	+/-	IRG role- share information ERG role to coordinate	Additionally Displacement
Harmonizing regulatory tools	+/-	LLU and LRAIC useful for learning Remedies useful for harmonization	Effectiveness Displacement

#### **5.3.4 Institutional arrangements in the European Union**

The distribution of competencies across two levels, national and regional was noted within the EU. Below we discuss the implications of this for regional regulation and its impact on sector performance within the EU.

In the case of the EU telecom sector the extraordinary high cost of introducing liberalization were evident from the design stage and in the implementation and control of the EC telecom rules. Given the complexity of the EU regulation and the prevailing principle of subsidiary within the EU it seems unlikely that greater efficiencies with respect to the cost of the telecom sector's liberalization and its regulation could be realized.

From an effectiveness perspective, the presence of a solid legal foundation and supporting institutional structures within the EU did contribute towards an effective means of regional regulation. The interactions between the legal foundations and institutional structures are thought to have contributed towards the effective coordination found in the complex and dynamic telecom sector within the EU. This impact was most evident in the harmonized EU policy framework set out in 2003, the use of which has contributed greatly towards overall sector growth.



The allocation of tasks between the regional and national levels in the EU telecom sector seems to have created benefits and challenges. The approach of harmonizing the definition on the two levels simultaneously allowed national specifics to be incorporated within the EU generalities. This process fundamentally transformed the traditional regulatory functions into ones that could support and promote competition. What was evident was the extraordinary cost of and time taken to complete the entire telecom market liberalization exercise. What are less certain are the implications of such an institutional change, particularly for operating procedures.

While IRG and ERG may have contributed towards regulatory harmonization, in the form of regulatory remedies, we have no evidence that their contribution minimized regulatory risk or improved investor's confidence. The many responses made by operators, and their associations, to the PIBs reflect the increasing interest shown in the work of the IRG within the EU telecom sector. This is further supported by the way operators, and their associations participated in and responded to the process of formulating regulatory remedies carried out by the ERG. These instances show the potential of IRG and ERG indirectly to minimize risk and improve investor's confidence. A lack of legal powers, however, minimizes the IRG and ERG's credibility as an institution able to facilitate sector development. ERG shows greater promises than IRG since its outputs serves as an important input to EC deliberations and decisions. See table 5.12 below for a summary of the effects of institutional arrangements in the EU. The impact of institutional arrangements was assessed using three logical steps (EC 2005).

- Additionally, what has happened over and above what would have happened anyway?
- Displacement, what has not happened which would have happened in the absence of the institutional arrangements?
- Effectiveness, did the institutional arrangements produce the expected result?

**Table 5.12: Summary of institutional arrangements in the European Union**

<b>Institutional arrangements</b>	<b>Implications on regional regulation</b>	<b>Mechanism</b>	<b>Impact on sector performance</b>
The regulatory process	-	Presence legally binding regional regulatory rules and procedure. Presence of supportive structures like regional courts.	Effectiveness
The distribution of competencies across two levels, national and regional	-/+	Regional – define markets National – tests for dominance and applied remedies.	Effectiveness

### **5.3.5 Actors in the European Union**

The interaction between; the incumbents and new entrants, the NRA's and the EC and the incumbents and the national governments were noted within the EU. Below we discuss the implications of this for regional regulation and its impact on sector performance within the EU.

The mental maps of incumbent telecom operators, with respect to viewing rivals and threats to their market position, have not had a negative influence on effectiveness. The ensuing anti-competitive behavior on behalf of the incumbents suggests that they were more resistant to change. This was seen in the responses made by incumbents to the legally binding rules set down in the EC Directives and Regulations to unbundled local loops in fixed markets and deal with excessive mobile termination rates in mobile markets. The incumbents strategies to delay competitive entry, in part explains why they were able to maintain high levels of market share. The impact on the cost of regulation, for time and resources, was enormous of numerous court ruling with respect to this new legislation and compliance to the legislation.

The mistrust towards the EC especially from the NRAs was apparent in their decision to create the IRG to use as a buffer against EC dominance. This was beneficial in the sense that participation in the IRG strengthened individual NRAs and enhanced learning. In another sense it complicated the process of telecom liberalization within the EU as with the creation of the ERG there is now a need to define how the ERG and IRG should interact. Some economies of scope were realized with the two organizations, for example in the developing of regulatory remedies, there were (are) a lot of parallel meetings and studies carried out at the two groups and there is also a need to increase coordination and cooperation such that repetition of tasks are reduced.

The political support enjoyed by some telecom incumbents within their EUMS had an influence on impact of competition. In some instances this influence may have made some markets less

attractive to new entrants. The number of firms operating in markets with strong incumbents is low and the structure of the market is typically a tight oligopoly. Anecdotal evidence exists for a softening stance on behalf of some EUMS. Anecdotal evidence also exists of EUMS governments and refusing to act with respect to compliance to other telecom regulations like LLU and LRIC. In instances where EUMS incumbents are still publicly owned, political imperatives, for example setting, or keeping, local tariffs low and below cost, are said to influence government in its role as a regulator of the telecom sector.

The decision by national governments to allow industry actors greater choice had a mixed influence on efficiency. Removing the need for public permission to enter the market, has allowed new entrants to simply enter the market by informing the NRAs of their intention to do so and this has increased the number of new entrants in the market. The decision to delegate the choice of technologies to firms, impacted the result with respect to the variety and type of broadband technologies deployed, i.e. for service offering and coverage. The decision to leave choice of interconnection to the industry players proved costly and time consuming. With respect to interconnection, the NRAs, working through the IRG, undertook much work required in this field producing the 2000 and 2003 PIBs which were designed to address the excessive fees charged for mobile termination by mobile operators. To date (2006), termination fees are still a cause for concern and the issues around this still have to be resolved. See table 5.13 below for a summary of the effects of actors in the EU. The impact of actors was assessed using three logical steps (EC 2005).

- Additionally, what has happened over and above what would have happened anyway?
- Displacement, what has not happened which would have happened in the absence of the actors?
- Effectiveness, did the actors produce the expected result?

**Table 5.13: Summary of actors in the European Union**

<b>Actors</b>	<b>Implications on regional regulation</b>	<b>Mechanism</b>	<b>Impact on sector performance</b>
Incumbents and new entrants	-	Delay and frustrate new entry especially with interconnection.	Displacement
NRAs and the EC	+	Mistrust resulting in IRG and ERG.	Effectiveness
Incumbents and member governments	+/-	Political support Soft stance with enforcing the EU legislation	Displacement Effectiveness
Allowing industry actors greater choice	+/-	Contracting problems with interaction between incumbents and rivals.	Effectiveness

The technological socio-economic effects described above raised a number of important issues for regional regulation and its ability to coordinate economic activities in EU's telecom sector. We found in our case study, that the majority of the technological socio-economic effects created *benefits* for regional regulation that have largely *enabled* the development of a competitive telecom sector across the EU.

## **5.4 Regulatory issues raised in the European Union**

Our case study also highlighted the underlying substantive regulatory issues in the EU. We will now summarize these issues and comment on the way in which EU policymakers and the NRAs have responded to them.

### **5.4.1 The European Union policy framework**

The current EU policy framework clearly spells out a policy for regional regulation of the EU telecom sector. The goals of the new framework are to encourage competition in the electronic communications markets, to improve the functioning of the internal market and to guarantee basic user interests not be guaranteed by market forces. The framework provides a set of rules that are simple and are aimed at deregulation, technology neutrality and being sufficiently flexible to deal with fast changing markets in the ICT industry.

An assessment of the objectives set out in the EU telecom framework shows that while some have been realized others have remained elusive. For example the issue of flexibility and less sector specific regulations has had the opposite effect; there is now more rigidity and more sector specific regulation. The regional policy framework is legally binding on participating EUMS; in some instances transition to national regulation was required, i.e. directives, in other instances the

decisions were immediately binding i.e. regulation, while in other instances the decisions were used as guidelines. At the same time the framework afforded member states enormous discretionary powers with respect to finding appropriate methods for implementing the policy framework. This was done to take into account the large economic disparities, differences in market structures and historical traditions amongst EUMS.

The recent revision of the entire EU telecom sector framework (2003) means that the EU region is still very much in transition from the old telecom framework to the new, integrated frameworks of 2003. The ongoing dynamics of the telecom industry within the EU means that the EU telecom market may stay in a state of ongoing transformation for the time being.

#### **5.4.2 Regulatory institutional structure**

The EU regulatory regime is characterized by the adoption of regulatory principles at an EU level, implementation at a national level, and shared responsibility for enforcement. From a regulatory perspective in the EU telecom sector this has taken the form of defining all the telecom markets at the regional level and leaving the tasks relating to dominance of incumbents etc. and remedies to the national level regulators.

While the commitment of national governments to market reform of the telecom sector has been seen as credible, reliance on member states and the NRAs to implement and enforce regulatory policy has weakened regional effectiveness. In most instances the NRA is the key implementer of all national and regional regulation. Given the extraordinary complexity and sophistication of regulatory tools, regulatory effectiveness has at times been compromised by a lack of speed and a lack of procedural clarity, something that is inherent in the regulatory procedures within the EU. In addition the EU's reliance on national courts and the ECJ slows down the system considerably. The increasing shift to competition law is expected to constrain speed and flexibility.

#### **5.4.3 The role of the Independent Regulators Group and the European Regulators Group**

The EC opted to create a high level coordinating group comprising members of the NRAs and EC members, to coordinate the harmonization of regulatory practices in the telecom sector. In contrast the NRAs opted to create a regional forum for sharing information with regards to understanding and implementing regional policies and regulations.

The primary activity of the IRG as a NRA led forum has been directed towards supporting the NRAs with regards to implementing the new policy framework. Insofar as its objectives are concerned the IRG has been effective and given the IRG's system of governance it cannot be expected to do more, even though much more has been required of it with respect to regulatory harmonization. This can be seen in the way the IRG developed PIBs, and supported the ERG in finalizing the regulatory remedies document, etc. From the evidence, it would seem that the benefits created by the work of IRG have far outweighed the costs associated with its functioning. Note, specific recommendations for the IRG will be discussed in chapter 8.

As an EC led regulatory forum the ERG's primary activities are directed towards supporting the EC in coordinating the implementation of a new EU telecom sector framework. Like the IRG, is considered to be effective insofar as its objectives are concerned. This is evident in the way it facilitated the completion of the remedies document. Again, on the evidence, it would seem that the benefits created by the work of the ERG have far outweighed the costs associated with its functioning; see chapter 8 for specific recommendations for the future functions of the ERG.

#### **5.4.4 The role of National Regulatory Authorities**

The EU opted to radically transform the role and function of the NRAs. In terms of the new EU telecom framework significant tasks have been shifted from the NRA to competition authorities, this means that cooperation and coordination between the two organizations has become crucial for market success.

In addition the EU has fundamentally changed some of the operating procedures normally done by the NRAs. For example the NRAs have been tasked with defining and analyzing relevant markets and the imposing of remedies or removing of regulation. The NRAs are also expected to refrain from regulating discretionary services and to limit regulation to basic and essential services.

Article 7 of the EU Framework Directive gives the EC the right to oversee national regulatory measures within its member states using consultation procedures. These procedures require the NRAs to conduct a consultation process with respect to the regulatory measures they intend to take prior to enforcing their adoption. The EC may comment on the draft measures and in certain cases it may exercise its veto power and require a measure to be withdrawn, Framework Directive, Art 7.

The NRAs in the new framework are positioned as regionally oriented in the sense that 60% of all regulations dealt with by them emanated from the EC. This transition has been particularly challenging to some NRAs and from the difficulties met with when addressing local loop unbundling and excessive mobile termination.

#### **5.4.5 Market power**

The EU's approach to the problem of dominance and market power is substantive. It is based on a number of documents such as the EC directive on competition (2002/77/EC), the commission guidelines on market analysis and the assessment of SMP under the EU's policy framework for electronic communications networks and services (2002/C 165/03), the EC's recommendations on relevant products and service markets within the electronic sector are susceptible to ex ante regulation in accordance with Directive 2002/21/EC and a report on market definitions for regulatory obligations in communications markets, this reflects the complexity of the issues at hand in the EU context.

The EU's definition is essentially derived from the European legal standards of dominance. Dominance therefore relates to "a position of economic strength enjoyed by an undertaking which enable it to prevent effective competition being maintained on the relevant market by affording it the power to behave to an appreciable extent independently of its competitors, its customers and

ultimately consumers.” (ECJ 2003).<sup>57</sup> The existence of such a dominant position may be due to several factors of which very large market share is the most important.

A distinction is made between an ex ante and an ex post approach to competition law. Ex ante regulation is only imposed within the EU if the market is found effectively to be uncompetitive following a market analysis. The identification of relevant markets requires that an assessment is carried out, consistent with the EU competition rules, of the range of services within a market sector in our case the telecom sector. This type of assessment has been done in the EU using hypothetical monopolist test methodology.

In terms of actual dominance test markers, these were first selected by the European commission and the European parliament and ordered on an economic basis, this gave 18 markets in total. The EUMS could provide motivation for adding more markets depending on their national circumstances. The SMP assessments were undertaken by the NRAs. The choice of appropriate remedies was made based on market failures using guidelines provided by the ERG. It is expected that this process will be reviewed every 3 years.

#### **5.4.6 Local loop unbundling regulation**

The EU decided to legislate the unbundling of local loops in 2000, the PIB for LLU was developed by the IRG in November 2000, amended in October 2001 and again in May 2002.

In the context of LLU the application of the general principles means the following; non-discrimination of the access seeker and the notified operator regarding use of a local loop, transparency in terms of conditions and prices for services, to enable operators to assure that notified operators have complied to regulation, development of competition, in which notified operators provide a number of services essential for LLU and a costs orientation that provides the right economic signals for access seekers to use when making decisions.

Success in this regard has been slow. By October 2002 there were 1 million unbundled lines in the EU, 600 000 by October 2001, out of a potential 187 million subscriber lines. Action was subsequently taken against some member countries, where there was no possibility to access the local loop. By 2004 an increase of 110% was reported in wholesale unbundled local loops in the EU15. This increased to 3.8 million in July 2004 and represented 2% of the PSTN lines in the EU15 at this time.

Prices for unbundled lines rental and connection have decreased steadily within the EU. In some instances the drop in prices during the period 2002 and 2004 was dramatic. One of the factors that may have contributed towards this was the incumbents’ initial unwillingness to allow access to new entrants.

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<sup>57</sup> Case 27/76, *United Brands vs. Commission* ECR [1978] p. 207.

Another reason may be the unbundling done by operations wishing to provide broad band access. The case of the Netherlands shows that over 2000 - 2004 alternative infrastructure competition promoted greater penetration of broadband than LLU.

#### **5.4.7 Long Run Average Incremental Costs regulation**

To harmonize access and interconnection prices the IRG opted to harmonize around the LRAIC costing methodology for both fixed and mobile services. The first document on this subject was in November 2000 followed by a revision in 2004. In essence the document encouraged harmonization around issues like estimating common costs, defining increments and long run costs. In terms of impact the initial responses to the EU directive and accompanying PIBs were not positive. In a more recent LRIC study (2005) variances could still be observed amongst EUMS. At the same time an increase in the use of LRAIC methodologies for setting allocation fixed interconnection charges was noted.

### **5.5 Conclusions**

In this study we explored how the various EU technological socio-economic systems have impacted regional regulation and how the EU policymakers and the NRAs have responded to the underlying substantive regulatory issues. Multiple data sources were used for the case study including literature, the internet, statistics, interviews and surveys.

We commenced with a discussion of the technological socio-economic systems in the EU. Under informal institutional elements, we described the culture of dominant incumbents, the attitude of mistrust on behalf of the NRAs towards the EC and competition as a strong value. Under technology we discussed the EU's adoption of the tactic of technology neutrality, the development of alternative technologies and the ability of incumbents to capture alternative technologies to maintain profits. Under formal institutions we discussed the EU regulatory objectives, liberalizing markets, creating the IRG and the ERG, harmonizing local loop unbundling and the LRAIC. Under institutional arrangements we discussed the regulatory process, the distribution of competencies across the EC and member countries, and the distribution of functions between private and public arrangements. Under actors we discussed the interactions between incumbents and new entrants, the NRAs and the EC, and incumbents and member governments.

We found that these technological socio-economic systems created benefits and challenges for regional regulation. We found that the majority of the institutional effects created benefits for regional regulation and have largely enabled the development of a competitive telecom sector across the EU. In addition the institutional effects had raised a number of important issues for regional regulation and its applicability as a means of coordinating economic activities in the EU's telecom sector.

We concluded with a description of the underlying substantive regulatory issues in the EU. The following regulatory issues were discussed: the EU policy framework, the EU institutional structures, roles of the IRG and the ERG, roles of the NRAs, market power, local loop unbundling and harmonizing cost methodology. We were particularly interested in the way the EU



policymakers and the NRAs have responded to these issues. In Chapter 8 we will compare the treatment of telecom sector regulatory issues across the three case study regions.



## **6. Regional regulation as a new form of governance in the Organization of Eastern Caribbean States**

### **6.1 Introduction**

In the second of our three case studies, we describe and analyze early experiences of regional regulation as a new institution in the Organization of Eastern Caribbean States (OECS) and assess the implications of this for regulatory effectiveness and sector performances in the OECS. The period 2000 to 2004 represents an important learning phase for the process of regional regulation in the OECS telecom sector.

#### **6.1.1 Background to the Organization of Eastern Caribbean States**

In terms of geography, the OECS region is located in the eastern part of the Caribbean and stretches from Florida in the north to Trinidad and Tobago in the south. This area is regarded as a single internal market governed by an authority comprised of the heads of states of the different islands. Five of the nine participating states, Dominica, Grenada, St Kitts and Nevis, St Lucia and St Vincent and the Grenadines have established a separate treaty within the framework of the OECS. The goal of the Eastern Caribbean Telecommunications Authority (ECTEL) treaty is to promote the growth and development of a regional telecom market across the 5 islands.

**Figure 6.1: Locations of the 5 islands, Dominica, Grenada, St Kitts and Nevis, St Lucia and St Vincent and the Grenadines that make up the Organization of Eastern Caribbean States.**



The OECS represents an emerging and economically middle-income region. The combined population of the sub region was slightly less than six hundred thousand inhabitants at the time of the case study. In terms of GDP growth rates, the region as a whole is experiencing reductions in rates of growth. The economy of the region is slowing, shifting from a traditional agricultural base, i.e. bananas, sugar, citrus and spices to a service, especially tourism; financial services, off shore banking; and information technology economy. The need to promote diversification has been forced upon the region by a combination of factors including, natural disasters, the removal of trading preferences on agricultural products and competition from Latin America.

**Table 6.1: GDP and Human development indicators for the Eastern Caribbean Telecommunication Authority states.**

Country	Gross Domestic Products Indicators			Human Development indicators	
	GDP (2002)	Rank	GDP annual growth rate (1990-2001)	Human Development Index (2001)	Rank
Dominica,	\$5,640	74	1.70	0.776	56
Grenada	\$7,280	57	2.90	0.738	74
St Kitts and Nevis	\$12,420	38	3.90	0.808	43
St Lucia	\$5,300	80	0.70	0.775	57
St Vincent and the Grenadines	\$5,460	77	2.50	0.755	65

*Source: Globalis*

### **6.1.2 Performance indicators of the Organization of Eastern Caribbean States telecom industry**

We will now briefly review the OECS telecom industry for the period 1998 – 2004 by looking at network growth and investment in telecom services.

#### **6.1.2.1 Network growth in the Organization of Eastern Caribbean States**

The total number of telecom phone subscribers has grown from 149.700 in 1998 to 297.200 thousand in 2003 in the ECTEL states. This represents an increase in total telephone subscribers, fixed and mobile, per 1000 inhabitants, from 27.7 in 1998 to 58.1 in 2003. A breakdown of the main telephone lines, mobile lines and teledensity figures for the period 1998 to 2003 is shown in Table 6.2.

**Table 6.2: Main telephone lines, mobile lines and teledensity figures for the period 1998 to 2003.**

	1998	2001	2002	2003
Main telephone lines				
Saint Lucia	40400	50000	51100	51100
Grenada	27500	32800	33500	32600
SV&G	21000	26100	27300	32400
St Kitts & Nevis	18400	22500	23500	23500
Dominica	20100	23300	23700	23700
Mobile lines				
Saint Lucia	1900	2700	5000	14300
Grenada	1400	6400	7600	42300
SV&G	8000	7500	10000	62900
St Kitts & Nevis	4000	2100	5000	5000
Dominica	7000	7700	9400	9400
Teledensity				
Saint Lucia	26,79	33,4	40,9	40,9
Grenada	26,28	39,16	38,77	66,67
SV&G	18,37	29,19	31,88	80,12
St Kitts & Nevis	41,83	53,35	60,64	60,64
Dominica	25,23	39,79	42,39	42,39

#### **6.1.2.2 Telecom sector investment in the Organization of Eastern Caribbean States**

Increased investment in the region<sup>58</sup> came hand in hand with the awarding of operating licenses. In general direct investment in the telecom sector has been significant within the ECTEL area. Investments have increased steadily over the period 2001 - 2004. Starting with EC\$128.66 million (2001), EC\$127.65 million (2002), EC\$ 240.90 million (2003) to EC\$285.62 million<sup>59</sup> (2004). Thus

<sup>58</sup> For more details see the impact assessment report on the ECICT Project by USAID/CARANA (January 2004).

<sup>59</sup> This is a projected flow for 2004 based on the entrants of new players, note: investment pertaining to cable landing licenses is not included in the projections.

investment has come primarily from the rollout of new infrastructure. Cable and Wireless (C&W), the incumbent was the biggest investor over the four-year period providing EC\$389.36 million of the EC\$ 782.83 million total investment. Of all the islands, investment has been greatest in St Lucia (EC\$267.2 million) followed by Grenada (EC\$183.4 million), St Vincent (EC\$188.45 million), Dominica (EC\$106.63), and St. Kitts (EC\$37.6 million).

### **6.1.3 Case Objectives**

In the context of our research, the objective of this case study was to provide evidence that could be used to answer the following research question:

*What effect has technological socio-economic systems had on the regional regulation of the telecom industry in the OECS, how have regional policymakers and regulators responded to the subsequent regulatory issues raised, and what are the implications of the response for effective regulation and sector development within the OECS?*

## **6.2 Technological and socio-economic systems in the Organization of Eastern Caribbean States**

In this section we describe the technological and socio-economic system of the OECS, each of which creates benefits and challenges for regional regulation within the OECS region.

### **6.2.1 Informal institutions in the Organization of Eastern Caribbean States**

The following informal institutions were deemed important for our investigation of regional regulation in the OECS; a strong culture of incumbent dominance, commitments to international organizations and competition as a value in the OECS.

The telecom industry in the OECS has a long history characterized by a dominant operator. The provision of telecom services was ensured by C&W who enjoyed a legal monopoly in all markets until 2000. C&W was exempted from private company law provisions, but was subject to restrictions on the range, the amount and the prices it charged for services it provided. The structure and level of prices were regulated by the respective national governments of the OECS to meet social goals and constraints on rate of returns and universal service obligations. In some islands, the scope of C&W's monopoly covered fixed voice and mobile services, infrastructure, data and value added services, Internet and satellite services. In some instances where its licenses were terminated, the Eastern Caribbean governments were obligated to buy back its assets, creating a costly disincentive for these governments to interfere with C&W's private monopoly.

By 2000 the OECS authority was dissatisfied with C&W and the services it provided. For example, the governments held minimal regulatory powers while C&W enjoyed the key regulatory powers that should typically have been invested in a regulator. Vague, ambitious and outdated telecom policies and licenses agreements were prevalent throughout the islands. The joint venture arrangements between C&W and the states of Grenada, Dominica and St Kitts and Nevis were inconsistent and confusing for all participants. The state governments only received small returns in

terms of royalties, license fees, and dividend payments for joint venture agreements including the use of radio spectrum, the payment of customs duties and taxes, and the use of government property and land. In one instance C&W's monopoly extended until 2020, in the case of Dominica. Finally C&W is a privately owned company with none of the OECS states holding shares in it.

Dissatisfaction with the C&W monopoly strongly influenced the Island State governments to start to look for ways of introducing competition in the telecom market by 2000. High ideological and political value had been attached to competition and to establishing pro-competitive regulations. The credibility of this commitment was further underscored by the OECS obtaining a World Bank loan to establish competition in their telecom markets. The decision to develop a single internal competitive telecom market was seen as an important step towards regional economic integration of their economies, among which telecom, would bring about economies of scale and was expected to provide better access to capital, i.e. to World Bank loans.

The OECS authority's commitments to the World Bank allowed the OECS states to access World Bank expertise and to obtain international support for their reform efforts. Additionally this access allowed the OECS states to at least try and match the expertise and experience of C&W especially during crucial negotiations regarding autonomy and reducing monopoly within the telecom sector. In many respects the World Bank loan provided the OECS authority with the confidence to embark upon aggressive pro-competition reforms. The OECS states had to repay the World Bank loans and this could best be done by using real reform and development of the telecom sector. In this way the OECS could generate profits that could be used to make loan repayments.

In the case of the OECS, those creating a single internal market for telecom could build on the close cooperation already existing amongst the OECS for example, in banking, common central bank, in the field of sport, i.e. regional cricket teams, and the field of law i.e. with a regional Supreme Court. The trust that had been generated with these projects was easily brought to bear on the OECS telecom project. It was therefore relatively easy for the national governments to delegate control of a multi-state authority like the OECS in the form of a treaty. In the Treaty a joint commitment was made to repay the World Bank loan.

### **6.2.2 Technology in the Organization of Eastern Caribbean States**

The following technology issues were deemed important for our investigation of regional regulation in the OECS; the modernization of C&W prior to new entry, the deployment of GSM as an alternative technology and the ability of C&W to "capture" the new GSM technologies.

One of the peculiarities of the telecom technological design within the OECS was the historical blanket, exclusivity granted to C&W. This effectively meant that all future telecom services would automatically fall under its monopoly. C&W used its monopoly rights to "future" proof its licenses from all technological developments (Schwartz, Satola and Bustani 2005). This in addition to the broad scope of its monopoly rights across all vertical and horizontal telecom markets and technologies, adversely affected telecom technology development in the region. In the period leading up to 2000, telecom customers, in particular were becoming increasingly dissatisfied with the antiquated technologies offered by C&W. Given the combination of these factors and the



overall bad performance of the telecom sector in the area, five members of the OECS<sup>60</sup> embarked upon a program of market liberalization.

Before the introduction of competition C&W had essentially extended its monopoly rights over all technology innovations within the telecom sector. C&W had the right to consider all present and future services as part of its monopoly rights. This led to antiquated telecom technology and little technological innovation.

The OECS 2000 telecom framework provided no specific technological blueprint but it did call for the promotion of a modern telecom network system. It was left to the market participants to decide which technologies to use. In the case of the mobile market the competition for the mobile market was essentially between the Time Division Multiple Access (TDMA) technology of C&W, as the incumbent and Global System for Mobile Communications (GSM) used by the new entrants.

The deployment of alternative technologies proved to be a decisive move in the Caribbean. In 2001 new entrants like Digicel decided to deploy the newer GSM technology rather than to use the TDMA technology offered by the incumbent C&W. The introduction of alternative technology coupled with aggressive pricing and promotion resulted in C&W having to cut its prices by a tenth for mobile handsets. Within a relatively short period the new entrant broke the monopoly that C&W held over the mobile market. While C&W did later deploy GSM technology in tandem with its TDMA technology it was not able to regain its competitive advantage. Digicel to date (2005) has over 1.3 million cellular phone customers, twice as many as C&W (Jamaica Observer 2005).

The period leading up to the liberalization of the telecom market in 2000 saw C&W embark upon an aggressive modernization program. This included the deployment of submarine optic cables and satellite to provide digital connections to the OECS. C&W was thus able to completely digitize its network and enjoy the last fruits of its monopoly.

### **6.2.3 Formal institutions in the Organization of Eastern Caribbean States**

The following formal institutions were deemed important for our investigation of regional regulation in the OECS; the OECS policy framework, liberalizing telecom markets, creating the ECTEL to act as a regional regulator and harmonizing regulatory principles across the OECS.

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<sup>60</sup> The five island states were Dominica, Grenada, St Kitts and Nevis, St Lucia and St Vincent and the Grenadines.

### **6.2.3.1 Organization of Eastern Caribbean States policy framework**

On 5 May 2000 the OECS heads of states of Dominica, Grenada, St Kitts and Nevis, St Lucia and St Vincent and the Grenadines signed the ECTEL treaty. The need for a harmonized approach to the regional management of the telecom sector is recognized in this treaty. The purpose of the treaty, defined in article 4 of the treaty, is to promote competition in telecom, harmonize policies on a regional level, promote universal service, fair pricing and the use of cost-based pricing methods by telecom providers. The authors of the treaty sought to achieve these objectives by establishing a regulatory body called the Eastern Caribbean Telecommunications Authority (ECTEL). The ECTEL was created to deal with telecom liberalization throughout the 9 member states and was mandated to act on behalf of the heads of the member states. This, the ECTEL was required to harmonize and advise the individual National Telecommunications Regulatory Commissions (NTRCs) of its member states on matters concerning telecom sector liberalization, and to promote collaboration and coordination within the ECTEL. The NTRCs were expected to take all the appropriate measures for ensuring implementation of the policy and recommendations of the ECTEL. The structure of the ECTEL was defined in the treaty of which the key three institutions are the council of ministers, board of directors and a directorate.

The ECTEL was expected to produce the telecommunications bill that could be transposed into national legislation to become the telecommunications act for each of the member states. The telecom acts were passed in the ECTEL states to provide a new legal telecom framework for the members that could be used as the basis for liberalizing the telecom sector in the ECTEL area. From the viewpoint of delegation of responsibility, the treaty was significant since it served to legalize the act of delegation. This specific objectives of the treaty included ensuring market liberalization and competition in the telecom sector, ensuring harmonization of policies in the region and promoting regulatory practices in line with the ECTEL and thus ensuring fair pricing, by the use of cost-based pricing methods for end users.

The telecommunications bill and the subsequent transposed telecom acts in the member states were also designed to create the NTRCs as the means by which the objectives of the act would be fulfilled. The NTRCs were established subject to the direction and control of the minister responsible for telecom, through the ECTEL states. The minister was empowered to nominate five commissioners to serve on the NTRC. Lastly, the state acts made provisions for a number of regulations to be published notably the Licensing & Authorization Regulation act of 2002 and Tariff Regulation act of 2002.

### **6.2.3.2 Liberalizing telecom markets in the Organization of Eastern Caribbean States**

In the OECS the move from monopoly to competition was characterized by a series of negotiated agreements between the incumbent and the OECS authority which culminated in the simultaneous opening up of fixed and mobile markets across all the islands.

#### **6.2.3.2.1 Negotiated agreements between Cable and Wireless and the Organization of Eastern Caribbean States Authority**

The development of the OECS telecom policy framework can only be understood in the light of the binding agreements made between the incumbent C&W and the OECS states. To date (2006) three agreements (2001, 2002, and 2004) have been made. The agreements are significant, since they operationalized the act of delegation and enabled the ECTEL to act as an official body. The first agreement (2001) called the Memorandum of Understanding (MOU) resulted in the partial liberalization of the telecom sector. The second agreement (2002) called the Amendment to the MOU, effectively ended the partial liberalization of the telecom sector and moved the telecom sector into full competition. The third agreement (2004) called the Price Cap Implementation Plan set the foundation for an incentive based rate regime for all participating states.

The first agreement, 7th April 2001, followed the completion of the reform project culminating in the signing of the treaty, the formulation of new model legislation and a means by which harmonized regulations could be promulgated. The agreements were intended to ensure a smooth transition to a fully liberalized telecom competitive sector which would have far reaching consequences for the exclusivity of C&W's license rights and its monopoly in the sector. The agreement contained key resolutions with respect to liberalization. First, the telecom sector would be liberalized on a phased basis. Phase 1 would begin on 1 April 2001 and would last for no less than 12 months and no longer than 18 months. Under phase 1, the following services would be licensed: domestic mobile network operations, resale of international switched minutes, Very Small Aperture Terminal (VSAT) for call centres and Internet services provision. In essence Phase 1 of the agreement was directed towards C&W's network. Another provision dealt with the development of joint work groups comprising representatives from the OECS and C&W. One of the key groups was the tariff and rebalancing group. A further provision was the granting of new non-exclusive operating licenses for C&W to provide the same network and services as provided by the company at the time the agreement was signed. Finally, the member states had to amend their telecommunications acts to ensure that C&W's existing licenses did not expire before 30 September 2001.

The second agreement of 20th May 2002 was considered to be a follow up to the MOU. Negotiations within the working group on tariffs had broken down and the OECS ministers spearheaded a new agreement with C&W. A key aspect of this agreement was the annex F, which set out the pricing rules to be adopted and provided for adjustments in the rates and tariffs charged by C&W for selected services. The agreement specified a new annex F for C&W's fixed license. While the second agreement contemplated with defining a process to develop price cap regulation, no guidance was provided as to how this was to be accomplished. The fall back provision provided in annex F was its most critical component. In the event of the ECTEL being unable to implement a

price cap plan this mechanism permitted an annual increases of up to 20% for certain services including line rentals, local call charges, fixed to mobile charges and connection charges. A principal output of the second agreement was an interim pricing mechanism which provided for transitional rates and pricing, effective until the implementation of a price cap regime to be brought in on the 1 March 2003.

The third agreement of 30 July 2004, was entered into during a time of key judicial reviews. First, the various court cases arriving from this were resolved between C&W and the ECTEL all in C&W's favor. Second there was an ongoing jurisdiction proceeding in Dominica to establish the rights of the NTRCs to regulate C&W's dominance in telecom services. Third, the dominance proceedings with regards to the ECTEL services were still in force.

### **6.2.3.3 Granting access to competitive operators in the Organization of Eastern Caribbean States**

The granting of access to competitive operators was tightly managed in the sense that the initial number of licenses (19 in total) was awarded by the OECS Authority using an administrative procedure. A dual licensing process was used to grant licenses. Under the new policy framework the telecom operators are subject to a rigorous licensing process involving the ECTEL and the NTRCs. New applicants are expected to request authorization to provide telecom services from the NTRCs of the island in which it wishes to operate. This application is then forwarded to the ECTEL who makes recommendations that are passed back to the relevant NTRC, if they are positive, the telecom minister of the island then awards the license. The initial number of network operators licensed to establish and operate network services was 19 in December 2003. The number of operators varies across the ECTEL states and includes 5 in Dominica, 4 in Grenada, 3 in St Kitts, St Lucia and St Vincent.

The major telecom competitors in the region are the incumbent, Cable & Wireless West Indies and Digicel. Cable and Wireless has dominance in the fixed markets while new entrants like Digicel have increased their presence in mobile and broadband. Digicel, which operates in seven states, including Aruba, Barbados, The Cayman Islands, Grenada, Jamaica, St. Lucia, St. Vincent and the Grenadines is the largest GSM mobile operator in the region with an average market share of 60%. Digicel is currently planning to extend its footprint to other Caribbean states and is currently (2006) one of five operators involved in a telecom license selection process in Trinidad and Tobago.

#### **6.2.3.3.1 Number of licenses granted in Eastern Caribbean Telecommunication Authority countries**

The awarding of initial licenses was preceded by a debate among the ECTEL states on the number of licenses that could be issued.<sup>61</sup> It was argued that limitations existed regarding the allocation of sufficient frequencies for spectrum dependent applications. Operators that wanted to invest argued that the number of licenses awarded should be limited to assure a suitable return on their significant capital investment. Due to the size of the market it was considered necessary to limit the number of individual licenses granted for fixed and cellular services in each member state. According to an impact assessment carried out on behalf of the OECS Authority it was considered prudent to limit the number of individual licenses to provide fixed and mobile services granted in each country. The ECTEL used an administrative procedure to limit the number of license granted.

The Council of Ministers (COM) agreed to consider all interested parties and provided a deadline before which they could apply for licenses, 30 January 2002. By the 30 January the COM had received 34 applications for individual licenses, 27 for class licenses and 18 for frequency allocation. Evaluations were conducted by the ECTEL for services falling under individual licenses and the short list of successful applicants was approved by the ECTEL Board of Directors (EBOD). The final recommendations for the awarding of licenses were made by the COM, in all 19 licenses were issued to operators in the five member states.

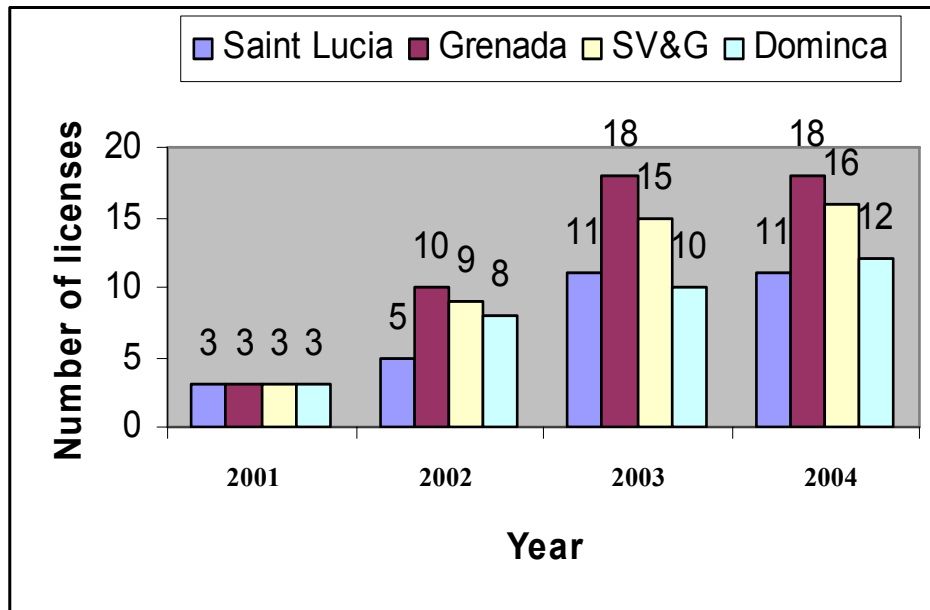
C&W, the incumbent was granted licenses in all member states in 2001, this was significant as it served to eliminate contention with C&W. When the new framework of 2000 was introduced C&W was deemed to have operating licenses. C&W was therefore the first to receive its licenses while all subsequent new entrant applicants were subjected to the new licensing process. In total 14 new entrants were granted licenses to provide fixed and mobile services. Since the liberalization of the telecom sector (2000) there have been over 128 new applications for the varied individual and class licenses.

In our case study only licenses relating to network infrastructure were considered. In terms of general licenses in 2001 and with the advent of the new system 12 licenses were issued, 3 licenses were granted for each island, to C&W for a public fixed, mobile fixed and Internet network and services. Awarding licenses to new entrants proceed at varying paces on each of the 5 islands of the ECTEL. The process started slow in 2002 and reached its peak in 2003. The only new license to be awarded in 2004 was in Grenada.

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<sup>61</sup> St Lucia Annual Report 2003

Figure 6.2: Individual licenses granted (2001 – 2004)<sup>62</sup>



#### 6.2.3.4 Creating the Eastern Caribbean Telecommunication Authority as a regional regulator

The opening up of the market in the OECS was accompanied by the simultaneous setting up of a regional regulator (in St Lucia) and national regulators on each of the other islands. We will now discuss the emergence of the ECTEL before turning to a discussion of its stated aims and objectives.

##### 6.2.3.4.1 Emergence of the Eastern Caribbean Telecommunications Authority

The ECTEL emerged as a top down donor funded World Bank sponsored initiative. The ECTEL was initially conceived in the OECS telecom project, created by the ECTEL treaty and inducted in subsequent acts and agreements.

The idea to establish a regional regulatory authority and the geographical area evolved from the OECS Telecom Reform Project (World Bank sponsored 1998<sup>63</sup>). The five OECS of the contracting

<sup>62</sup> The data from two islands were not available for incorporation into the graph at the time of writing (2006).

states negotiated and signed a project agreement for a loan of US\$6 million with the World Bank, complemented by US\$4 million counterpart funding from the participating states. The loan was divided equally between the participating states and a separate project agreement was signed to give the OECS Secretariat administrative responsibility for the project administration.

A key driver for creating the ECTEL was the need to strengthen the capacity of the member states to negotiate with the incumbent operator. While the position of the OECS had always been to negotiate with C&W as a group, the creation of a regional body would enable the member states to do so more effectively, particularly on the issue of seeking a common date for termination of existing C&W licenses. Member states had hoped to do this in such a way that C&W would not seek compensation for the loss of its exclusive rights. A second driver was the need to address regulatory matters within the OECS. This ranged from reforming outdated laws, licenses and agreements to terminating the exclusive provision of all main services by the incumbent operator C&W. Other major issues included reducing unbalanced profits, which were not cost based, which promoted excessive profit margins and the adverse effects of monopoly provision like a failure to introduce new services and improved quality of services provided.

The OECS telecom sector reform project became effective on 10th October 1998, and its offices are located in Castries, St Lucia. The objective of the project was to introduce pro-competition reforms in the telecom sector and increase the supply of informatics-related skills in the 5 OECS World Bank supported countries. The aim of the project was to establish an independent regional regulatory authority within two years, and to pass new sector legislations in each country within the three years of project effectiveness. A key component of the project was modernization of the telecom policy framework. Deliverables included a framework to facilitate sectoral reform in the form of changes in regulation, designing new telecom legislation, establishing a coherent licensing regime and an appropriate regional regulatory authority. The most critical function of the project management unit was to transform itself into the new regulatory body. The establishment of this new body was intended to enhance financial management processes and internal controls within the area. This would facilitate the transition of oversight from the OECS Secretariat to the new ECTEL governance structure. Four areas of activities were undertaken and mandated by the OECS Authority; development of the policy framework and regulatory instruments, spectrum management, cost analysis and development of tariff policy and technical assessment of the network.

The project was unique in the sense that 5 independent states would give up some independence to establish a regional regulatory body. The organization was established by a treaty signed in St. George's, Grenada on 4th May 2000, the directorate, or secretariat, is located in Castries, Saint Lucia.

#### **6.2.3.5 Aims and objectives of the Eastern Caribbean Telecommunications Authority**

The ECTEL's aims and objectives are contained in the treaty, signed on 5 May 2000 by the OECS member states of Dominica, Grenada, St Kitts & Nevis, St. Lucia and St Vincent & the Grenadines.

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<sup>63</sup> International Bank for Reconstruction and Development (IBRD) and International Development Association (IDA).

The treaty clearly defines and stipulates the ECTEL's purpose, functions and powers. Essentially the ECTEL is expected to harmonize and advise the individual NTRCs in its member states.

In terms of functions<sup>64</sup> the ECTEL is responsible for:

- harmonizing and coordinating the approach (policies) to telecom in its member states
- managing and regulating telecom or radio spectrum
- ensuring a competitive environment for telecom services
- working towards the provision of affordable, modern, efficient, competitive and universally available telecom services to the people of its member states
- advising NTRCs and governments on matters relating to telecom and spectrum including regional policy, types of telecom services, licensing, fees, pricing and management and provision of universal service

Each of the member states agreed to collaborate and coordinate with each other and with the ECTEL to take all the appropriate measures for ensuring the implementation of the ECTEL policy and recommendations and to finance the efficient operation of the ECTEL.

#### **6.2.3.5.1 The Eastern Caribbean Telecommunications Authority's system of governance**

The ECTEL enjoys discretionary capacity when carrying out its function of advising member NTRCs, managing regional radio spectrum and recommending regional policy, etc. The decisions made by the ECTEL are not contingent on approval by the OECS authority or the NTRCs of the participating member states.

The OECS Authority exercises control over the ECTEL mainly through actively and formally monitoring the ECTEL's activities. The procedures and mechanisms that the OECS has instituted are identified in typical principal agent relations.

The Eastern Caribbean Board is active in the day-to-day activities of the ECTEL. In order for the Board to discharge its duties some members are housed in the same building as the ECTEL managing director and support staff. In a sense the board representatives with the managing director sets the ECTEL agenda and work pursuant to the agenda. The Board guides the operations of the Directorate for the Council on Ministers. Board members are nominated from representative states while the chair is rotated annually.

In terms of Article 9 the Directorate is responsible for the day-to-day management of the ECTEL. Responsibility includes making recommendations for, and in relation to, the issues of licenses and frequency authorization, the management of the ECTEL fund, etc. Actual Accounting for the ECTEL expenses is overseen by the Managing Director and approved by the Council of Ministers. The operations of the ECTEL are funded through an ECTEL fund. The ECTEL also receives revenues in the form of payments made with respect to the management of spectrum.

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<sup>64</sup> See Appendix for excerpts from the Treaty, Article 4, 5.



The ECTEL Directorate is headed up by a Managing Director who is assisted in the day-to-day running of office by his management team and support staff. The Managing Director was part of the original project management unit team that implemented the initial project and became the managing director of the ECTEL upon the satisfactory transition from the telecom project unit under the OECS Secretariat to the management of the ECTEL.

#### **6.2.3.6 Harmonizing regulatory principles across the Organization of Eastern Caribbean States**

One of the key deliverables by the ECTEL was a set of regulatory best practices called regulations. These policy documents contained high level regulatory principles intended to assist the national regulators to implement their regional policy frameworks. The NTRCs were expected to comply with these regulations and to formulate their own methods of implementation to achieve the espoused regulatory principles. Here two such regulations are discussed, licensing and tariffs.

##### **6.2.3.6.1 The regulation on Licensing**

Under the new policy framework operators are subject to a rigorous licensing process that involves the participation of the ECTEL and the respective NTRCs. New applicants are expected to request authorization to provide telecom services from the regulatory authority of the island where it wishes to operate. The application is forwarded to the ECTEL which makes a recommendation. The telecom Minister on the island in question awards the license. In the case of the OECS the Ministers discretion not to approve a license is limited to procedural matters regarding the selection and evaluation process.

In the OECS case both the incumbent operator (C&W) and the new entrants were issued operating licenses. The incumbent received its licenses outside of the competitive selection process used to select new entrants. In total, four license categories were awarded in the OECS, see the Telecommunications Act 2000. These categories range from individual licenses, general network services; class licenses, ranging from A - values added services, B – various radio licenses and C-type approval and wiring; frequency authorization licenses, in addition to either individual or class license; and special licenses, emergency licenses. For purposes of our case study we examined individual licenses and class A license.

The OECS approach envisaged concurrent processes with regards to the issuing of licenses. Licensing is considered to be a joint competency showed between the NTRCs and the ECTEL. In this relationship, ECTEL provides the overall guidance and support to the NTRCs<sup>65</sup>. The dual licensing process consisted of different steps. First, applicants apply for licenses in the local NTRC offices, on the island in which applicant hopes to operate. Second, the national regulator authority forwards the applications to the ECTEL office in St Lucia. Third, the ECTEL evaluates the request and make a recommendation on whether to award license or not. Lastly, the Minister of the respective island awards the license or does not, based on the ECTEL's recommendation. The

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<sup>65</sup> See ECTEL's Guidance Notes on the application for a telecommunications license (revised September 11<sup>th</sup> 2002).

ECTEL retains the responsibility for renewing the license and is responsible for monitoring and enforcing compliance with license conditions.

The ECTEL licensing procedure provides a local one-stop shop for all applicants. Local as well as transnational operators are obligated to apply for licenses in each of the islands in which they wish to operate. Consistency seems to be applied at the regional level since all applications are forwarded to the ECTEL for consideration and review. The approach also seems to harmonize the license fees for all the ECTEL members. The application fees for mobile public, fixed public and Internet services are the same for each of the islands. The approach also affords flexibility in allowing islands to advance national interests while at the same time allowing the OECS to advance regional interests. Operators are assured of consistency in practice, the regulators draw from regional expertise and the ECTEL draws on national expertise.

#### **6.2.3.6.2 The regulation on Tariffs**

In the case of the OECS the regulation of tariffs includes the implementation of a new price cap plan. This became the basis for much litigation within the context of the liberalization process in the OECS. For example C&W would evoke litigation against 4 of the 5 NTRCs and in all of the cases the courts decided in favor of C&W.

The importance of regulating tariffs was identified in all initial discussions and deliberations. As early as 1998 the World Bank Reform Project identified a need to reform tariffs in the region. In the World Bank Project Report (No PID5165) it was noted that the prices charged by the incumbent monopolies were in excess of those prices in states with sector competition. Two of the three performance indicators used to assess the effectiveness of the project were, competitive prices and the development of cost-orientated methodologies for pricing telecom services. The ECTEL treaty document (2000) identified as one of the ECTEL's purposes the need "to promote fair pricing and the use of cost-based pricing methods by telecommunications providers in the Contracting States." (Article 4.e). Another of the ECTEL's function was stated as: "to recommend a regional cost-based pricing regime for implementation by each contracting State". The MOU 2001 made provision for the creation of a tariff and rebalancing working group, comprised of representatives from C&W and the OECS team. The working group was required to negotiate with a view to arriving at an amicable termination of existing C&W licenses in the respective member states. The terms of references included determining appropriate tariffs and making recommendations with respect to setting initial tariffs, and reviewing existing rates and proposals for rebalancing. In terms of methodology, the group was expected to make decisions by consensus. Due to a conflict of interest between C&W and the OECS members, negotiations within the group eventually broke down. The 29th May agreement (2002) between the OECS and C&W resulted in an interim pricing mechanism, which provided transitional rates, effective until the implementation of a price cap regime. A price cap regimes was expected to be in place by 1 March 2003. After which C&W would be entitled to raise local rates by a maximum of 20% per annum.

In the negotiated price cap plan residential access lines rates are specified while business access lines rates can only increase by inflation in any given year. The remaining regulated services must be reduced by a productivity factor of 2.5 percent per year, less inflation. International and mobile

services were not included in the price cap as they were considered to be sufficiently competitive and therefore not to require regulation. The price cap plan also included concessions of an estimated US\$7.5 million for operators over the first two years of the price cap plan. These took the form of reductions in fixed to fixed national call rates, fixed to mobile national calling rates, and the inclusion of a significant number of free fixed to fixed national calling minutes with fixed C&W residential monthly metered rentals (the ECTEL and the World Bank 2004).

This approach to tariffs reduced the cost of the available telecom services, particularly in the long distance and cellular markets. For example the average price per call from the region to the USA has fallen by more than 70% since the start of the liberalization process. In 2000 calls to the US from the region averaged EC\$ 3.25 per minute compared with EC\$ .90 per minute today. According to the ECTEL a further anticipated benefit of the new price cap plan<sup>66</sup> will be to provide a significant reduction in costs for C&W fixed line consumers.

**Table 6.3: The Eastern Caribbean Telecommunications Authority price plan**

	<b>1 January 2005</b>	<b>31 December 2006</b>
Local calls (peak period)	.09 cents per min	.07 cents per minute
Local calls (off peak period)	.07 cents per min	.05 cents per min
Local calls (weekends)	.06 cents per min	.05 cents per min

It is proposed that off peak and weekend rates would further decrease to 4 cents per minute on 1 January 2006. With effect from 1 January 2005 residential fixed customers were to receive 60 free minutes of local fixed to fixed calls after 8pm in the evening and during weekends. The new agreements, however, came at a cost. A full price cap regime would only become fully operational in 2006. So although the ECTEL succeeded in obtaining regulatory harmonization with regards to no more increases, the ECTEL failed in their quest to protect consumers and other telecom providers who must rely on C&W for non-cost based pricing. The ECTEL have therefore failed in its key role of facilitating the provision of affordable telecom services and in its objective of providing cost based regulation to C&W.

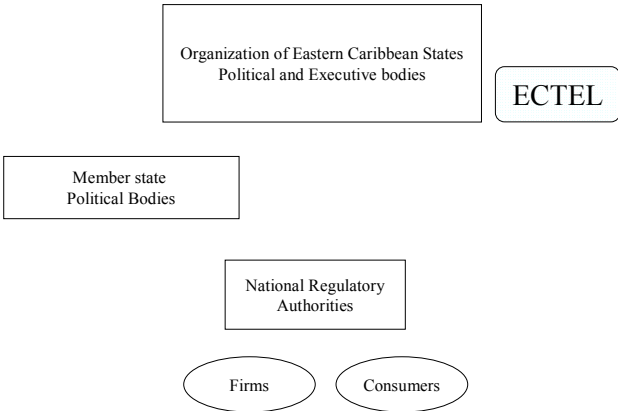
#### **6.2.4 Institutional arrangements in the Organization of Eastern Caribbean States**

The following public institutional arrangements were deemed important for our investigation of regional regulation in the OECS; the regulatory process and the distribution of competencies across two levels, national and regional.

In Figure 6.3 we show the stakeholders involved in the OECS; the executive political bodies, the political bodies of the respective member countries, regional organizations of telecom regulators, NTRCs and national competition authorities and firms and consumers (telecom market).

<sup>66</sup> ECTEL negotiated the proposed PCP based on its analysis of current cost data rather than on past pricing data.

**Figure 6.3: Public institutional arrangements in the Organization of Eastern Caribbean States**



**6.2.4.1 The process of regulatory decision-making in the Organization of Eastern Caribbean States**

Broadly speaking the national ministers adopted regulatory principles on a regional level, which they were expected to transpose into national legislation. ECTEL and NTRCs were expected to implement all legislation while the Eastern Caribbean Supreme Court (ECSC) and national courts were expected to enforce all legislation. This is a hybrid model in the sense that it is neither purely governmental nor purely market driven. Government provides the formal institutions, i.e. policy framework and model regulations, and the supporting structures, while firms are allowed to negotiate commercial contracts, for example, interconnection terms, conditions and costs, between themselves pursuant to these formal institutions.

#### **6.2.4.1.1 Adoption of telecom regulation in the Organization of Eastern Caribbean States**

The OECS<sup>67</sup> telecom policy was formulated by the OECS Authority. The OECS Authority consists of the Prime Ministers and Chief Ministers of the constituent Islands and is the highest decision-making body of the Organization.<sup>68</sup> The process was initiated by the Heads of Government and coordinated by the Secretariat.<sup>69</sup> The policy outcomes are binding for participating member states; examples of policy outcomes include the ECTEL Treaty, the Telecommunications Bill, and the three agreements between the OECS and C&W.

Member states are responsible for transposing regional model policies and regulations into national legislation. National governments transpose regional legislation into national laws through their respective national regulatory processes, national parliaments, committees, ministries, government, etc. Regional policy is considered law only when it has been transposed into national legislation in the member states. Policies that have been transposed include the Telecom Bill and regulatory instruments like the ECTEL decisions regarding price cap regulation and numbering.

#### **6.2.4.1.2 Implementation of telecom regulation in the Organization of Eastern Caribbean States**

The national telecommunications regulatory commissions (NTRC) are sector specific regulators that were established under the Telecommunication Bill (2000) to regulate and maintain the development of the telecommunications sector of the member states. These authorities were created in 2000 as the key telecom implementation agents. Their functions and powers are stated in their local Telecommunication acts and can be summarized into the following broad categories; sector regulation, sector administration of policy, especially with respect to licensing; revenue collection and management, collecting fees and tariffs; adjudication, as a tribunal, and advisory with respect to the Minister.

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<sup>67</sup> OECS was created by Treaty in 1981 when 7 Eastern Caribbean countries agreed promote (co-operation, unity and solidarity) harmonize policies and undertake economic integration among the member states. In 1991 the Heads of Government agreed to the creation of an OECS single market. Efforts had been directed at removing barriers to free movements of goods, service labor and capital, harmonizing macroeconomic policies and to accelerating the economic development of the region. At the 34<sup>th</sup> meeting of OECS Heads of Government (July 2001) a decision was made to deepen economic integration by creating an economic union.

<sup>68</sup> They direct the work of the Organization; meet twice yearly and the chair changes every year

<sup>69</sup> Working groups may be created (as was the case with the OECS Telecom Reform Project).

#### **6.2.4.1.3 Control of telecom regulation in the Organization of Eastern Caribbean States**

Telecom policies that have been formulated by the OECS and transposed into national legislation are enforced by the NTRCs and the national courts. In the case of the OECS enforcement of telecom matters is also done through a regional judiciary agency, the Eastern Caribbean Supreme Court (ECSC) which was established in 1967 by the West Indies Associated States Supreme Court.<sup>70</sup> It has unlimited jurisdiction in the Member States<sup>71</sup> to make rules of court for regulating the practice and procedures of the Court of Appeal and the High Court. The national legislations in the states served by the Court confer rule-making authority on the Chief Justice in relation to matters outside the Court of Appeal and the High Court. To date national courts had made numerous rulings on matters of dispute between the ECTEL and C&W.

The institutional structures of the telecom sector can be considered to be innovative since the creation of the NTRCs was preceded by the functioning of a regional regulator. The ECTEL Treaty created the NTRCs and legitimized the ECTEL simultaneously. At the time the ECTEL was functioning in the form of a regulatory unit for the World Bank project. This situation is unique to regional regulation. In other regions, national regulators have been set up first with regional regulators growing out of cooperation between NRA's. In the case of the OECS the NTRCs were set up with the express view of relating to the regional organization and being supported by it. In this regard the ECTEL's decisions are to be considered important inputs to all the NTRC's decisions at a national level. The NTRCs often look to the ECTEL for guidance given its greater experience with regulatory matters, from the start there was a strong regional orientation in the region as opposed to national orientation.

#### **6.2.5 Actors in the Organization of the Eastern Caribbean States**

The following actor issues were deemed important for our investigation of regional regulation in the OECS; the interaction between incumbents and rivals, the interaction between governments and incumbents and the interaction between national and regional authorities.

National governments have espoused new values like competition, as opposed to monopoly, and articulated this position in formal rules with supporting structures, the behavior of the incumbent shows how difficult it will be to obtain these new values. The interactions incumbents and rivals have largely been predicated on the significant market power of the incumbent. The monopolistic mindset of C&W has been the cause of many problems in the region and considerable legal action on behalf of new entrants, national governments and the ECTEL.

With respect to new entrants C&W took the view that all new entrants were potential threats. Riding on its incumbent's strength C&W used tactics that caused it to be accused of anti-competitive practices like delaying interconnection agreements and flooding the markets with cell

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<sup>70</sup> It is a superior court of record for nine Member States, six independent namely, Antigua and Barbuda, Dominica, Grenada, St. Kitts-Nevis, St. Lucia, St. Vincent and the Grenadines and three British Overseas Territories namely, Anguilla, the British Virgin Islands and Montserrat.

<sup>71</sup> in accordance with the respective Supreme Court Acts. Section 17 of the Courts Order empowers the Chief Justice and two judges of the Supreme Court, selected by the Chief Justice,

phones prior to mobile entry. Dissatisfaction with C&W extended to the public at large, as evidenced by numerous public demonstrations and dumping of C&W hand sets, following the ECTEL's price increases.

With respect to the OECS authority, C&W opted to hinder the process of liberalization and resist the introduction of competition. In negotiations with the OECS, C&W managed to extract significant concessions in exchange for giving up long term exclusive licenses. C&W also successfully challenged many of the decisions made by the ECTEL and the NTRCs. More importantly, it managed to stall the public process of being declared a dominant service provider. The vindictive threats made by C&W in St Lucia illustrate its extraordinary dominance. In St Lucia, C&W threatened to pull out of the country within one month after the governments granted a VSAT license to a competitor. It required the intervention of the OECS Authority as a whole, and not just the St Lucia government to resolve the crisis. The OECS was able to improve matters by linking negotiations to the larger issue of reform in the OECS (Bousquet 2001). In addition, the information advantage C&W held on regarding its cost structures meant that the ECTEL could not implement a price cap regime as required by law, according to the ECTEL, C&W simply refused to provide accurate data.

Notwithstanding with deregulation the OECS authority increasingly delegated greater choice to the industry actors. With respect to conduct, the firms could decide what new technologies they would use and to negotiate interconnection agreements. With respect to pricing government would still set the formula by which firms would comply.

In general, within the OECS region, the regional structures like the OECS Authority, the ECTEL and the ECSC are perceived as credible by member countries. This can be seen from the effort made by national actors to participate in regional regulatory processes, especially in the working arrangements set up between national regulators and the ECTEL. The delegation of real powers to these organizations has served to enhance the credibility of the national government's commitments. At an international level the perceptions of the regions authorities towards international structures like the World Bank has been positive. The World Bank provided co-funding for the telecom sector reform activities and advisory services. The World Banks focus in the region had been primarily on encouraging the OECS Authority to create an enabling legal and regulatory environment to mobilize private capital and management within the telecom sector.

### **6.3 Analysis of technological socio-economic affects and regional regulation**

We will now explore the effects of the aforementioned technological socio-economic systems and regional regulation in the OECS. The effects of technological socio-economic systems on sector performance will be described according to our levels (informal and technology, formal, institutional arrangements and actors), mode of effect (direct or indirect) and mechanism of effect (enabling or constraining) competition, network growth and regulatory harmonization.

#### **6.3.1 Informal institutions in the Organization of the Eastern Caribbean States**

A strong culture of incumbent dominance, commitments to international organizations and competition as a value was noted within the OECS. Below we discuss the implications of this for regional regulation and its impact on sector performance within the OECS.

The prevailing presence of incumbent dominance created various problems for regional regulation. Many of the established policies and regulations developed by the ECTEL were simply not adhered to and circumvented by C&W. For example, C&W succeeded in stalling the process of being declared a dominant monopoly provider across all the islands of the OECS, such a decision would have granted the ECTEL and the NTRCs the power to regulate C&W as an incumbent of SMP. This tactic allowed C&W to avoid the more intrusive form of regulation reserved for those with significant market power in the telecom sector and it restricted the ECTEL's ability to regulate tariffs and interconnection more efficiently. At the time of writing (2006) the SMP process was stalled indefinitely.

Further inefficiencies resulting from C&W's strength, are to be found in the delaying tactics. C&W affected the overall costs of telephone calls for business and consumers across the OECS. These incidents highlight the limitations of governance systems as a means of addressing incumbent power in the telecom sector. The above serves to illustrate the effectiveness of regulation as a means to address the problem of SMP, it was undermined by the very problem, it was intended to address.

The regions commitment to international organizations created benefits for regional regulation. Reforms were achieved that would not have happened without support from the World Bank. The World Bank loans allowed the OECS states to access World Bank expertise and international support for its reform efforts. In addition the loans allowed the OECS states to use negotiators with experience that matched the expertise and experience of C&W, especially during the crucial liberalization negotiations. Obtaining of a loan rather than donor funding added an element of commitment on the part of the participating states to ensure that reforms were produced in the telecom sector. The states were obligated to repay the loans and were thus committed to real reform to sector development and to producing profits that could be used to repay the World Bank loan. Regulatory harmonization with respect to policy objectives and with its implementation across all islands was achieved.

The high political value attached by the OECS member states to competition created benefits for regional regulation. We believe this happened at a level over and above that might have happened without such a high political value being attached to the project. Market reform initiatives, like



market liberalization the setting up of the ECTEL and pro-competition regulations licensing access, price cap and interconnection were pursued aggressively. This in turn increased the number of operators and levels of competition present within the region, in mobile, extended mobile coverage and increased penetration rates. The overall impact of this effectiveness can be seen from the year on year annual sector growth, investment increases and growth in employment. See table 6.4 below for a summary of the effects of informal institutions in the OECS. The impact of informal institutions was assessed using three logical steps (EC 2005).

- Additionally, what has happened over and above what would have happened anyway?
- Displacement, what has not happened which would have happened in the absence of informal institutions?
- Effectiveness, did informal institutions produce the expected result?

**Table 6.4: Summary of informal institutions in the Organization of Eastern Caribbean States**

<b>Informal institutions</b>	<b>Implications on regional regulation</b>	<b>Mechanism</b>	<b>Impact on sector performance</b>
Culture of incumbent dominance	-	Stalled SMP process. Delayed introduction of price cap regime.	Effectiveness
Commitments to international organizations	+	Increased the OECS credibility. Harmonized reform approach.	Additionally Effectiveness
Competition as a value.	+	Increased competition in mobile. Increased mobile penetration.	Additionally

### **6.3.2 Technology in the Organization of Eastern Caribbean States**

The modernization of C&W's network prior to new entry, the deployment of GSM as an alternative technology and the ability of C&W to "capture" these new technologies were noted within the OECS. Below we discuss the implications of this for regional regulation and its impact on sector performance within the OECS.

The introduction of GSM by new entrants created benefits for regional regulation as it resulted in new service offerings and increased coverage. The introduction of GSM as an alternative technology would probably not have happened had C&W still enjoyed monopoly over technologies. GSM proved to be more reliable, with respect to service quality, than the TDMA technology offered by C&W. Customers therefore preferred the GSM technology to the TDMA technology offered by the incumbent. The impact of GSM on mobile growth was dramatic. Significantly, for the purpose

of competition the new entrants were able to capture market share and break the incumbent monopoly in mobile, even when the incumbent eventually deployed GSM technology, it was unable to capture market share. Its “capturing” of the rivals technology did not necessarily lead to increased market share. C&W was the first mobile provider but Digicel gained the first (technological) mover advantage with its use of GSM technology. To date (2006) Digicel has twice the number of mobile subscribers as the incumbent.

The decision by C&W to modernize its network prior to liberalization created both benefits and problems for regional regulation. It created benefits in the form of the significant investments made by C&W with the deployment of a modern digital network to replace the antiquated technologies used in the OECS by C&W. Perhaps this investment would have happened without the OECS Authority providing C&W with a period of exclusivity. C&W remains the largest investor in infrastructure and employment in the region. These advantages were countered by negative competition in certain markets after liberalization. New entrants did not find it viable to duplicate parts of the network, for example the optic rings around each of the islands. Here the cost of replicating C&W’s modern network was simply too high for new entrants. Investors seemed more interested in the more profitable mobile market which provides a shorter return on investments. As a result the markets for long distance and international calls remain essentially a C&W monopoly. This has also had implications for further competition in the mobile arena as mobile operators depend on C&W for interconnection and backhaul links. Overall it can be argued that the telecom liberalization policy has been effective in stimulating investment and modernizing the network in that there has been investment in the network which has been modernized. See Table 6.5 below for a summary of the effects of technology in the OECS region. The impact of technologies was assessed using three logical steps (EC 2005).

- Additionally, what has happened over and above what would have happened anyway?
- Displacement, what has not happened which would have happened in the absence of technologies?
- Effectiveness, did technologies produce the expected result?

**Table 6.5: Summary of technology in the Organization of Eastern Caribbean States**

<b>Technology</b>	<b>Implications on regional regulation</b>	<b>Mechanism</b>	<b>Impact on sector performance</b>
The modernization of C&W's network prior to new entry	+/-	Increased investment. Modernized network. Huge costs needed to compete limited competition.	Additionally Displacement
The deployment of GSM mobile technologies	+	Increased competition in mobile. Stimulated telephone growth. Lowered telephone prices for consumers	Additionally Effectiveness
The ability of C&W to "capture" GSM technologies	+	First technology mover advantage lost	Effectiveness

### **6.3.3 Formal institutions in the Organization of Eastern Caribbean States**

The regional regulatory objectives, market liberalization, the creation of a regional regulator and the harmonizing of regulatory principles were noted within the OECS. Below we discuss the implications of this for regional regulation and its impact on sector performance within the OECS.

The OECS regulatory objectives created a number of benefits for regional regulation. In the case of the OECS the promotion of competition, harmonizing policies on a regional level, universal service, fair pricing and the use of cost-based pricing methods by telecom providers were emphasized. The homogeneity of the region, economic growth, stages of reform, etc., meant that these issues were considered to be relevant by all the islands governments. Our case study shows that of all the above aims the question of how to bring about the use of cost-based pricing methods remains the most elusive.

The phased liberalizing of markets created benefits and challenges for regional regulation. The phased opening up of the market was intended to allow all the stakeholders, incumbent, new entrants, policymakers, adequate time to prepare for competition. However, it soon became evident that the policymakers and regulators were ill prepared for the opening up of the telecom market (sector). Many states had not set in place the relevant regulations as specified in the ECTEL Treaty and Bill. In addition many of the early regulatory decisions were successfully challenged by the incumbent C&W in court.

Nonetheless the simultaneous opening of the telecom markets across the OECS states was significant from the perspective of regulatory harmonization. It placed the five participating states on an equal footing with regards to dealing with regulation. In addition coordination of telecom

activities by the ECTEL was relatively easy as the region is not characterized by large economic disparities.

Market liberalization benefited sector performance. This was seen in the increase in the number of new entrants across all the OECS islands and in the levels of competition in mobile. Overall the OECS experienced year on year annual growth, increased investment and employment growth, after telecom market liberalization. In the case of the OECS it is easy to link these benefits directly to the reform efforts since it was the ECTEL that facilitated the licensing process that resulted in new entrants. These developments would probably not have happened in the absence of reform, given the conduct of the incumbent C&W.

The creation of the ECTEL as a regional regulator created benefits for regional regulation; C&W was compelled to negotiate with the ECTEL as a regional authority on regional matters, spectrum, numbering, etc. and to pursue individual terms and conditions with individual member states through the NTRCs. The ECTEL provided the means to collectively constrain (to an extent) the dominance of the C&W and to provoke it into investing in modern telecom technologies to the benefit of the region. It seems that this result would not have been achieved without the creation of a regional regulator with real powers, even though the course ‘pulled its teeth’ in the earlier stages of the liberalization process.

This increased the credibility of the ECTEL as an institution. This credibility can be seen from the willingness of member states to adopt, implement and enforce its decisions. In addition, the willingness of states to collaborate with each other and with the ECTEL to ensure the implementation of regional policy contributed towards more efficient regulation.

The specific harmonized regulations created benefits and problems for regional regulation. The regulation on licensing was a benefit since it resulted in the consistent application of access criteria by NTRCs. We found a high degree of harmonization of principles and method of implementation across the OECS for the licensing processes. The regulations regarding price cap, however, proved to be a challenging task for the ECTEL to implement. The process was marred by problems from the offset culminating in a collective agreement between the OECS states and C&W to delay the implementation of a price cap plan for an 18 month period in January 2006. See table 6.6 below for a summary of the effects of formal institutions in the OECS. The impact of formal institutions was assessed using three logical steps (EC 2005).

- Additionally, what has happened over and above what would have happened anyway?
- Displacement, what has not happened which would have happened in the absence of formal institutions?
- Effectiveness, did formal institutions produce the expected result?

**Table 6.6: Summary of formal institutions in the Organization of Eastern Caribbean States**

<b>Formal institutions</b>	<b>Implications on regional regulation</b>	<b>Mechanism</b>	<b>Impact on sector performance</b>
The regional regulatory objectives	+/-	Promotion of competition. Harmonizing of policies. Cost-based pricing methods remain elusive.	Additionally Displacement
Liberalizing markets	-/+	Unprepared. Increased levels of competition.	Displacement Additionally
Creating regional organizations of telecom regulators	+/-	Regulate regional market Unfair pricing remains unresolved	Additionally Displacement
Harmonizing regulatory principles	+/-	Licensing process Price cap failure	Effectiveness Displacement

#### **6.3.4 Institutional arrangements in the Organization of Eastern Caribbean States**

The distribution of competencies across two levels, national and regional was noted within the OECS. Below we discuss the implications of this for regional regulation and its impact on sector performance within the OECS.

The legality of the policy framework created benefits for regional regulation, it effectively meant that the OECS members were obligated to transpose regulations into national legislation, NTRCs, with support from the ECTEL, were expected to implement the regulations and the courts national and regional, and were expected to enforce them. The commitment of the OECS states to make and enforce national regulations; further enhanced regional regulation.

The setting up of a regional regulator (the ECTEL) created further benefits for regional regulation. Greater coordination became possible as the ECTEL worked alongside and in support of the national NTRCs. The delegation of functions such as spectrum management and numbering to the ECTEL rather than individual states meant that limited resources could be allocated in a more efficient manner. The decision to make licensing a dual competency meant that both regional interests and national interest could be advanced. Individual ministers could accept or reject the ECTEL's recommendation given their national market conditions. In general the expertise at national level was enhanced by advice and support from the ECTEL concerning regulatory matters like setting price caps, interconnection, etc.

The presence and participation of the judiciary, national and regional, as a regulatory tool created benefits and problems for regional regulation. The presence of a regional judiciary willing to act to

enforce, enhanced the regulatory situation in the sense that it provided a forum for debate when matters could not be resolved at the national level. The litigation between the incumbent C&W and the NTRCs provides ample evidence of this. In one case the Supreme Court served as a deterrent and as catalyst to negotiation. In one particular case C&W and the ECTEL opted to settle out of court rather than face a negative judgment, as such a judgment had the potential to impact the ECTEL's decisions and C&W's operations in other states. In this way the judiciary assisted in constraining the behavior of the incumbent while ensuring the consistent application of regional policies. However, the length of time it took to hear cases, acted as a constraint on regional effectiveness. See table 6.7 below for a summary of the effects of institutional arrangements in the OECS. The impact of institutional arrangements was assessed using three logical steps (EC 2005).

- Additionally, what has happened over and above what would have happened anyway?
- Displacement, what has not happened which would have happened in the absence of institutional arrangements?
- Effectiveness, did institutional arrangements produce the expected result?

**Table 6.7: Summary of institutional arrangements in the Organization of Eastern Caribbean States**

<b>Institutional arrangements</b>	<b>Implications on regional regulation</b>	<b>Mechanism</b>	<b>Impact on sector performance</b>
The actual regulatory process	-	Presence legally binding regional regulatory rules and procedure. Presence of supportive structures like regional courts.	Effectiveness
The distribution of competencies across two levels, national and regional	-/+	The ECTEL as regional regulator	Effectiveness

### **6.3.5 Actors in the Organization of Eastern Caribbean States**

The interaction between; C&W and new entrants, member states and the OECS Authority and C&W and the OECS states were noted within the OECS. Below we discuss the implications of this for regional regulation and its impact on sector performance within the OECS.

C&W's attitude of hostility towards its rivals created challenges for regional regulation. This resulted in high administrative costs for government, in terms of regulatory activities, and constrained industry growth, in terms of lost revenues. This was seen in the numerous negotiations between C&W and the government and court proceedings.

In some way the antagonism of the OECS towards C&W advanced the cause for regulatory regulation. The conflict with C&W literally drove the governments of the OECS to mount a

collective, rather than an individual, response to C&W. This resulted in the suspension of bilateral agreements and the making of three collective agreements between member states and C&W. While it did not deter individual member states from challenging C&W actions in their state, it did advance the regional reform program and the development of a regional market.

The relations between the OECS governments are based on trust as can be seen in the political will to give up a degree of self government and to commit to obtain and to repay a World Bank loan collectively was, however, not without some suspicion. In the discussion leading to the creation of the ECTEL the national governments insisted that its funding should go hand in hand with the setting up of national regulators.

In addition the relations between member states and the OECS Authority intensified the need for greater consistency of regulatory practices amongst the regulators, who were faced with an experienced incumbent, that was the dominant operator in all the member states and which had the will and power to exploit inconsistencies in regulatory behavior between OECS states.

The close working relationship with the World Bank created benefits for the OECS member states. First the World Bank provided the OECS states with access to telecom expertise on matters of regional regulation. When one considers what the OECS states were up against in terms of the entrenched dominance of C&W, the World Bank approach was the most logical approach to ensuring and supporting a liberalized telecom sector within the OECS region.

In addition the World Bank's support in the form of a loan was crucial for sector development. The OECS Members had a collective obligation to repay the loan, which meant unlocking sector growth using the instruments of aggressive reform. The subsequent policy framework, institutional structures and regulatory instruments were all geared towards sector development and towards producing market profits with which to pay off the World Bank loan. See table 6.8 below for a summary of the effects of actors in the OECS. The impact of actors was assessed using three logical steps (EC 2005).

- Additionally, what has happened over and above what would have happened anyway?
- Displacement, what has not happened which would have happened in the absence of actors?
- Effectiveness, did actors produce the expected result?

**Table 6.8: Summary of actors in the Organization Eastern Caribbean States**

<b>Actors</b>	<b>Implications on regional regulation</b>	<b>Mechanism</b>	<b>Impact on sector performance</b>
C&W and new entrants	-	Hostility	Displacement
Member states and OECS Authority	+	Limited mistrust	Effectiveness
C&W and the OECS countries	+/-	Antagonism	Displacement Effectiveness
Allowing industry actors greater choice	+/-	Contracting problems with interaction between incumbents and rivals.	Effectiveness

The technological socio-economic effects raised a number of important issues for regional regulation and its ability to coordinate economic activities in the OECS telecom sector. We found in our case study that in general the majority of the institutional effects created benefits for regional regulation that have largely enabled the development of a competitive telecom sector across the OECS.

#### **6.4 Regulatory issues raised in the Organization of Eastern Caribbean States**

Our case study also highlighted the underlying substantive regulatory issues in the OECS. We will now summarize these issues and comment on the way in which OECS policymakers and regulators have responded to them.

##### **6.4.1 The Organization of Eastern Caribbean States policy framework**

The OECS policy framework spelt out a clear policy for regional regulation. The ECTEL treaty of 2000 recognized the need for a harmonized approach to the management of telecom in the region. The purpose of the treaty, defined in article 4, was to promote competition in telecom, to harmonize policies at a regional level, to provide universal service, fair pricing and introduce the use of cost-based pricing methods by telecom providers. The regional policy framework was made legally binding on the participating OECS member states. Virtually all the OECSs perceived the framework to be relevant and cooperated with the ECTEL in its implementation. Where the framework has been implemented effectively the OECS experienced dramatic growth, where its penetration has been limited i.e. problems with cost-based pricing methods, growth has been limited for the state in question.

Perhaps a contributing factor to the OECSs difficulties in implementing the framework has been the relative inexperience of the ECTEL and the NTRCs in relation to the experiences of, and the information asymmetry in favor of C&W. Even with the support from the World Bank, this



information asymmetry served the interests of C&W. C&W was able to operate in a manner that allowed it to circumvent early regulatory objectives and use this regulation to its advantage.

#### **6.4.2 Regulatory institutional structure**

The OECS regulatory regime is characterized by the adoption of principles at the OECS level and by shared implementation and responsibilities for enforcement. In the OECS context this has taken the form of allocating tasks like spectrum management to the ECTEL and leaving most of the other tasks to the national NTRC, i.e. pricing and interconnection. Licensing, for example, has been allocated as a dual competency. While the commitment of the national governments to reform is credible this reliance on the member states and their NTRCs to implement and enforce regulatory policy has weakened regional effectiveness with respect to enforcement of liberalization measures. This was seen especially in the early stages of the regulatory reform process when the incumbent C&W was able to exploit the weaknesses within the system. Regulatory effectiveness has at times been compromised by the lack of procedural clarity inherent in the regulatory procedures and the time it took to enforce procedures. In addition the reliance on courts to enforce no compliance with regulations reduced flexibility and self regulation and cooperation.

#### **6.4.3 The role of the Eastern Caribbean Telecommunications Authority**

While the ECTEL has been promoted as the first “regional regulator”, in the OECS region in practice its function has been primarily directed towards supporting the NTRCs in their national tasks. In terms of fulfilling its regulatory objectives the ECTEL is perceived to have done well. This can be seen in the manner in which it has addressed regulatory harmonization, licensing process etc. in its management of radio spectrum; the provision of more affordable telecom services; and the extent to which it has advised the NTRCs and national governments on regional policy matters. In terms of stimulating competition, however, the ECTEL has been less effective. While levels of competition have increased in some markets, mobile in particular, it has remained virtually unchanged in others, i.e. fixed. To a large extent the ECTEL’s ability to bring about change was constrained by the problem of incumbent dominance. The manner in which it responded to C&W with respect to the SMP process and introducing a new price cap illustrates this. However on the evidence, it would seem that the benefits created by the work of the ECTEL far outweighed the problems created. As a regulatory organization it has facilitated credible and effective regional regulation.

#### **6.4.4 The role of National Telecommunications Regulatory Commissions**

In many respects the NTRCs have played a supportive role to the ECTEL. This was evident in the handling of the SMP process and price cap process. In terms of their objectives they have performed some tasks better than others. The pursuit of regulating the monopoly of the incumbent has been particularly challenging for the ECTEL. In disputes with C&W they did not fare well, litigation against 4 of the 5 NTRCs, was decided in favor of C&W. The NTRCs inability to address the issue of SMP is expected to further complicate the use of regulatory tools such as price regulation. Since no SMP has been determined it is not possible for the NTRCs to apply price regulation to the specific areas where monopoly power exists.

#### **6.4.5 Market power**

The dominance of the incumbent C&W in the OECS region was particularly problematic. In the case of the OECS the motivation to address the problem of market power was high given that C&W held a private monopoly. The case illustrates the problems created by incumbent dominance prior to reform, leading up to reform and after liberalization. The OECS approach was to radically change the rules of the game. This included formal changes like setting up a new policy framework, directed specifically towards developing competition, setting up new institutional structures to implement competition policies and to start incremental liberalization with a “shock” opening. In addition, from a governance perspective, the OECS opted to delegate real power to a regional regulator mandated to assist NTRCs in their dealing with the incumbents conduct.

In the case of the OECS its efforts were largely constrained by the strong culture of dominance and the strategies used by the incumbent C&W to dominate and hinder competition. The technology blunder made by C&W with its failures to introduce GSM technology until forced by rival Digicel to do so proved decisive for mobile telephony. Further competition was constrained by the inexperience of the ECTEL and the NTRCs in dealing with C&W. This allowed C&W to hinder the liberalization process, to provide barriers to new entrants and generally to undermined reform in the OECS.

#### **6.4.6 Licensing regulation**

The initial opening, using administrative procedures to award fixed and mobile licenses accounted for most of the licenses awarded. The subsequent process has been relatively slow as a result of the decision by the OECS Authority to distribute functions across two levels. The “dual competency” approach of licensing came at the expense of speed and efficiency. Some in the telecom sector have already complained about the length of time it takes new entrants to obtain a license. While this dual competency approach served a useful purpose during the early stages of regulatory reform, it is a barrier to competition rather than a means of facilitating competition. Thus while the OECS approach show some steps towards unifying licensing, the changes in technologies suggest that this approach will not suffice in the foreseeable future. Already in the EU, for example, licensing regimes have been replaced by simple registration i.e. new entrants inform regulators of their intention to enter the market, rather than requiring permission to do so.

#### **6.4.7 Price cap regulation**

The OECS had an extremely difficult time with price regulation during the initial reform of its telecom market. The OECS case shows the challenge that have to be faced when establishing a regional price cap regime. With 6 years of discussions, negotiations, and court cases all the parties concerned achieved was a decision to delay implementation of a price cap regime. This will have far reaching consequences for private institutional arrangements such as interconnection arrangements between firms.

Experience in the OECS has shown how asymmetry of information and negotiating power between a strong incumbent C&W and new entrants yields inefficient results. Once a price cap is

implemented, the ECTEL will need to reassess the situation for fixed and mobile and fixed-mobile convergence.

## **6.5 Conclusions**

In this study we explored how the OECS technological socio-economic system impacted regional regulation and how the OECS policymakers and regulators responded to the underlying substantive regulatory issues. Multiple data sources were used for the OECS case; including literature, the internet, statistics and interviews.

We commenced with a discussion of the technological socio-economic system in the OECS. We then described the culture of the dominant incumbents (mainly C&W), the culture of commitments to the World Bank in the region and value of competition as a strong driver. Under technology we discussed the modernization of C&W's network prior to entry, the deployment of GSM mobile technologies and the ability of C&W to capture these alternative technologies. Under formal institutions we discussed the OECS regulatory objectives, liberalizing markets, the creation of the ECTEL as a regional regulator and harmonizing licensing and price caps. Under institutional arrangements we discussed the regulatory process and the distribution of competencies across the ECTEL and member states. Under actors we discussed the interactions between C&W and new entrants, member states and the OECS Authority and between C&W and the OECS states.

We found that the technological socio-economic system described created benefits and challenges for regional regulation. We found that the majority of the institutional effects created benefits for regional regulation which have largely enabled the development of a competitive telecom sector across the OECS. In addition these institutional effects have raised a number of important issues for regional regulation and its use as a means to coordinate economic activities in the OECS telecom sector.

We concluded with a description of the underlying substantive regulatory issues in the OECS. The following regulatory issues were discussed: the OECS policy framework, the OECS institutional structure, the role of the ECTEL, the role of NTRCs, market power, licensing and price regulation. We paid particular attention to the way OECS policymakers and regulators responded to these issues.



## **7. Regional regulation as a new form of governance in the Southern African Development Community**

### **7.1 Introduction**

In the third of our three case studies, we describe and analyze early experiences of regional regulation as a new institution in the Southern African Development Community (SADC) and assess the implications of this for regulatory effectiveness and sector performances in the SADC. The period 1997 to 2004 represented an important learning phase for the process of regional regulation in the SADC telecom sector.

#### **7.1.1 Background to the Southern African Development Community**

The region is located in Southern Africa. It was established by Declaration and Treaty in 1992 and replaced the Southern African Development Coordination Conference. It currently comprises the following states; Angola, Botswana, Malawi, Mauritius, Mozambique, Namibia, South Africa, Tanzania, Zambia and Zimbabwe. The organization is currently (2006) undergoing a process of restructuring and with the focus of their activities shifting to regional economic integration and regional poverty alleviation. In March 2004, the SADC announced a strategic plan that sets out measures and time frames for economic integration within the region.<sup>72</sup> The plan also stated that policies, regulations and legislation on petroleum, gas and electricity within the SADC states should be harmonized between 2004 and 2006.

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<sup>72</sup> Some of the outlined measures include: the creation of a free trade area by 2008; establishment of a SADC customs union and implementation of a common external tariff by 2010; elimination of exchange controls on intra-SADC transactions by 2006; establishment of a SADC central bank and preparation for a single SADC currency by 2016; the creation of a SADC regional development fund and self-financing mechanism by 2005; and a common market pact by 2012.

**Figure 7.1: Location of the states that make up the Southern African Development Community.**



*Source Link Centre 2004*

The SADC represents an undeveloped and economically poor region. Its financial, human and institutional infrastructures are all less developed than in other regions of the world. The combined gross domestic product (GDP) for Southern Africa was estimated at \$173.8 billion in 2004. The individual national economies are structurally diverse and at varying stages of development. South Africa, the region's most developed economy, had a GDP of \$156.9 billion in 2004, which is nearly ten times the combined GDP of the other Southern African countries. While the region's economies grew at a combined rate of 2.7% in 2003, the substantial external debt of individual states remains a big problem, in the region. See table 7.1 below.

**Table 7.1: Economic and Demographic Indicators**

<b>Country</b>	<b>GDP, 2003E (Billions of U.S. \$)</b>	<b>Real GDP Growth Rate, 2003 Estimate</b>	<b>Real GDP Growth Rate, 2004 Projection</b>	<b>Per Capita GDP, 2002E</b>	<b>Population 2003E (Millions)</b>
Angola	\$10.00	4.40%	11.40%	\$650	13.9
Botswana	\$5.10	3.70%	3.60%	\$2,980	1.6
Comoros	\$0.20	2.50%	3.00%	\$380	0.6
Democratic Republic of Congo	\$7.00	5.00%	6.00%	\$90	53.6
Lesotho	\$0.80	4.20%	4.40%	\$480	2.2
Madagascar	\$4.60	6.00%	6.00%	\$240	16
Malawi	\$1.50	6.50%	5.20%	\$160	10.5
Mauritius	\$4.50	3.30%	5.50%	\$3,900	1.2
Mozambique	\$2.40	7.00%	8.00%	\$210	19.4
Namibia	\$2.90	3.70%	4.70%	\$1,840	1.8
Seychelles	\$0.60	-5.10%	-2.00%	\$6,530	0.1
South Africa	\$156.90	2.20%	3.00%	\$2,520	45.7
Swaziland	\$1.20	1.50%	1.60%	\$1,220	1.1
Tanzania	\$8.90	5.50%	6.30%	\$280	36.2
Zambia	\$3.10	4.50%	4.50%	\$330	9.8
Zimbabwe	\$9.40	-11.00%	5.10%	\$570	11.4
Regional Total/Average	\$173.80	2.70%	4.80%	\$1,399	219.5

*Sources: Central Intelligence Agency World Factbook; International Monetary Fund; World Bank*

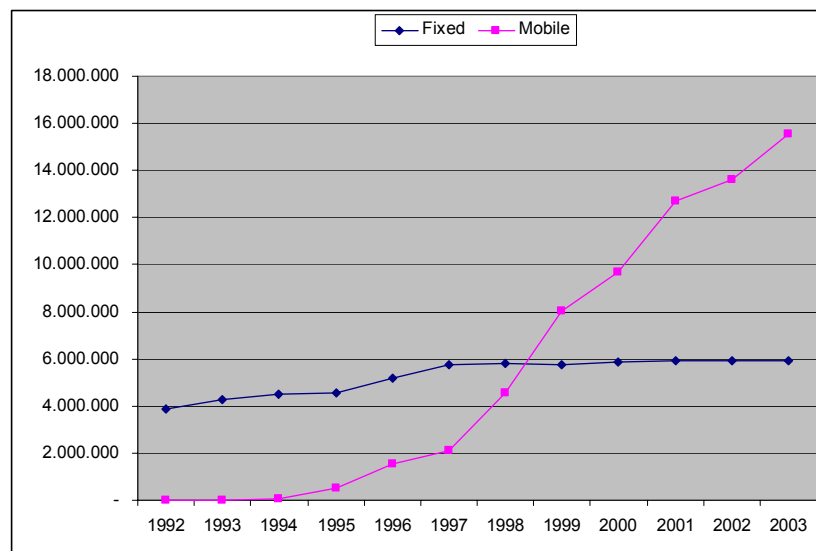
### **7.1.2 Performance indicators of the Southern African Development Community telecom industry**

We will now briefly review the SADC telecom industry for the period 1999-2003 by looking at network growth and teledensity of telecom services.

#### **7.1.2.1 Network growth in Southern African Development Community**

The growth in fixed and mobile telephone access lines over the period 1999 – 2003 for the SADC is shown in Figure 7.2. While fixed line growth has remained steady, the growth of mobile access has shown a dramatic increase. This is consistent with the rest of Africa where 13 million new mobile lines were added in 2003, a figure equivalent to the total number of telecom lines in use in Africa 1995. In 2004 the International Telecommunications Union (ITU) recognized the region as the world’s fastest growing mobile telephone market.

**Figure 7.2: Fixed and mobile growth for the Southern African Development Community (1999-2003)**<sup>73</sup>



Source ITU Africa Indicators 2003

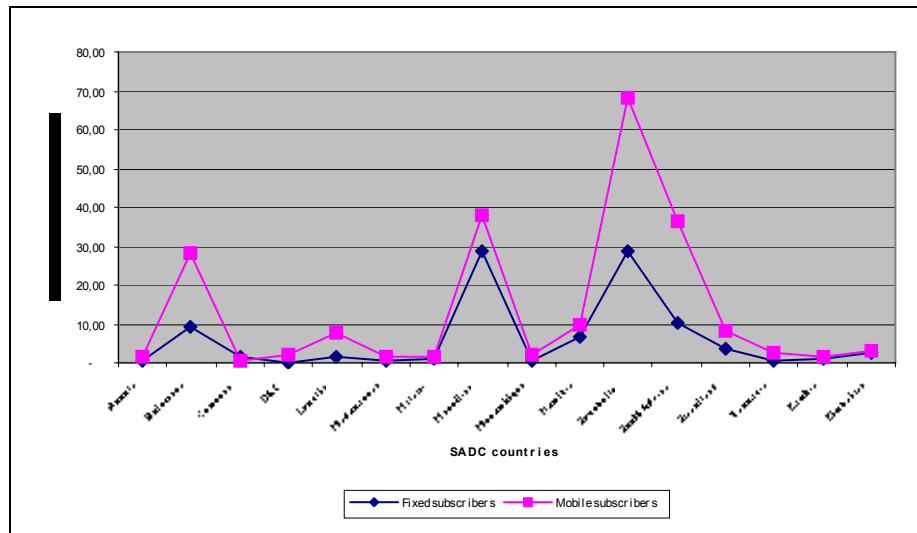
### 7.1.2.2 Teledensity in the Southern African Development Community

The teledensity figures for the SADC in 2003 are shown in figure 7.3. With the exception of South Africa, the Seychelles and Mauritius, the teledensity figures remain relatively low. The dramatic increase in the use of mobile telephony, however, has contributed towards the overall increase in teledensity. The realization of social goals, such as universal access is now pursued using mobile telephony. Overall, though, the provision of universal access remains out of reach for many in the SADC region.

<sup>73</sup> Data from Tanzania not included due to unavailability of data.



**Figure 7.3: Teledensity in the Southern African Development Community**



Source ITU Africa Indicators 2003.

### 7.1.3 Case Objectives

In the context of the overall research, the objective of the SADC case study was to provide evidence that could be used to answer the following research questions:

*What effect has technological socio-economic systems had on the regional regulation of the telecom industry in the SADC, how have regional policymakers and regulators responded to the subsequent regulatory issues raised, and what are the implications of the response for effective regulation and sector development within the SADC?*

## 7.2 Technological and socio-economic systems in the Southern African Development Community

In this section we describe the technological and socio-economic system of the SADC, each of which creates benefits and challenges for regional regulation within the SADC region.

### 7.2.1 Informal institutions in the Southern African Development Community

The following informal institutions were deemed important for an investigation of regional regulation in the SADC; a strong culture of public ordering, submitting to pressure from international organizations and a dependency upon (international) donor funding with respect to the telecom sector.

A strong culture of public ordering in telecom existed within the SADC. Despite a shift in emphasis to private ordering, for example, leaving interconnection negotiations to firms, many of the old behaviors and values remained intact. In particular the national governments of the SADC routinely intervened directly in the telecom regulatory process often sidelining the appointed regulatory institutions.

In the case of South Africa (SA), for example, this took the form of direct interference in the day to day operations of the national regulatory authority (NRA) by the national communications ministry (NCM). This undermining of the NRA and its procedures, increased tensions between the policy making organizations of the Department of Communications (DOC) and the NRAs. This was evident in South Africa's DOC's handling of the 3rd mobile operator licensing process and Second Network Operator (SNO) and the "rift between the two entities" that ensued (BMIT 2004). While the strained relationship was ascribed to mistrust in the capabilities on the part of the SA NRA this situation highlights the tendency of the DOC to fall back to past habits.

Due to the "poor" economic conditions in the SADC, a strong culture of undertaking reform in response to international pressure from international organizations like the WTO and ITU exists (Mosedale 2004). This compliance included governments committing to principles of fair regulation with respect to competitive safeguards, interconnection regulation, and control of the allocation of scarce resources, providing universal service within the telecom sector and creating independent regulatory agencies. In the case of the WTO for example, four SADC states, Lesotho, Mauritius, South Africa and Zimbabwe, made commitments to liberalize their telecom markets within a specific time period. Part of their commitments included transforming the monopolistic structures of their respective telephony markets. While the rationales for doing this have differed amongst the SADC states from taking negotiating pressure off other sectors, to using the commitments to accelerate national reforms (Hodge 2003), this illustrates the culture of submitting to international pressure prevalent in the SADC region. In general all the SADC states except Namibia have investigated legislative and regulatory practices that bring them into line with the general regulatory principles encompassed in the WTO Telecom Reference Paper (Hodge 2003).

A strong culture of dependence upon international donor funding exists in the SADC region. The SADC region faces a multitude of pressing issues like the redistribution of wealth, addressing and reducing or eliminating poverty in the region, famine and civil wars. All this means that infrastructure development has been neglected within the SADC region. As a result the vast sums of money required to develop infrastructure must be sought outside of the SADC region. This has led the SADC to become dependant on aid funding, commercial capital flows and private capital, and this dependence on donor funding has had far reaching consequences for the nature and direction of market reform within the SADC. Many international and bi-lateral aid agencies actively promote the transfer of western models of regulatory policy to the SADC region. However, the extent to which reform initiatives like privatization, liberation and deregulation are relevant in the SADC context is an ongoing debate (Mosedale 2004).

### **7.2.2 Technology in the Southern African Development Community**

The following technology issues were deemed important for our investigation of regional regulation in the SADC; the modernization of incumbents prior to new entry, the deployment of GSM mobile as an alternative technology and the ability of incumbents to “capture” GSM mobile technologies.

Prior to 1998, the SADC incumbents offered antiquated mechanical systems and technologies to consumers. The incumbent operators were unable to respond to technological changes, since they had neither the funds nor the expertise, to introduce new technologies. Most SADC governments came to accept that their monopoly operators were unable to respond adequately to the ever accelerating technology changes within the telecom sector.

Starting in 1996, capital injection in the form of partial privatization and strategic equity partnering resulted in numerous telecom network modernization projects across the SADC. Examples included, the South African modernization program (1996 – 2006) where US\$ 1.2 billion was invested to modernize network infrastructure, and the SAT3/WASC/SAFE cable project funded by a consortium of 36 nations built an undersea cable system costing more than US\$600 million.

The vast economic disparities to be found between and within the SADC states mean that the technological requirements of the various consumer groups differ. Some consumer groups and business users within city centers, required modern converged broadband services while other consumer groups, rural and residential communities, required basic access to telecom services. The majority of users, however, required basic telephone services. The policymakers were therefore required to consider the tradeoffs of meeting the technological needs of the business communities while at the same time, meeting the basic technological needs of those requiring basic universal access to telephony services.

Technological innovation in the form of deploying alternative technologies has been largely constrained in the SADC. As a result technological variety within the telecom sector has been limited to the deployment of mobile GSM. The dependence of GSM on a traditional fixed infrastructure, however, reduces its potential to be a real infrastructure alternative.

The SADC incumbents were often able to offset their losses in fixed revenues by entering the GSM mobile markets and this also constrained telecom sector development within the SADC. In instances where the incumbents were prevented from doing this, they were still able to acquire substantial stakes in GSM mobile operators. The example of Voice over Internet Protocol (VoIP) demonstrates the ability of incumbents, for example South Africa to bundle new technologies with existing technologies and compete with entrants offering alternative technologies.

### **7.2.3 Formal institutions in the Southern African Development Community**

The following formal institutions were deemed important for our investigation of regional regulation in the SADC; the SADC policy framework, liberalizing telecom markets, creating the TRASA as a regional organization of telecom regulators, and harmonizing regulatory principles of interconnection and tariffs within the SADC.

### **7.2.3.1 The Southern Africa Development Community policy framework**

The SADC does not have the legal capacity to design or implement regional telecom policies. Telecom policies formulated by the SADC are not legally binding on member countries. Although such a policy is cloaked in legal jargon it enjoys no legal status within the SADC states and as such is not legally enforceable by the national or international courts of law. Such a policy can only be viewed as guidelines that may or may not assist participating states to improve their telecom sector. The SADC policy framework largely focuses on encouraging national governments to reform their national governance structures and extend network access.

The SADC telecom policy framework was initially formulated in the Protocol on Transport Communications and Meteorology<sup>74</sup>, tabled on 24 August 1996 and entered into force on 6 July 1998, and later defined in the SADC regional Model Telecommunications Policies<sup>75</sup> and the complementary Model Telecommunications Bill of June 1998<sup>76</sup>.

The framework pays attention to the following key issues:

- the commercializing and privatizing of incumbent operators
- the separation between the regulation and operation of telecom services within their respective states
- the establishment of independent regulatory authorities
- pro-universal service rules that permeates policy and regulation, for example interconnection, tariffs and frequency management

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<sup>74</sup> The Protocol is the instrument (formal rule) used to implement the Treaty specifically with regards to the establishment of transport, communications and meteorology systems.

<sup>75</sup> SATCC 1998. Telecommunications policies for SADC. Southern Africa Transport and Communications Commission (June).

<sup>76</sup> SATCC 1998. SADC Model Telecommunications Bill. Africa Transport and Communications Commission (18 June 1998)

The policy objectives can be summarized as follows; see table 7.2 below.<sup>77</sup>

**Table 7.2: Summarized Southern Africa Development Community regional telecom policy objectives.**

<ul style="list-style-type: none"><li>• To promote the development of national telecom networks to provide reliable effective and affordable telecom services. This involves ensuring quality and efficient services that are responsive to the needs of commerce and industry and support regional social and economic growth, achieving a regional universal telecom service and access to advance services and enhance service interconnectivity in the region and globally.</li><li>• To promote the development of a harmonized regional policy that should facilitate the economic and institutional restructuring of telecom in a phased and coordinated manner. This involves instituting a public service provider's financial management authority and ownership options.</li><li>• To provide a policy framework to ensure separation between the regulation and operation of telecom services within the SADC. Thus to establish autonomous, independent NRAs with the statutory authority to regulate and monitor telecom related activities and encourage the establishment of industry-based bodies with a view to ensuring participation by industry in telecom sector development.</li><li>• The NRAs are mandated to overview the various aspects of universal telecom service obligations, i.e. licensing, management of spectrum, interconnection, tariff setting, numbering, promoting stability within the sector and enhancing fair competition.</li><li>• To promote human resource development to enhance the capacity and capability of human resources in the region. This involves developing common curriculum frameworks for the education and training of personnel, common standards for competence evaluation and certification, a regional directory of training specialization centers and joint provisioning of training throughout the SADC.</li><li>• To provide universal service policy designed to achieve regional universal telecom services including regional universal access to advanced information services through participation by the SADC member states in regional and international bodies.</li><li>• To promote a competitive regional market sector that is globally competitive and strengthen a government's capacity to provide a predictable policy framework, within its state, while developing regulatory legislation to attract investors and promote the integrity and viability of public telecom services within the SADC regions.</li></ul>
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#### **7.2.3.1.1 Key steps in the development of the Southern African Development Community telecom policy framework**

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<sup>77</sup> See Protocol, Policies and Bill, actual and the presentations by Funde (1999).

With the assistance of international donor agencies, work on the SADC Protocol began in 1994. The Southern African Transport and Communications Commission – Technical Unit (SATCC-TU) initiative encouraged greater harmonization amongst the member states with regards to developing common telecom standards, maintaining common facilities, sharing experiences and moving towards an environment that would enable the regional integration of markets. The development of the Protocol was supervised by the Committee of Ministers in conjunction with legal and technical consultants funded by the United States Agency for International Development (USAID). A draft was approved by the Committee of Ministers in June 1996 and signed by the SADC Heads of State in August 1996.

Work on the Telecommunications Policies and the Telecommunications Bill was prepared in conjunction with all members of the SADC in pursuance of the provisions of Article 10.2<sup>78</sup> of the SADC Protocol, which was discussed and endorsed by the relevant SATCC structures and approved on 26 June 1998 by the Southern African Transport and Communications Commission (SATCC) Committee of Ministers. Member states were urged to “expeditiously adopt and implement the Policies and the Model telecommunications Bill in the interest of regional integration and economic development”. The SATCC-TU began work in 1997, funded by USAID, on the development of a regional model telecom policy and complementary model legislation. The member states of the SADC were also urged to submit their time schedules for the national adoption and implementation. The SATCC-TU was given the task of monitoring implementation of the Telecommunications Policies and Bill and reporting to the SADC Committee of Ministers.

### **7.2.3.2 Liberalizing telecom markets in the Southern African Development Community**

The move from monopoly to competition within the SADC was characterized by incremental steps and included an initial emphasis on privatization measures rather than liberalization measures.

The process was tightly managed and of an ad-hoc nature. The incumbents were granted a period of exclusivity while strategic equity partners were sought to transform the company, modernize the network infrastructure, meet roll out targets and transfer skills. This was followed by the introduction of a second network operator that was also granted a period of exclusivity (Hodge 2003).

For example, take the case of South Africa, in 1997 the government sold a 30 percent equity stake in its incumbent company to a consortium made up of the US based SBC Communications and Telekom Malaysia. This represented the biggest single investment stake for the telecom sector in Africa. The sales generated some R4.4 billion in cash, just over two-thirds of the 5.6 billion proceeds of the equity sale. A number of senior managers were brought in by the consortium to transfer skills. This was followed by an aggressive network modernization project and a local staff-training program.

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<sup>78</sup> Article 10 requires member states to develop a common regional regulatory telecom policy to achieve the regional telecom objectives.

### 7.2.3.2.1 Granting access to competitive operators in the Southern African Development Community

Granting access to competitive operators within the SADC was done using a licensing process. In most instances it was a tightly managed process, in the fixed markets, a competitive operator was awarded second network operator status to compete with the incumbent. In mobile markets, a 2nd or 3rd operator license was awarded to competitive operators who then also had to compete with the incumbent mobile operators. The awarding of these licenses was followed by periods of exclusivity and reviews. See table 7.3 below for an outline of the licensing process within the SADC.

**Table 7.3: Schedule for fixed and mobile licenses in the Southern Africa Development Community**

Country	Fixed lines		Mobile lines	
	Introduction of SNO	VOIP allowed	No of operators	Review of no. of operators
Angola	2003 <sup>79</sup>	No	2	2003
Botswana	2004	No	2	2003
Lesotho	Not set	No	2	
Malawi	2008	No	3	
Mauritius	2004	No	2	2004
Mozambique	2003	No	2	
Namibia	2004	No	2	
South Africa	2002 (Operational 2005)	Rural only	3	2002
Tanzania	2004	No	5	2005
Zambia	Not set	Rural only	4	
Zimbabwe		No	3	

*Source Link Centre 2004, BMIT 2005*

Many market commentators would agree that progress with respect to creating competition in the telecom market within Africa has been slow.<sup>80</sup> Key markets in the SADC, fixed, mobile, etc. are still characterized by operators with dominance and significant market powers. The major regional telecom competitors are Telkom and a number of mobile operators<sup>81</sup>.

**Table 7.4 Fixed and mobile licensees in the Southern Africa Development Community**

Country	Licenses Fixed	Incumbent	Licensed Mobile	Date Mobile
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<sup>79</sup> To date 5 fixed operators has been licensed.

<sup>80</sup> See for example ITU (2004) for a discussion on the limited efforts to induce facilities base completion.

<sup>81</sup> Telkom, MTN and Vodacom have leveraged their South African successes and experience to expand into the rest of Africa.

	<b>Operators</b>	<b>Market Share</b>	<b>Operators</b>	<b>Licenses</b>
Angola	5	100%	2	1999
Botswana	1	100%	2	1998
Lesotho	1	100%	2	1996
Malawi	1	100%	3	1995
Mauritius	1	100%	2	1990
Mozambique	1	100%	1	1997
Namibia	1	100%	1	1992
South Africa	1	100%	3	1993
Zambia	1	100%	4	1995
Zimbabwe	2	100%	3	1996
Tanzania	2	100%	5	2000

*Source Link Centre 2004, BMIT 2005*

**Table 7.5: Largest transnational operators in the Southern African Development Community**

<b>Operator</b>	<b>Mobile subscribers (000s)</b>	<b>Change 2002-03</b>	<b>Revenue (m)</b>	<b>Countries</b>
Vodacom	8910	19%	1877	South Africa, DR Congo, Lesotho, Mozambique, Tanzania
MTN	6050	34%	1167	South Africa, Cameroon, Nigeria, Rwanda, Swaziland, Uganda
Cell C	1900	114%	175	South Africa
Telkom	4500		3000	

*ITU 2004*

While numerous fixed licenses have been awarded, national incumbents still dominate national fixed telecom markets. In the case of Angola, for example, the regulator has awarded for fixed wireless licenses and is considering awarding a third cellular license (2005). Industry experts have questioned the viability of these licenses, given the size of the market, below 230 000 subscribers. In the case of South Africa the process of awarding a license for a second network operator has been fraught with difficulties and a second license still has to be awarded. The incumbent Telkom has in the meantime used the time to strengthen its position in the South African market. The majority of the mobile licenses were awarded in the 1990's and mobile competition proved to be the most effective form of competition in South Africa.



### **7.2.3.3 Creating the Telecommunications Regulators' Association of Southern Africa as a regional organization of telecom regulators**

Within the SADC, the TRASA has emerged as a top down donor inspired and driven organization.

#### **7.2.3.3.1 Emergence of the Telecommunications Regulators' Association of Southern Africa**

The idea of an association of telecom regulators was conceived in the Regional telecommunications restructuring program (RTRP). The \$18 million USAID funded project was intended to supply consultancy, training support and development. With Price Waterhouse as the executing agent and a core team of five, three in the field and two based in Washington, the project was mandated to deliver a SADC telecom framework, protocol and model regulations. The project commenced in 1997 and was concluded in 1999.

The SADC Protocol was intended as an instrument that could be used to harmonize the SADC approach in the fields of joint transport, meteorology and communications. It also envisaged the setting up of regional associations to coordinate the implementations of harmonized policies. The management of the RTRP project worked closely with the SATCC unit (based in Maputo) and with the Southern African Telecommunications Association (SATA).<sup>82</sup> Their strategy was to start with the formation of a regional association of telecom regulators and through this process increase acceptance to the idea of Model Regulations. Such a vehicle could then be used as a mechanism to promote participation, and the involvement of regulators in the SADC regulatory process, and to prepare regulators for the Model telecom policies and bill. An association of regulators, it was felt by the RTRP management would take ownership for the implementation of the model telecom policies and bills in the SADC member states.

In terms of formally arriving at their goal the RTRP management program worked through the SATA and the SATCC to facilitate the process of forming a regional association<sup>83</sup>. The recommendation for a regulatory body was first formally discussed at a SATA workshop in 1996. Development within SATA included various milestones, at the 16th SATA conference; 9-11 July 1996 in Pretoria, the participants recommended that a separate forum be established for Southern African telecom regulators. The action planning workshop for the SADC Protocol on Transport, Communications and Meteorology, 26-28 January, 1997 held in Pretoria, considered and discussed the proposal for the establishment of a regional regulatory body. The SATA Conference, 22-25 April 1997 in Windhoek, saw the formal separation of the telecom regulators from SATA and the

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<sup>82</sup> SATA was the association of telecom operators who were responsible for network development and network regulation. At the time SATA was a longstanding forum for the PTO's in the SADC region and served as an association of telecommunications operators to develop common standards with respect to technical and quality, tariffs, maintenance policies and procedures and develop human resource and training. Telecom regulatory matters were first handled at regional level by SATA.

<sup>83</sup> The successors to the RTRP program would be the Regional Activity to Promote Integration through Dialogue and Policy Implementation (RAPID) program and the more recent SIRPS program. The field management team would essentially remain the same. In particular RAPID would associate with TRASA to develop the models and guidelines of the issues.

formation of the TRASA. At the SATCC regulatory workshop, 15-17 July, 1997 in Johannesburg, the decision to set up the TRASA was reinforced with the development of a draft charter for the proposed association of national regulators. The TRASA held its original meeting in Dar es Salaam, 15-19 September 1997. It became officially operational on 22 April 1998 with six founding members, Tanzania, Botswana, Mozambique, Namibia, South Africa and Zambia. The TRASA Constitution was adopted at a special TRASA meeting, 4 December 1997 in Cape Town. The consortium was largely inspired by the US approach to regional associations, the RTRP, in keeping with models that had been tried and tested, based the TRASA constitution on the National Association of Regulatory Utility Commissioners (NARUC) approach to regional harmonization. The TRASA became effective on 22 April 1998. The first TRASA Annual General Meeting (AGM) was held in Johannesburg, November 19-20 in 1998. The initial signatories include Botswana, Executive Committee; Zambia, Executive Committee; South Africa, chair; Mozambique, Namibia and Tanzania. The TRASA established a number of working groups tasked with developing regional perspectives on major regulatory issues at its action planning workshop, April 1999.

#### **7.2.3.3.2 Telecommunications Regulators' Association of Southern Africa's aims and objectives**

The TRASA objectives outlined in its constitution include the following:

- to coordinate regulatory matters and exchange ideas, views and experiences on all aspects of regulation of the telecom sector throughout the Southern Africa region
- to promote the establishment and operation of efficient, adequate and cost effective telecom networks and services in the Southern African region which meet the diverse needs of customers while being economically sustainable
- to facilitate a uniform level of understanding on regulatory matters
- to maximize the utilization of scarce resources in specialist areas of telecom

**Table 7.6: The Status of Regional bodies and the Southern African Development Community Framework**

<p>The SADC Protocol refers to regional regulatory bodies in general rather than to the TRASA in particular. In terms of Articles 10.6, 13.6 and 13.13 a regional regulatory body is expected to provide a framework for collaboration and interaction between and amongst stakeholders in the process of implementing the Protocol. The regional body is also expected to participate with the SATCC-TU in the promotion of the consultative responsibilities of the SATCC-TU.</p> <p>Furthermore the regional body is expected to operate as a consultative body by participating in meetings of the SADC Telecommunications Committee in a non-voting capacity for the following purposes:</p> <ul style="list-style-type: none"> <li>• to create an opportunity for a mutual exchange of views on issues of regional importance</li> <li>• to provide meetings with inputs in respect of their areas of activity</li> <li>• to be informed on progress with the implementation of this Protocol</li> </ul>
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- to report on progress with implementation of the SADC Protocol within their areas of responsibility,
- to generally report on the activities of the regional body and be informed of the activities of sub-sectoral committees
- to contribute towards the process of monitoring implementation of the telecom policies and bill.

#### **7.2.3.3.3 Telecommunications Regulators' Association of Southern Africa's system of governance**

The TRASA's decisions were not contingent upon the approval of the SATCC, rather the TRASA was deemed to have discretionary powers. The TRASA made its decisions contingent upon the approval of the SATCC. The TRASA was committed to take all its decisions to the SATCC for approval prior to implementation. Neither the SADC Protocol nor the SADC Model policies nor bill insisted upon this practice. Under Protocol only the SATCC and the Telecommunications Committee were formally recognized as regionally mandated telecom institutions. The TRASA was not mentioned specifically but referred to in general terms. In seeking to fulfill its objectives the TRASA makes "recommendations to the SATCC" and become a consultative member of the Telecommunications Committee" (Articles 3.2.1 and 3.2.3 of the SADC Constitution). Although not stipulated in its constitution the TRASA sees itself as responsible to the SATCC and Telecommunications Committee. In reality there was no legal stipulations or legislation laid down to guide the TRASA in terms of its decision-making motion.

The TRASA Secretariat comprised representatives drawn from member states who volunteered to serve on the TRASA Secretariat and of professional staff appointed by the TRASA and funded by international donors. The availability of donor funding greatly influenced the functioning of the TRASA Secretariat. The need for a program manager or Secretariat was identified in the TRASA Constitution. Initially funding was sought and obtained from the RTRP project. In October 1999 a program manager<sup>84</sup> was recruited from the SATCC's Telecom unit who had previously worked on the SADC Policies and Bill processes.

At the first AGM of the TRASA in Johannesburg, the South African Telecommunications Regulatory Authority (SATRA) offered to host the Secretariat. SATRA provided free office accommodation and administrative support to the program manager who was based in Johannesburg for a period of 12 months. With the merger between SATRA and Independent Broadcasting Authority in South Africa, Botswana offered to host the Secretariat in Gaborone. The program manager moved to Gaborone and continued in the function for 8 months until funding became a problem; USAID decided to only provide funding for one technical person and decided not to further fund the Secretariat. Subsequently the post of manager was dealt with on an ad-hoc consultancy basis and Botswana provided residential accommodation.<sup>85</sup> On the retirement of the first manager Botswana provided secretariat support while a new program manager was being recruited. This gave members time to collect the contribution necessary to fund the post. The next manager was soon recalled, leaving Botswana to again step in to take over the secretariat function.

<sup>84</sup> Mr. Simon Mashiro, a Tanzanian national.

<sup>85</sup> Simon Mashiro would eventually work a further 8 month in Botswana before retiring in 2001.

To date (2006) the TRASA has not appointed a permanent Executive Secretary as envisaged in its Constitution.

The role of the Secretariat was primarily to handle administrative and co-ordination functions. Its main tasks were those of circulating documentation and implementing the schedule of the action program. Although additional tasks were envisaged, i.e. keeping a database of information for members, this was found impossible due to the pressure of administrative duties within the TRASA Secretariat. The accounting function for the TRASA expenses was not handled by the Secretariat; it was handled by the Botswana Telecommunications Authority (BTA). Funds received by the TRASA in the form of membership contributions and a grant from USAID were kept and administered by the BTA. Records of transactions financed by assistance were provided by donors or kept by their agents (for example Datex). In 2000, the BTA appointed its auditors to be the TRASA auditors. According to the treasurers report the funds at the TRASA's disposal totaled \$100,079.80. Annual contributions by the TRASA members increased from \$7,500 per member in 2001/2002 to \$12,500 in 2002/3 to \$15,000 in 2003/4.

#### **7.2.3.3.4 Harmonizing regulatory principles across the Southern African Development Community**

One of the key deliverables by the TRASA was a set of regulatory best practices called model regulations. These policy documents contained high level regulatory principles intended to assist the NRAs to implement their regional policy frameworks. The NRAs were expected to comply with these model regulations and to formulate their own methods of implementation to achieve the espoused regulatory principles. Here two such model regulations are discussed; interconnection and tariffs.

#### **7.2.3.3.5 The model regulations on Interconnection**

The Model Regulation and Guidelines on Interconnection produced by the RTRP project were completed on 29th May 2000. The Interconnection Guidelines and Regulations were adopted at the 3rd AGM of 14<sup>th</sup>-15<sup>th</sup> September 2000 and thereafter the regulations were sent to the SATCC-TU for approval and adoption. The documents included in the RTRP submission were the Policy documentation on interconnection for the SADC countries and Model Telecommunications (Interconnection) regulations. Both the workshops on Tariffs and Interconnection were sponsored by USAID.

The model regulation on Interconnection contained principles of good regulatory decision-making such as transparency and non-discrimination. Transparency referred to interconnection agreements or reference interconnection offers made available to the public by telecom operators. The TRASA recommended that copies of all national agreements were filed with the national regulator who would be responsible for making copies of agreements available to the public for inspection. In the model regulations, non-discriminatory interconnect, referred to a telecom operator applying similar technical and commercial conditions on a competitor that it would apply to itself, its subsidiaries or its affiliates in the delivery of services.

It is assumed in the model regulation on interconnection that interconnection rates are set between operators, i.e. two fixed wired operators, incumbent fixed wired operators and mobile operators, incumbent local fixed wired-operators and long distance operators and or two mobile operators, using private or bilateral negotiations between operators. All the SADC operators were expected to operate under the same technical terms, conditions and price strategies, i.e. for them to be a 'level playing field' within the SADC telecom sector.

The TRASA also proposed specific methods of implementing interconnection principles namely accounting separation, resolving disputes, costs orientation and network typology. With respect to accounting separation, the TRASA required separated accounts for the main products and services of telecom operators. The TRASA also sought to create more transparency in internal transfer pricing, common and joint costs. With respect to resolving disputes the TRASA stated that the "regulator shall not take more time than necessary to determine a solution in the interest of both parties, such time shall not exceed three months". With respect to cost orientation the TRASA recommended that operators cooperate with national regulators to use of a CCA cost base for distributing interconnection costs. Regarding the cost standard to be implemented the TRASA recommended the use of FL-LRAIC. With respect to network typology the TRASA went into great detail to promote the use of discounted cash flow techniques within the TRASA region. The Interconnection model regulation seemed to suggest a top down model with the implementation of a scorched node approach.

The Interconnection model regulation provides an illustration of the effectiveness of harmonizing regulatory principles (see Appendix D).<sup>86</sup> In our case study survey we found some significant differences, for example in transparency; costing presentation cost base in particular; and in network typology. At the same time we found that a high degree of harmonization existed, for example in the recommended remedies for dealing with discrimination; cost orientation, cost approach in particular, and network typology, scorched node approach. We also found that in some cases the harmonization had not been achieved by following the principles recommended in the model regulations. This was evident in the development of remedies of cost bases and cost standards. In other instances the harmonized regulatory practices followed the TRASA recommendation, for example with respect to cost approach.

#### **7.2.3.3.6 The model regulations on Tariff**

The Model Regulation on Tariff was completed by the TRASA on 29th May 2000. The Tariff Regulations were adopted at the 3rd AGM of the TRASA of 14th - 15th September 2000. Thereafter the regulations were put to the SATCC-TU for approval and adoption, by a combination of the SATCC-TU Committee on Tariffs and Interconnection and a workshop sponsored by USAID.

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<sup>86</sup> We conducted a survey amongst the NRAs. The issues under the survey headings are more or less outlined in the model regulations. Although not all the NRA's responded to our survey, we considered the responses sufficient for the purpose of demonstrating the degree of regulatory harmonization. We measured the impact on regulatory harmonization in terms of low, medium or high. When less than half the respondents adopted an NRA's recommendation then regulatory harmonization was said to be low. When half the respondents adopted a TRASA recommendation - impact was said to be medium. If more than half of the respondents adopted a TRASA recommendation then impact was said to be high.

The TRASA model regulation covers aspects of rate rebalancing. It mainly obligates operators to comply with all rebalancing directives issued by the NRAs. The tariff regulation is fairly general on other less substantive issues. The TRASA is silent on the key issue of pricing arrangements, for example the use of price cap regulation. In terms of filling of the TRASA information, the NRAs should receive it within 30 days before the intended effective date. Proposed tariffs are expected to come into effect 30 days after filing unless the NRA issues a counter proposal within this period. Operators have 30 days to lodge an appeal after a decision has been taken at the national level or the counter proposal would be effective. Tariff proposals issued by the NRAs should contain all the relevant accounting and costing information. Operators have the obligation to advertise the new tariffs in public media. In terms of arbitration, an operator may appeal to a tribunal of 3 persons appointed by a national Chief Justice. Any such tribunal is expected to make its decision within 30 days of an appeal being lodged. It is assumed in the model regulation on tariffs that consumer prices with respect to fixed line telephony will be regulated by the NRAs; the NRAs are also expected to carry out periodic reviews of prices.

Looking at the model regulation on Tariffs we found that a number of differences in regulatory principles and practices exist across the SADC (see Appendix D).<sup>87</sup> In our survey we found some significant differences, for example, in the role played by the NRA in negotiations, in unbundling and the extent to which it has occurred. We also found a high degree of harmonization, for example with respect to recommended approaches to interconnection agreements and defining the NRAs role with respect to negotiation. We found that in some cases the harmonization did not include ways of carrying out the recommendations made in the model regulations of Tariffs. For example, with respect to the type of approach recommended for interconnection arrangements and for the form of price regulation.

#### **7.2.4 Institutional arrangements in the Southern African Development Community**

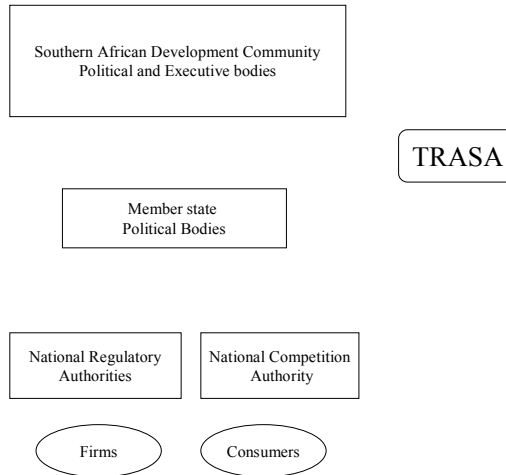
The following public institutional arrangements were deemed important for our investigation of regional regulation in the SADC; the regulatory process and the distribution of competencies across two levels, national and regional.

In Figure 7.4 we show the stakeholders involved in the SADC; the executive political bodies, the political bodies of the respective member countries, regional organizations of telecom regulators, the NRAs and national competition authorities and firms and consumers (telecom market).

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<sup>87</sup> We conducted a survey amongst the NRAs. The issues under the survey headings are more or less outlined in the model regulations. Although not all the NRA's responded to our survey, we considered the responses sufficient for the purpose of demonstrating the degree of regulatory harmonization. We measured the impact on regulatory harmonization in terms of low, medium or high. When less than half the respondents adopted an NRA's recommendation then regulatory harmonization was said to be low. When half the respondents adopted a TRASA recommendation - impact was said to be medium. If more than half of the respondents adopted a TRASA recommendation then impact was said to be high.

**Figure 7.4: Public institutional arrangements in the Southern African Development Community**



#### **7.2.4.1 The process of regulatory decision-making in Southern African Development Community**

In the context of the SADC the national ministers adopted regulatory principles on a regional level, and were then expected to transpose these principles into national legislation. The NRAs in turn were set up to implement and control the use of the regulatory principles. The national courts of the SADC nations are expected to enforce these policies. This is a hybrid model in the sense that it is neither purely government organized nor purely market organized. Government provides the formal institutions policy framework and model regulations, while the telecom sector firms are allowed to negotiate commercial contracts, for example, interconnection terms, conditions and costs, pursuant to the formal institutions.

##### **7.2.4.1.1 Adoption of telecom regulation in the Southern African Development Community**

Regional telecom regulation within the SADC is essentially centralized. The central instrument of the Commissions' regulations is Article 13 of the SADC Protocol. Article 13 confirms the SATCC as the Commission responsible for all aspects of policy in the respective sectors covered by the SADC Protocol. According to Article 13.3 the SATCC comprises various entities each contributing in its own way to the overall process of policy formulation. A Committee of Ministers (COM)

drawn from all the SADC states (Article 13.4) is set in place to coordinate, prepare and adopt regional policy agendas and developments strategies. The Committee of Telecom Ministers (COTM) is made up of the Communication Ministers of the SADC member states. It is the supreme decision making body of within the SATCC and the SADC for the telecom sector. A Committee of Telecom Senior Officials (COTSO) was set up to coordinate the sectoral and sub-sectoral implementation strategies (Article 13.5). The COTSO is made up of the Director Generals of the SADC member states. The COTSO reports to the COTM, sub-sectoral committees (Article 13.6) national working groups are required to develop harmonized regional policies, align policies with international obligations and consult with regional bodies. The COTSO is served by the Telecommunications Committee which is made up of senior officials and technical experts drawn from the various member states. This committee reports to the COTSO. A technical unit, the SATCC-TU (Article 13.9) liaises between the SATCC and the COM secretariat regarding implementation of the SADC Protocol. Regional bodies can take up consultative membership of the SATCC through the SATCC-TU. The SATCC is responsible to the COM and is closely aligned with its secretariat.

#### **7.2.4.1.2 Implementation of telecom regulation in the Southern African Development Community**

The NRA's are the key implementers of regional regulations in the SADC member states. In the SADC most of the national governments, via their telecom ministers, have created national regulatory authorities to implement telecom policies at the national and regional level.

In the SADC each country is responsible for the setting up of its own national regulator bodies to ensure economic, social and technical regulation. The SADC regulators only have national jurisdiction but may, at their own volition, participate in regional and international regulatory organizations. In most instances the department responsible for telecommunications within a SADC nation represents national interests at regional and international organizations. An overview of states and date of inception is provided in table 7.7 below.



**Table 7.7: National regulators in the Southern African Development Community countries**

<b>Country</b>	<b>Regulatory agency (date)</b>
Angola	1985
Botswana	1996
Malawi	1998
Mauritius	1988
Mozambique	1992
Namibia	1995
South Africa	1997
Tanzania	1994
Zambia	1994
Zimbabwe	2000

The regulatory duties of the NRAs have been defined in several SADC policy documents, i.e. in the Protocol, Model Policies and Model Bill. These functions can be described as controlling access to the market, controlling the behavior of operators in the market, ensuring compliance to universal service obligations and settling disputes. The SADC Protocol requires the NRAs to perform general interconnection tasks like undertaking approvals of telecom equipment, setting rules for their interconnection and determining harmonized interconnection guidelines. The Model Policies document includes the requirements to determine, facilitate and approve agreements in the public interest. The Model Bill specifies the tasks required to approve all interconnection agreements and to establish tariffs, terms and conditions of interconnection if service providers are unable to do this.

In most instances the bulk of an NRA's funding comes from its national government, represented in the form of monies from the respective minister responsible for telecommunications. The NRA chairman is often approved by national parliament after being nominated by the telecom Minister or states President. In some cases as in the case of South Africa the Communication Minister retains veto rights over all regulatory decisions made by its regulatory authority.

The requirements for regulatory separation, independence and autonomy within the telecom sector were first outlined in Article 10.7<sup>88</sup> of the SADC Protocol. In terms of separation, the restructuring of incumbent national operators is considered the first priority. This should take the form of incorporating national telecom operators into public companies; see the SADC Model Telecommunications Bill Schedule 1. The privatization of incumbents should take place within a

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<sup>88</sup> "Member states shall ensure the separation between the regulation and operation of telecommunications services within the national jurisdictions and to this end, Members shall a) establish autonomous, independent and national regulatory bodies which shall have statutory authority to regulate and monitor specified telecommunications related activities in the respective Member States".

period of two years from the date of commencement of the Model telecom Bill. In terms of the Bill therefore the SADC governments were not expected to own incumbent operators or to be involved in the management of these companies. The Telecommunications Policies for the SADC produced by the RTRP project gives us some indication of how separation was to be achieved. In this document clear roles and responsibilities are allocated to the key players in the sector. The national governments of the SADC member states were expected to create an overall, enabling environment by liberalizing and commercializing their telecom sectors. The governments were also expected to establish all the policies necessary to restructure their telecom sectors. The national ministries in the SADC, responsible for telecom, and the appropriate national 'Telecom' ministers were limited to national policy making. The various telecom actors were expected to assume responsibility for operating the networks within (and between) their countries. This form of control and the various actor responsibilities were laid down in a general manner in the Protocol. The accompanying policy document consisted of a set of ways and means, i.e. the finer details, to accomplish the above. For example part 2.5.2 of the policy document states that a regulatory body "be established as an autonomous entity with all the powers of a legal persona". While Part 2.5.12 of the policy document recognizes that "autonomy and independence and other related concepts are fairly subjective and elusive notions" and sees transparency of the regulatory process as key to avoiding any doubt about the independence of the regulator. Transparencies should include issues like "public consultations opportunities for reviews and other related processes that open the regulatory process to interested parties and the public in general". Part 2.5.14 specifies that "although independent" the regulator should be accountable for its actions to various other entities, i.e. national ministry, parliament, courts, auditors, users and service providers.

#### **7.2.4.1.3 Control of telecom regulation in Southern African Development Community**

Telecom regulations formulated by the SADC and transposed into national legislation are enforced by the NRAs and the national judiciary systems. The SADC does not have a regional judicial mechanism for enforcing the SADC law. The NRAs are limited by their mandate to act only in accordance with the powers conferred on them, and the functions and duties assigned to them, by the relevant legislation and general guidelines set out in their national legislation public or service providers contravene the provisions of national legislation or license the NRAs have the right to impose sanctions, typically fines. All the NRAs have some judicial powers of enforcement regarding decisions. Within the SADC there is no appellate system for semi-judicial decisions made in the SADC courts that is separated from the court system, thus no mechanisms for regional enforcement exist. Regional policies are transposed into national law by a national regulatory process, Parliament Committees, Directorates, etc. and enforced by the national courts within the member states. Problems arise when national judicial systems are unable to respond timely to manner regulatory issues that require quick decisions, i.e. tariff determination, licensing, interconnections, etc. With regards to appeals against the decisions of the NRAs all persons/operators have a right of appeal to the superior courts, high or supreme within their SADC member state.

#### **7.2.5 Actors in the Southern African Development Community**

The following actor issues were deemed important for our investigation of regional regulation in the SADC; the interaction between incumbents and rivals, the interaction between governments and incumbents and the interaction between national and regional authorities.

On a national level, the incumbent firms were typically dominant and the regulatory agencies were weak, in terms of ability to act independently and skills base, while executive commitments to advance competitive markets within the SADC states lacked credibility. Incumbent firms were hostile towards new entrants and to a large extent were engaged in anti-competitive practices.

In the case of South Africa the hostility is documented in the numerous complaints from Value Added Network Suppliers (VANS) and Internet Service Providers (ISPs) regarding Telkom's abuse of its dominance by engaging in anti-competitive practices. In particular, the complaints involved Telkom's refusal to provide facilities, the bundling of services, Telkom's practice of cross-subsidization and its alleged discriminatory pricing of some of its services.

New telecom service provider entrants have typically sought relief from incumbent's dominance problems by turning to their NRAs their national judiciaries and at times even to international organizations. Regulatory agencies facing information asymmetries with respect to firms and government capture, have by and large been unable to resolve these disagreements between the NRAs and their executive and between the NRAs and incumbent operators, often leaving the contentious matters for national judiciaries to resolve.

Notwithstanding with deregulation the SADC national governments increasingly delegated greater choice to the industry actors. With respect to conduct, the firms could decide what new

technologies they would use and to negotiate interconnection agreements. With respect to pricing government would still set the formula by which firms would comply.

In general regional structures like the TRASA, the SATCC and the Communication Committees lack credibility. This can be seen in the lack of effort put into participating meaningfully in the SATCC decisions, and to transposing these bodies' regulatory principles into national legislations. Leading countries, like South Africa, Botswana and Mauritius have not played an active role in shaping regulatory outcomes and provided only nominal support for regional regulatory activities. They see regional telecom sector regulation as lagging behind reform developments in their own states and therefore not substantive enough to be used to address the more dynamic situations in their own states.

Key national specialized telecom agencies promoting competition, universal service, skill building, etc. does not exist on a regional level within the SADC. When matters pertaining to these agencies are discussed in the SADC, national ministers rather than the relevant national agencies typically represents their respective countries.

In the case of the SADC, the South African national telecom market is inextricably linked to its regional markets. Its fixed and mobile operators are dominant across the region requiring bilateral and regional regulatory cooperation with local operators to provide network infrastructure and services for local access, long distance, regional and international markets.

Surprisingly, given South Africa's economic strength, and post 1994 acceptance in the region, it has been unable to lead the SADC's reform program and appears reluctant to do so. South Africa's leadership often seems tentative, South Africa responds only to requests from other countries, due to anxiety with regards to it becoming too dominant in the region (Gillwald 2003). Subsequently, the telecom agenda is being set by international organizations, with input from and the participation of regional players.<sup>89</sup>

The relationship between the SADC national governments is generally one of political support. In the first instance the incumbents' telecom actors provided governments with much needed capital raised via partial privatization measures. This offered governments the benefit of generating budget financing, for their treasuries and decreasing state investment in the industry. The subsequent initial public offerings (IPOs) of many incumbents have further contributed to state coffers while policy and regulations favorable to the incumbents have further enhanced stock value.

### **7.3 Analysis of technological socio-economic affects and regional regulation**

We will now explore the effects of the aforementioned technological socio-economic system on regional regulation in the SADC. The effects of technological socio-economic systems on sector performance will be described according to our four levels (informal and technology, formal,

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<sup>89</sup> Both the DTI and DoC acknowledge that international ICT issues play an important role in shaping South Africa's ICT agenda (Gillwald, 2003).

institutional arrangements and actors), mode of effect (direct or indirect) and mechanism of effect (enabling or constraining) competition, network growth and regulatory harmonization.

### **7.3.1 Informal institutions in the Southern African Development Community**

A strong culture of public ordering, submitting to pressure from international organizations and dependency upon (international) donor funding was noted within the SADC. Below we discuss the implications of this for regional regulation and its impact on sector performance within the SADC.

The strong culture of public ordering has created various sets of problems for regional regulation. Routine intervention by national executives has undermined regulatory rules and procedures. Needless to say this habit of intervening directly at critical junctures has undermined the credibility of the SADC's national government's commitment to promote effective competition. In the case of South Africa it has influenced market entry negatively resulting in delays the opening the fixed market (SNO) and the mobile market to new competitors, i.e. to a third mobile operator. Further intervention to preserve the market value of its incumbent prior to and after listing, in accordance to a private contract between the government and the strategic equity partner, inadvertently negated true competition in the sector and further enforced the monopoly power and dominance of the incumbent. One of the consequences of maximizing revenues for the incumbent is a "diminishing of broader economic welfare" which in the case of South Africa took the form of massive dismantlement of telephone services (Barendse 2004). In addition the South African case showed the high social costs of failing to curb incumbent power, many now view the limited window of political opportunity for telecom reform to be closed (Benjamin 2002, Gillwald, 2004).

The commitment to international bodies created various benefits for the NRAs. The SADC governments readily committed to the regulatory principles espoused by the WTO and the ITU. The states that did commit to WTO obligations did however work according to these principles. In addition the absence of a regional judiciary bodies this commitment seems to make the commitment of national governments more credible. In the case of South Africa the appeals of the VANS to the WTO for support against incumbent power demonstrate the use of mechanisms outside of the SADC to constrain incumbent behavior. While the particular case may not have helped the VANS it did show incumbents that the new entrants were willing to seek assistance from external regulatory sources, e.g. the WTO.

Dependence upon international donor funding within the SADC created benefits and challenges for regional regulators. It created benefits in the sense that the vast sums required for infrastructure development within the SADC could not have been funded from national or regional resources. Donor funding also contributed towards the use of a common policy framework and regulations. The funding created new challenges in the sense that the donors invariably influenced the nature and direction of reform, part of which included the active promotion of Western models of regulatory policy such as, privatization, liberation and deregulation. Little effort was given to the actual implementation of these policies by national countries. While some states found the framework useful others found the framework too general for the complexities and modernity of its markets, i.e. South Africa, Mauritius and Botswana. One of the additional consequences of dependency upon donors was the ad-hoc nature of the reform carried out in the SADC area due to the availability of

funding and the interests of the organization or states involved with the funding. Reform projects typically stalled until such time that funding was again made available. See table 7.8 below for a summary of the effects of informal institutions in the SADC. The impact of informal institutions was assessed using three logical steps (EC 2005).

- Additionally, what has happened over and above what would have happened anyway?
- Displacement, what has not happened which would have happened in the absence of informal institutions?
- Effectiveness, did informal institutions produce the expected result?

**Table 7.8: Summary of informal institutions in the Southern African Development Community**

<b>Informal institutions</b>	<b>Implications for regional regulation</b>	<b>Mechanism</b>	<b>Impact on sector performance</b>
Culture of public ordering	-	Increased costs	Displacement
Commitments to international organizations	+	Regulatory harmonization	Additionally
Dependence upon international donor funding	+/-	Regulatory harmonization Appropriateness	Additionally/Displacement

### 7.3.2 Technology in the Southern African Development Community

The modernization of the incumbent's network prior to new entry, the deployment of alternative technologies and the ability of incumbents to capture these new technologies were noted within the SADC. Below we discuss the implications of this for regional regulation and its impact on sector performance within the SADC.

The modernization of incumbent networks in the SADC region prior to new entry created various sets of problems for regional regulation. In many instances the modernization was undertaken by foreign strategic equity partners since the incumbents themselves had neither the funds nor the expertise required to introduce new technologies. These investors in turn sought guarantees, like temporary monopolies and tightly managed market liberalization to ensure repayment, with interest of their investment. This had a negative impact on the introduction of new technologies as incumbent operators were able to delay the rollout of new technology to claim a market share the new technologies thus reducing effective competition. The example of the strategic behavior of the South African incumbent, Telkom, the largest fixed provider in Africa can be used to illustrate this. Telkom was able to delay rollout of newer technologies like ADSL, opting to provide ISDN for broadband requirements (Gillwald 2004). Telkom was also able to profit from the delays in awarding new entrants special VoIP licensees; by the time the licenses were finally awarded the licensing conditions had been changed and Telkom was allowed to market its own VoIP product, negating any competitive advantage that new entrants might have had (Ton and Fabian 2005).

In the SADC the problem of technological design was compounded by the vast economic disparities to be found between states and within states in the region. This effectively means that the technological requirements of the different consumer groups will differ. Some consumer groups, business users typically within city centers, required and could pay for, modern converged broadband services while other consumer groups, rural and residential communities required basic access to services. The policymakers and operators therefore had to take into consideration the tradeoffs of meeting the technological needs of business communities while at the same time meeting basic technological needs for basic universal access to telecom services. In the case of the SADC, this meant private efficiencies were pursued at the expense of public efficiencies.

The introduction of mobile technology led to dramatic growth within the telecom sector of the SADC. Some have argued that this happened not as a consequence of forward looking reform initiatives but despite them (Gillwald 2003). In most instances, however, the national incumbents managed to obtain a mobile operator. Where the incumbents were directly prevented from taking over a mobile operator, few of them has problems with becoming a majority share holder in such an operator. These tactics allowed the dominant incumbents also to obtain, and maintain a majority share in such an operator. These tactics allowed the dominant incumbent also to obtain and maintain dominance in the mobile markets. The dependence of mobile new entrants on traditional fixed infrastructure, for example the backhaul link and their dependency on fixed networks for interconnection, which leaves them at the mercy of incumbents, and subject to excessive pricing, means that the ideal of universal telecom access is still a long way off for some communities. See table 7.9 below for a summary of the effects of technology in the SADC region. The impact of technologies was assessed using three logical steps (EC 2005).

- Additionally, what has happened over and above what would have happened anyway?
- Displacement, what has not happened which would have happened in the absence of technologies?
- Effectiveness, did technologies produce the expected result?

**Table 7.9: Summary of technology used in the Southern African Development Community**

<b>Technology</b>	<b>Implications for regional regulation</b>	<b>Mechanism</b>	<b>Impact on sector performance</b>
The modernization of incumbents prior to new entry	+/-	Investment Competition Network development	Additionally Displacement
the deployment of alternative technologies	+	Competition Network Development Pricing	Additionally
the ability of incumbents to “capture” these new technologies	+/-	Competition	Additionally/Displacement

### **7.3.3 Formal institutions in the Southern African Development Community**

The regional regulatory objectives, market liberalization, the creation of regional organizations of telecom regulators and the harmonizing of regulatory principles were noted within the SADC. Below we discuss the implications of this for regional regulation and its impact on sector performance within the SADC.

The SADC telecom regulatory objectives created a major challenge for regional regulation. In the case of the SADC issues like the commercializing and privatizing incumbent operators, separation of regulation and operation of telecom services within the SADC were emphasized. For leading telecom markets like South Africa, Mauritius and Botswana this emphasis proved to be outdated and inadequate.

In addition, the regional policymakers aimed to design a “competitive regional market” in which privatizing the national incumbents, separation of regulation and operation and the establishment of regulatory authorities and universal service rules would be essential. We found that very little privatization actually took place, with the result that the SADC governments, retained in most cases the largest amount of shares in their incumbents. The limited credibility of the national institutional environments compounded this situation; national telecom departments and ministers interfered in the public, day to day operations of the NRAs to honor private contracts with strategic equity partners (mostly incumbents).

The reform initiatives undertaken, provided an equally challenging task for regional regulation. The tightly managed liberalization processes within the SADC resulted in limited new entry and hence duopoly or tight oligopoly structures. The approach was harmonized across the SADC and produced similar outcomes of limited market entry. The granting of access to competitive operators using a licensing process was the subject of considerable political interference; this damaged the



credibility of the SADC's national governments commitments to a truly open, competitive telecom sector.

The TRASA as a regional organization of the NRAs emerged as a top-down donor driven initiative. It was able to coordinate participation in, and acceptance of, the 1998 the SADC regional reform initiatives. The governance structure of the TRASA, however, precluded it from being anything more than an information sharing body. The TRASA's key output took the form of non-binding model regulations, which as regional regulatory guidelines, were not effective for harmonizing principles. The TRASA's dependence on donor funding further compromised its ability to support NRA's in dealing with competition problems as it had no legal status or judicial functions that could be used to support and promote the NRAs and their national regulatory roles within the telecom sector.

The TRASA's model regulations were intended to assist the NRAs. The Model Regulation and Guidelines on Interconnection, adopted in September 2000 by the SADC countries, contained general principles of regulatory decision-making like transparency and non-discrimination and specific methods of implementing these interconnection principles such as accounting separation, resolving disputes, costs orientation and network typology. The Model Regulation on Tariff adopted at the same time covered, with little detail aspects of rate rebalancing. It mainly obligates operators to comply with all rebalancing directives issued by the NRAs. The tariff regulation laid down in the document was fairly general on other less substantive issues, and in reality these documents were hardly used by the NRAs. For many of the NRAs the model regulations on interconnection and pricing were considered to be "irrelevant", "vague" and "impractical" (Interviews 2005). In general the NRAs considered the documents to be inadequate for dealing with the real complexities of interconnection and pricing in emerging telecom markets.

Despite this the model regulation formulated by the TRASA did help some of the NRAs to overcome some information asymmetries and coordination inefficiencies within their countries. In the 1998 policy framework the TRASA's role was limited to obtaining buy-in and participation. This lack of any real power on the TRASA's behalf further limited its usefulness. See table 7.10 below for a summary of the effects of formal institutions in the SADC. The impact of formal institutions was assessed using three logical steps (EC 2005).

- Additionally, what has happened over and above what would have happened anyway?
- Displacement, what has not happened which would have happened in the absence of formal institutions?
- Effectiveness, did formal institutions produce the expected result?

**Table 7.10: Summary of formal institutions in the Southern African Development Community**

<b>Formal institutions</b>	<b>Implications for regional regulation</b>	<b>Mechanism</b>	<b>Impact on sector performance</b>
The regional regulatory objectives	-	Relevancy of emphasis for leading countries. Very little privatization.	Displacement Effectiveness
Liberalizing markets	-/+	Limited entry. Licensing process subject to political interference. Sector growth	Displacement Effectiveness
Creating regional organizations of telecom regulators	+/-	Share information. Coordinate participation. Lack of legal powers.	Additionally Effectiveness
Harmonizing regulatory principles	+/-	Learning tool Relevancy and practicality	Displacement Effectiveness

#### **7.3.4 Institutional arrangements in the Southern African Development Community**

The distribution of competencies across two levels, national and regional was noted within the SADC. Below we discuss the implications of this for regional regulation and its impact on sector performance within the SADC.

The actual regulatory processes created various problems for regional regulation. The SADC policymakers did not have the benefit of mechanisms like legally binding regional regulatory rules and procedures, and there is no independent regional judiciary system for the region. (Levy and Spiller 1996, Heller and McCubbins 1996, Henisz 2004). At best the SADC policy makers and regulators can provide guidelines i.e. flexible rules and legislation, consisting of high level regulatory principles, the rest is left to national governments who must involve national regulatory rules and procedures based on the advice offered by bodies such as the TRASA and enforced by the national independent judiciary at their disposal. In the absence of a regional judiciary some of the SADC states and operators facing problems in the telecom sector often with incumbent dominance, have turned to third party commitment mechanisms such as those provided by the WTO and the ITU.

The absence of a solid legal foundation and regulatory support organizations for the ICT sector in the SADC region has seriously undermined efforts in the SADC aimed at advancing regional policy objectives. Implementation by the individual SADC states has had to depend on informal measures like “moral pressure”. Policy formulation is constrained by the absence of a formal, legitimate policymaking structure and limited to the production of guidelines rather than legally binding regulations. The existing supporting structures, Committee of Telecom Ministers, the SATCC, etc., lack the necessary legitimacy to formulate, implement and enforce regional telecom policies and regulations. This limits the implementation of regional regulation at a national level; most of the

SADC member states did not find 'regional' guidelines credible and were unwilling to transpose them into national regulation. All this made little contribution to the minimizing of regulatory incompatibilities across the SADC states.

In practice the SADC policymakers designed their national arrangements in a manner that provided for the vertical decoupling of the telecom value chain in a tightly managed fashion. This included periods of temporary monopolies, followed by limited entry to second network operators (in fixed) and oligopoly (in mobile) markets. Competition suffered as the monopoly powers of incumbents became entrenched. The case of South Africa shows that, although universal service targets were met by the incumbent during its period of exclusivity more than half of these telephones were later disconnected due to lack of affordability.

The arrangements between regional actors and national actors were expected to minimize the transactions costs associated with bilateral and trilateral agreements between national authorities when addressing regulatory incompatibilities amongst countries. In addition the TRASA was expected to serve as a mechanism of coordination and in this way to minimize the transaction costs associated with the implementation of regional policies. At best it can be argued that the TRASA has enabled the sharing of information amongst national regulators in the SADC. See table 7.11 below for a summary of the effects of institutional arrangements in the SADC. The impact of institutional arrangements was assessed using three logical steps (EC 2005).

- Additionally, what has happened over and above what would have happened anyway?
- Displacement, what has not happened which would have happened in the absence of institutional arrangements?
- Effectiveness, did institutional arrangements produce the expected result?

**Table 7.11: Summary of institutional arrangements in the Southern African Development Community**

<b>Institutional arrangements</b>	<b>Implications for regional regulation</b>	<b>Mechanism</b>	<b>Impact on sector performance</b>
The actual regulatory process	-	Absence of legally binding regional regulatory rules and procedure. Absence of supportive structures like regional courts.	Displacement Effectiveness
The distribution of competencies across two levels, national and regional.	-	No formal competencies at the regional level	Effectiveness

### **7.3.5 Actors in the Southern African Development Community**

The interaction between; the operators with SMP and new entrants, NRA's and the SATCC and incumbents and national governments were noted within the SADC. Below we discuss the implications of this for regional regulation and its impact on sector performance within the SADC.

The operators with SMP and new entrants created various problems for the NRAs and regional regulation. Incumbents were typically hostile towards new entrants and anti-competitive practices in the past have to a large extent allowed them to be successful in maintaining their market dominance. The open antagonisms between incumbents and new entrants suggest that the culture of the incumbent firms was still that of monopolistic behavior, of keeping competitors out, and where this was not possible, engaging in collusive behavior. Overall incumbent behavior was found to have a negative effect with respect to enabling a more competitive market structure. Even when, having been taken to court, incumbents were found guilty of a wide range of anti-competitive practices the incumbents were able to use the judiciary process (appeals) to sustain their competitive advantage. New entrants in the SADC region had to seek relief from the national regulatory agencies, national judiciaries and at times from international organizations often with little success.

The hostility between government ministries and the NRAs suggests that the former was still locked into the traditional "command and control" mode. This interaction had the unintended consequence of negating the social objectives that the policymakers had so aggressively pursued in their telecom policies. The delay in awarding special licenses to rural operators, caused by disagreements as to how the guidelines should be interpreted between the Ministers and the NRAs in the SADC, allowed incumbent operators to extend connectivity via mobile and to remove the competitive advantage of the fixed operator. This resulted in the idea of universal access being constrained. The South African case study shows how the veto rights granted to the Department of Communication (DOC) over regulatory decisions made by the NRA undermined the regulatory independence of the NRA's and had implications for the perceptions of regulatory risk. The ensuing, well documented,

spats, fought out in the courts between the DOC and its portfolio organizations, at critical times, seem to have directly constrained the introduction of effective competition in South Africa (BMIT 2004). It has also been argued (Ton and Fabian 2005) that delays regarding the timely granting of UALS licenses adversely affected the provision of telecom services in under serviced areas and thus had delayed universal access in the SADC.

The significant role played, and influence exerted by, international donor agencies on regional ICT strategies remains a concern for the SADC. The greatest challenge in this regards seems to be finding ways of improving the working relationships between international experts and local experts. The donor funding supplied to create a regional telecom policy and bill, is a case in point. In some instances these donor documents simply incorporated aspects taken from the EU telecom framework with little thought as to how applicable or transferable such aspects were for the SADC situation. In other instances the suggested regulation went beyond what policymakers required, bringing into question again its relevance for the SADC context. There was also a problem of continuity of donor funding. The telecom framework was first formulated in 1998 and a lack of further funding has constrained further revisions of the framework despite the advent of new technologies and the changes taking place in the SADC region.

With respect to interactions between the NRAs and the regional organizations, the latter are generally not perceived to be credible. This can be seen in the little effort afforded to participating meaningfully in the SATCC decisions, in transposing regulatory principles into national legislations and in implementing regulatory decisions. Furthermore, leading states see regional policy frameworks as lagging reform developments in their states and not substantive enough to address the dynamic challenges in their states.

In the SADC the relationship between national governments and telecom sector incumbents is generally one of political support. In the first instance the incumbents have provided national governments with much needed capital produced by the partial privatization measures. This has offered governments the benefit of generating budget financing, for their treasuries, and decreasing state investment in the telecom industry. The ensuing IPO's of many of the incumbents have further contributed to state coffers while favorable policy and regulations have continued to favor the incumbent and enhanced their stock value.

The decision to allow industry actor's greater choice with respect interconnection and technology had a negative influence on efficiency. The existing arrangements were simply inadequate for restraining the anti-competitive behavior of incumbents. Incumbents were simply allowed to continue to dominate and use a variety of tactics to retain a position of power they could negotiate. See table 7.12 below for a summary of the effects of actors in the SADC. The impact of actors was assessed using three logical steps (EC 2005).

- Additionally, what has happened over and above what would have happened anyway?
- Displacement, what has not happened which would have happened in the absence of actors?
- Effectiveness, did actors produce the expected result?

**Table 7.12: Summary of actors in the Southern African Development Community**

<b>Actors</b>	<b>Implications for regional regulation</b>	<b>Mechanism</b>	<b>Impact on sector performance</b>
Incumbents and new entrants	-	Hostility	Displacement
Member states and the SATCC	+	Credibility	Effectiveness
Incumbents and national governments countries	+/-	National champions and soft support.	Displacement Effectiveness
Allowing industry actors greater choice	+/-	Contracting problems with interaction between incumbents and rivals.	Effectiveness

The technological socio-economic effects described above raised a number of important issues for regional regulation and its ability to coordinate economic activities in the SADC’s telecom sector. We found in our case study, that the majority of the technological socio-economic effects created *challenges* for regional regulation that have largely *constrained* the development of a competitive telecom sector across the SADC.

#### **7.4 Regulatory issues raised in the Southern African Development Community**

Our case study also highlighted the underlying substantive regulatory issues in the SADC. We will now summarize these issues and comment on the way in which the SADC policymakers and regulators have responded to them.

##### **7.4.1 The Southern African Development Community policy framework**

The SADC policy framework is vague with respect to providing a policy for regional regulation. It tends to emphasize issues like commercializing and privatizing incumbent operators, and separation between the regulation and operation of telecom services within their respective countries. While the framework might once have been useful, for the majority of the SADC states it proved to be outdated and inadequate particularly for leading telecom markets like South Africa, Mauritius and Botswana. In the end these “sophisticated countries” became reluctant, uncooperative participants in the efforts to enforce the framework or to develop the policy framework further. An assessment of how and whether, the objectives of the TRASA framework were achieved shows that very little privatization took place, resulting in the SADC government retaining the largest shareholding in most of the national incumbents. In addition little progress was made with respect to creating the NRAs; much of this was due to the interference by national ministers in the public day to day activities of the NRAs. Many factors may explain the relative effectiveness of the SADC policy framework. Other than the relevance of the actual regulatory objectives, there is a problem with its legal status which is not legally binding on members.

#### **7.4.2 Regulatory institutional structure**

The SADC regulatory regime is characterized by the adoption of principles at the SADC level, and nationally led implementation and enforcement. The national governments have been reluctant to hand over any formal regulatory control to a regional organization. As such informal cooperation (the TRASA) between the NRA's has been used as a temporary solution. The TRASA's decisions, its model regulations, however, have lacked credibility in the face of lack of compliance by member states of behalf of national ministers and the NRAs. In addition when problems of enforcement have arisen at a national level the parties have sought help from international organizations like the WTO. While it was hoped that procedural convergence and harmonization would emerge from the SADC telecom sector framework and that the TRASA might evolve into a more formalized regulatory body, this is unlikely under the present regulatory regime. In the next stage of regional regulatory reform it will be necessary to examine issues of legality and the instituting and supporting of institutional structures such as a SADC regional supreme court.

#### **7.4.3 The role of Telecommunications Regulatory Association of Southern Africa**

As a regulatory forum, one that is not explicitly recognized in the SADC's constitution, the TRASA's primary activities have been directed towards information sharing around the 1998 new policy framework. Insofar as its objectives are concerned the TRASA was effective. Given its governance and institutional environment it could not be expected to do more. Unfortunately the situation in the SADC required more. For example, stimulating competition across the region, promoting and supporting the NRAs; restraining incumbent dominance across the SADC; and stimulating innovation and experimentation at a regional level, WiFi and VoIP. This seems to require substantive changes to the governance and competencies of the TRASA. This in turn requires substantial changes to the formal rules and supporting structures of the TRASA.

#### **7.4.4 The role of National Regulatory Authorities**

In general, the NRAs across the SADC had difficulties with implementing national policies i.e. access, interconnection and pricing. Implementation of regional regulation was not given priority. While the NRAs did participate in regional initiatives these have mostly been limited to information sharing and increasing national country understanding of regional issues. The need for increased regional cooperation was further stimulated by the various regional initiatives and the presence of regional operators. In many respects, though the shift in perception of the NRAs role from national or regional regulator has not yet been realized.

#### **7.4.5 Market power**

The dominance of incumbents in the SADC region has been particularly problematic. The fact that many are still majority owned by national governments in the region has had an affect on the overall liberalization of national markets. National governments have to intervene from time to time to preserve their interest in the incumbent. Our case study shows the problems created by incumbent dominance prior to reform, leading up to reform and after liberalization. The SADC approach to the

problem of market power was to institute a tightly managed liberalization process. The policy framework that accompanied reform consisted of model regulations or guidelines that were non-binding on member states and unsupported by any form of regional judiciary. The setting up of the TRASA as a regional organization of telecom regulators was also based on the principle of voluntary participation. This, in addition to the strong culture of dominance and the ability of incumbents to capture new technology, meant that effective competition is presently restricted in the SADC region. The TRASA decisions, i.e. model regulations and their relevance were questioned and ignored by many countries. The incumbents were therefore able to hinder the liberalization process to provide barriers to entry for new entrants and generally to undermine reform in the SADC. The incumbents have been able to maintain market share in fixed telephony and to extend their influence in the mobile sector. In addition, we also saw the emergence of regional monopoly telecom operators capable of exercising dominance across the SADC (Telkom and some mobile operators<sup>90</sup>).

#### **7.4.6 Interconnection regulation**

The issue of interconnection has been particularly problematic in the SADC. Incumbent power and information asymmetry between regulators has resulted in numerous disputes. The NRAs have not interfered in private negotiations between firms; they have only gotten involved in the case of disputes when invited. Firms at the receiving end have sought help to deal with the incumbent dominance from international organizations like the WTO. The SADC response to the problem of interconnection is considered to be too simplistic and inadequate by the NRAs. The framework does not address the substantive issues like costing models or standards. Leading states like Mauritius in particular, have not found the framework useful. Where leading states have made progress, they have not passed this learning experience back to the TRASA, in terms of revising the model regulations. Our survey also shows that regulatory harmonization has been elusive, with respect to pricing and methodology, etc.

#### **7.4.7 Price regulation**

The question of tariffs has been problematic in the SADC. At national level the pursuit of cost based pricing focused initially on rate rebalancing. This was also reflected in the model regulation on tariffs. Here again the model regulation do not address substantive issues like cost modeling and methodologies. The issue of price caps is mentioned but not explained for the SADC context; again the model regulations are again inadequate for the real challenges facing the NRAs. It is clear from the case study that the question of price caps may need to be reviewed in the context of identifying specific monopoly nodes in the network and applying price caps where monopoly exists.

### **7.5 Conclusions**

In this case study we explored how the SADC technological, socio-economic system impacted regional regulation and how the SADC policymakers and the NRAs responded to the underlying

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<sup>90</sup> Telkom, MTN and Vodacom have leveraged their South African successes and experience to expand into the rest of Africa.



substantive regulatory issues. Multiple data sources were used for the SADC case study, including literature, the internet, statistics, interviews and surveys.

We began this chapter with a discussion of the technological socio-economic system present in the SADC. Under informal institutions, we described the culture of public ordering, the culture of commitments to the WTO and the culture of dependence on international donor funding. Under technology we described the modernization of the national incumbent's networks prior to entry, the deployment of GSM mobile technologies and the ability of incumbents to capture these alternative technologies. Under formal institutions we described the SADC regulatory objectives, liberalizing markets, creating the TRASA as a regional regulatory forum and harmonizing interconnection and price regulations. Under institutional arrangements we described the actual regulatory process and the distribution of competencies across the SATCC and member countries. Under actors we described the interactions between incumbents and new entrants, member states and the SATCC and incumbents and national governments.

We found that the technological socio-economic system created benefits and challenges for regional regulation. In our case study we found that the majority of the technological socio-economic effects created challenges for regional regulation and have largely constrained the development of a competitive telecom sector across the SADC. These technological socio-economic effects raised a number of important issues for regional regulation and its use and means to coordinate economic activities in the SADC's telecom sector.

We concluded with a description of the underlying substantive regulatory issues in the SADC. The following regulatory issues were discussed: the SADC policy framework, the SADC institutional structure, and the role of the TRASA, the role of NRA's, market power, and interconnection and price regulations. We were particularly interested in the way in which the SADC policymakers and regulators have responded to these issues. In Chapter 8 we will compare the treatment of these regulatory issues across the three regions of our case studies.



## **8. Regional regulation and the performances of the telecom sectors in the European Union, Organization of Eastern Caribbean States and the South African Development Community**

### **8.1 Introduction**

Using the empirical case study evidence and conclusions presented in Chapters 5, 6 and 7 we are now ready to compare the technological socio-economic systems, treatments of the regulatory issues and the performances of the telecom sectors across the three regions of our case studies. Given that three varying economic regions are represented, developed, the European Union (EU), developing, the Organization of Eastern Caribbean States (OECS) and underdeveloped, the Southern African Development Community (SADC), we expect to find some issues that are common to the three economic regions and some that are unique to each region. Beyond the comparison, we aim to draw conclusions based on the comparison that will be used to provide the basis for assessing the relationship between technological socio-economic systems and regional regulation, and its subsequent impact on sector performance.

### **8.2 Assessment of technological socio-economic affects**

We discussed the approach to regional regulation in the EU, the OECS and the SADC in chapters 5, 6 and 7, below we provide a summary of the implications of technological socio-economic systems for the policymakers and regulators in these regions.

#### **8.2.1 Technological socio-economic effects in the European Union**

We discussed the approach to regional regulation within the EU in chapter 5. Here we provide a summary of the implications of technological socio-economic systems for the EU policymakers and regulators.

##### **8.2.1.1 Informal institutions in the European Union**

In the EU the incumbent's market power is still a force to be reckoned with, on average incumbents in the EU have a market share of 70%. The EU incumbents were able to maintain their fixed telephone market share in traditional markets and to extend their influence to new markets. In addition, many of the dominant incumbents are still partially owned by their governments and in some instances supported as national champions, for example, the EU state owned public telecommunication operators (PTOs) provide 62% of fixed access lines.

A strong culture of mistrust towards the European Commission's (EC) control can be seen in the development of the EC telecom regulation and in the creating of regional organizations of telecom regulators. A "lack of political will" (Arnbak 2004) to set up a regional regulator and opting instead

for a high level coordination group, European Regulatory Group (ERG), has resulted in increased costs, with respect to harmonizing regulatory practices within the EU.

The high value attached to competition within the EU has created a positive influence on sector development. This was crucial given the EU objective of pursuing an information society build on an EU knowledge economy. The impact on the deployment of various broadband technologies and their market penetration, including the increased penetration of broadband, suggests that considerable progress has been made in the EU with respect to achieving an EU knowledge based economy.

#### **8.2.1.2 Technology in the European Union**

The adoption of technology neutral legislation has boosted diversity in broadband access, i.e. DSL, ISDN, cable and fibre to the home. Diversity can also be seen in the formal drive towards a single EU market, capable of promoting an information society based on an EU knowledge economy.

While a technology neutral design relieves the NRAs of much of their regulative burden, it places considerable faith in the telecom industry to select the “right” technologies. While the EU decision has proven successful to date, recent difficulties in the US (Vesa 2005, et al) and the high transactions costs associated with this approach suggests a need for this policy to be continuously reviewed within the EU.

Lastly, the advent of new alternative technologies like cable television (CaTv), for example, in the Netherlands, has stimulated broadband market penetration and lowered prices. At the same time, incumbents have demonstrated their ability to “capture” these new technologies. In the case of mobile, incumbents have been able to leverage their dominance in fix networks to provide services in mobile networks.

#### **8.2.1.3 Formal institutions in the European Union**

The EU telecom policy framework emphasized notions like competition, improving the functioning of the internal market, guaranteeing basic user interests, technology neutrality and flexibility to deal with fast changing markets. The heterogeneity of the region means that the adoption of these objectives by all EU member countries will be extremely difficult in the short term.

The full liberalization of the EU sector has created a positive effect on EU sector development, as can be seen in the steady growth in the telecom sector for fixed, mobile and broadband. The granting of authorizations instead of licenses has removed regulatory barriers to entry and allowed new entrants to enter the market that might not have been able to do so had licensing of market entry continued in the EU.

The creating of the IRG and the ERG has promoted the setting of priorities, stimulated awareness, provided for the educating of the NRAs, increased understanding of regulatory matters and created an environment conducive to shared learning within the EU. The roles of the IRG and the ERG have been to reinforce and accelerate moves towards regulatory harmonization within the EU and to assist NRAs in pursuing their strategies of adaptation to new conditions.

The contribution of IRG's regulatory best practices for local loop unbundling (LLU) and long run average incremental costs (LRAIC) however, were not found to have contributed directly towards regulatory harmonization. In some instances the regulatory best practices have enhanced existing desires for change and provided additional arguments to justify reform within the EU telecom sector.

In general, the results in the EU with respect to LLU and LRAIC show that the varying methods of implementation used by the NRAs did not achieve the regulatory principles espoused in the regional telecom framework. Despite this, the best practices document did contribute towards better information sharing and capacity building between the NRA and the EC.

#### **8.2.1.4 Institutional arrangements in the European Union**

The system of governance that evolved within the EU in 1998 included new rules and new key players, i.e. the ERG and the Communications Committee. The EC opted to allocate regulatory functions across the national and regional levels. While some functions became centralized, for example, identifying telecom markets, others were done at a national level, for example imposing remedies. The complexity of the system placed an enormous strain on the EU objective of being flexible enough to meet telecom market changes. The various delays within the EU in defining markets, identifying dominance and prescribing remedies illustrate the complexity of the system. The EU system was further complicated by its reliance on competition rules in competitive parts of the telecom market, which required closer working relations between the NRAs and the National Competition Authorities (NCAs).

It can be argued that solid legal foundation and supporting institutional structures in the EU contributed towards more effective regulation. The presence of actors like the Council of Ministers (COM), the EC, the European Parliament (EP) and a European Court of Justice (ECJ) all contributed towards confidence in applying regional regulation. The setting up of the two regional organizations of regional regulators filled an important void in the regional process, that of coordinating regulatory implementation. In general the existence of these institutions contributed towards a more efficient way of coordinating telecom regulatory activities, even though at times certain tasks were being duplicated.

### **8.2.1.5 Actors in the European Union**

The perceiving of new entrants as threats and the mentality of “holding and defending” existing market share and ‘capturing and growing’ new markets was certainly evident in the EU. This gave rise to strategic behavior which, in many ways, aimed at lessening competition (EC 2004). The new EU framework accepts the dominance and significant market powers of incumbents as a given.

The attitude of mistrust on behalf of the NRAs towards the EC resulted in a structure of governance that included two “rival” regional organizations of telecom regulators, both essentially pursuing the same objectives with respect to regulatory harmonization. The EC’s vision for a single internal market can be contrasted with those of some of the members that wished to develop strong national markets. The process of determining the institutional coordination mechanism, for the telecom sector in the EU concluded with the creation of the ERG as an alternative to a fully functional EU regulator. While this process was taking place the NRAs created the IRG as an informal body to harmonize regulatory practices within the EU and between other European countries.

The key EU governments in Germany, France, Italy and the Netherlands, continued to support their “national champions”; and in these countries the incumbents were only partially privatized and still enjoy political support from their governments. This happened despite formal proceeding by the EC against some of the member states for failure to comply with EU rules with respect to telecom sector liberalization.

While specific regulations on interconnection and pricing were adopted, much of actual implementation of these regulations was left to private arrangements, where firms were expected to enter into private negotiations with other firms. This decision proved to be costly and time consuming for the EU. In many instances rivals sought help from the courts, national and regional. In the EU, decisions were characterized by long delays on behalf of the national courts and the ECJ, which further frustrated rivals. Incumbents in particular had used the courts to challenge decisions by regulators resulting in “regulation by judiciary”.

### **8.2.2 Technological socio-economic effects in the Organization of Eastern Caribbean States**

We discussed the approach to regional regulation within the OECS in chapter 6. Here we provide a summary of the implications of the technological socio-economic systems for the OECS policymakers and regulators.

#### **8.2.2.1 Informal institutions in the Organization of Eastern Caribbean States**

Cable and Wireless (C&W) continued to exert considerable influence within the OECS region and exercised significant market power even after new entrants had been phased in. This dominance of C&W created problems in that many of the policies and regulations developed by the OECS

Authority and ECTEL were simply not adhered to. C&W was able effectively to stall dominance proceedings against it and any challenges brought against it with respect to dominant behavior. This allowed C&W to avoid the more intrusive form of regulation reserved for those with significant market power (SMP), and effectively weakened key regulatory tools like price and interconnection regulation set out in the OECS.

The OECS Authority's commitments to the World Bank allowed the OECS countries to access World Bank expertise and to obtain international support for their reform efforts. In addition this allowed the OECS countries to at least try to match the expertise and experience of C&W especially during the crucial negotiation period. In many respect this support provided the OECS Authority with the confidence to embark upon aggressive pro-competition reforms in the region. In addition the OECS countries had the obligation to pay back the World Bank loans and to do this; they had to commit to real reform and sector development.

With respect to trust, a single internal market for telecom within the OECS could be built on the existing close cooperation amongst the OECS countries, for example in banking, common central bank; sport i.e. a regional cricket team; and the judiciary, the Eastern Caribbean Supreme Court (ECSC). The trust that had been generated by these projects was easily brought to bear on the OECS telecom project. It was therefore relatively easy for the OECS states to delegate control of the telecom sector to the OECS Authority in the form of the ECTEL Treaty to commit jointly to repay their World Bank loan. Despite this, some suspicions remained as can be seen in the decision to create the NTRCs, to represent national interests, and to complement the ECTEL.

Cohesive competition provided the OECS members with a powerful tool to constrain C&W's dominant incumbent powers within the OECS. The OECS members attached high political value to introducing telecom competition within their region. This strong support for the project led to the aggressive pursuit of pro-competition regulations within the region which included, for example, regulations on price caps interconnection and licensing.

#### **8.2.2.2 Technologies in the Organization of Eastern Caribbean States**

While the OECS telecom framework (2000) provided no specific technological blueprint, it allowed new entrants to provide the technologies of their choice. This allowed new entrants like Digicel to deploy GSM mobile as an alternative infrastructure to the TDMA technology deployed by C&W. Consumers preferred the newer GSM technology over the TDMA technologies offered by the incumbent, C&W. This had a profound impact on the market structure for mobile markets and for prices and service quality.

In fixed services the incumbent (C&W) was able to maintain its market share. However C&W's decision to modernize its network prior to liberalization, and while still enjoying monopoly rights, allowed it to upgrade its network, to set in place optic rings and to provide satellite technology for

the islands. This tactic meant that new entrants did not find it viable to duplicate parts of the network, for example, the optic rings around each of the islands to set up systems for their core base. All this led to a number of implications for competition in the international markets.

### **8.2.2.3 Formal institutions in the Organization of Eastern Caribbean States**

In our case study we found that a good fit existed between the objectives of the OECS telecom policy framework, promotion of competition, the harmonization of policies on a regional level, universal service, fair pricing and the use of cost based pricing methods by telecom providers, and the homogeneity of the region. The relatively similar sizes of the national markets, the amount of similar experiences with respect to C&W's incumbent dominance and stages of reform placed the islands more or less on an equal footing.

With respect to liberalization, the phased approach used by the OECS Authority seems to have allowed new entrants to prepare better for competition. It also forced the incumbent to modernize its network and balance its tariffs. The "shock" of simultaneously opening all the national markets, seems to have 'shocked' the policymakers and regulators rather than C&W the incumbent, in terms of their unpreparedness for the results of this action. Many of the regulations were not yet in place when the market opened while the working relations between ECTEL and the NTRCs still had to be tested.

With regards to ECTEL, its status as a de facto regional regulatory authority with real powers, 'real teeth' improved the effectiveness of regional regulation. The incumbent C&W was made to negotiate with ECTEL, as a regional authority on regional matters, i.e. spectrum, numbering, while still pursuing individual terms and conditions with individual C&W member states through their NTRCs. ECTEL's regional orientation meant that regulation within the region was more regionally orientated and enforced regionally, if necessary in the Eastern Caribbean Supreme Court (ECSC).

The consistent application of regulations, like licensing, by NTRCs provided the means collectively to constrain the dominance of the incumbent. The use of common regulations provided guidelines with respect to implementation and meant that NTRCs had very little discretion to deviate from the regional plan. Consistency with ECTEL's recommendations resulted in similarity of regulatory practices amongst the OECS member states. This was particularly evident for the licensing procedures, cost structure and the rate rebalancing process of each of the OECS states. The goal of regional price regulation, however, remains elusive.

### **8.2.2.4 Institutional arrangements in the Organization of Eastern Caribbean States**

The system of governance for the telecom sector that evolved within the OECS in 2000 included new rules for the game, set out in the OECS Treaty and key new players, the ECTEL, the NTRCs and a Board of Directors. The OECS Authority opted to allocate functions and responsibilities



between the national and regional levels. In some instances the centralization of functions made regulation more efficient, for example the spectrum management and numbering by the ECTEL. In other instances the allocation of functions across national and regional levels complicated the procedures. For example, making licensing a dual competency, allowed regional interests and the OECS member states to be advanced.

In terms of the regulatory process, the regulatory decisions made by the OECS Authority and the ECTEL were legally binding. Transposition into national law was therefore mandatory and by and large, the member states enacted the regional policies into national legislation. This was made easier by the OECS's clearly defined policy and regulatory framework that was binding on participating states. The setting up of a regional regulator, the ECTEL to support and work alongside NTRCs, contributed towards a more effective regulatory system and with this greater coordination and cooperation became possible.

#### **8.2.2.5 Actors in the Organization of Eastern Caribbean States**

With respect to relations between the incumbent and new entrants, C&W opted to view all new entrants as potential threats. C&W's subsequent behavior towards rivals included anti-competitive practices like delaying interconnection agreements and flooding the markets with cell phones prior to mobile entry. In response its rivals sought help from the courts and policymakers.

With regards to the relation between the incumbent, C&W and the national and regional governments, the OECS national governments did not own any shares in C&W; and in response to incumbent dominance, the national governments united, preferring to negotiate with C&W through the OECS Authority. This relationship was often antagonistic and characterized by three negotiated agreements, numerous court decisions and even a threat by the incumbent C&W to withdraw from one of the member countries. The anti-competitive behavior of the incumbent had a direct impact on competition and sector performance within the OECS. The incumbent was able to delay and frustrate competition successfully and to win court cases in the process. The latter in particular suggests a lack of experience and capacity on behalf of the ECTEL to regulate the complexities of the new telecom sector environment.

The relationship between the OECS governments are based on trust, as can be seen their political will to give up some national control and to commit to repay a World Bank loan jointly. This came with some suspicion, in the discussion leading up to the creation of the ECTEL, the national governments insisted that its creation should be accompanied by the setting up of NTRCs.

The hostile relationships between the incumbent and the national governments consumed considerable time and resources. This dissonance contributed towards ending the monopoly rights of C&W and served to be ushered in first partial, then full liberalization of the telecom sector. The conflict literally drove the governments of the OECS to make a collective rather than individual

response to C&W. This resulted in the suspension of bilateral agreements and the making of three collective agreements between member states and C&W. It compelled the OECS member states to pool their resources and expertise and to centralize their decision-making with regards to regional telecom matters. The creation of the ECTEL was a direct consequence of this; the member states were now able to use the mechanism to harmonize their responses to C&W. While the creation of the ECTEL did not deter individual member states from challenging C&W actions in their own states, it did advance a regional reform program and the development of a regional market.

While specific regulations on interconnection and pricing was adopted, much of the implementation of these were left to private ordering, where firms were expected to enter into private negotiations among themselves. This leaving of interconnection arrangements and pricing to private actors constrained competition within the region. Various disputes arose between the incumbent and new entrants concerning interconnection and pricing. In some instances, the national and, where necessary, the regional courts were brought in to address the problem of solving disputes.

### **8.2.3 Technological socio-economic systems in the Southern African Development Community**

We discussed the approach to regional regulation in the SADC in chapter 7. Here we provide a summary of the implications of the technological socio-economic systems for the SADC policymakers and regulators.

#### **8.2.3.1 Informal institutions in the Southern African Development Community**

The shift in emphasis to private ordering within the SADC region did not automatically change the mindsets of national governments, many of the old behaviors and values remained intact. This meant that despite the encouragement of private ordering amongst firms, with respect to interconnection for example, and the creation of NRAs, the national telecom executive minister routinely intervened directly, often sidelining national regulatory structures and in the process, thwarted competition and affected investor confidence.

The SADC national governments readily committed to principles of fair regulation with respect to competitive safeguards, interconnection regulation, the allocation of scarce resources, universal service and creating independent regulatory agencies, as espoused by the WTO and the ITU. The rationale for doing so, however, varied amongst the countries from taking negotiating pressure off other sectors, to using the commitments to accelerate national reforms. This aided harmonization, and resulted in a common policy framework and regional regulations.

With respect to dependence upon international donor funding, pressing issues like addressing poverty, famine, of civil wars meant that telecom infrastructure development came far down the list. The vast sums required for infrastructure development in the SADC could simply not be funded

from national or regional resources. Thus the SADC was dependant on donor funding, if and when available. This dependence had far reaching consequences for the nature, and the direction of the telecom sector reforms made within the SADC and set out in reform documents such as the model policies of regulation. Western models (the EU) of regulatory policy, i.e. privatization, liberation and deregulation, were actively promoted.

### **8.2.3.2 Technology in the Southern African Development Community**

A key internal driver of the SADC reform was the inability of incumbent operators to respond to technological change, since they had neither the funds nor the expertise to introduce new technologies. Most governments in the region came to accept that their monopoly operators were unable to respond adequately to the ever accelerating changes in telecom technologies. This persuaded many governments to actively pursue foreign, strategic equity partners for injection of capital to modernize their telecom sectors and provide the necessary expertise.

In the SADC the problem of technological design was compounded by the vast economic disparities between countries and within countries. This effectively meant that the technological requirements of the diverse consumer groups presented in the region would differ. Some consumer groups, typically business users within city centers, required modern converged broadband services while other consumer groups, commonly rural and residential communities, required basic access to telecom services. The policymakers and operators were therefore expected to consider the tradeoffs of meeting the technological needs of business communities while simultaneously meeting the basic technological needs of universal access. In the case of the SADC, private efficiencies were pursued at the expense of public efficiencies.

The advent of alternative technologies like GSM dramatically altered the African telecom landscape. Despite dramatic growth in mobile, Africa's dependence on traditional fixed infrastructure means that universal access to telecom technologies within Africa is still a dream. In addition the mobile operators are largely dependent on fixed networks owned by incumbents for interconnection and thus subject to excessive pricing. Lastly, incumbent operators responding to the opening up of competition in the telecom sector either deployed mobile networks or acquired mobile networks as a means of retaining market dominance.

### **8.2.3.3 Formal institutions in the Southern African Development Community**

The policy objectives advanced in the telecom policy framework, i.e. commercializing and privatizing incumbent operators, the separation between the regulation and operation of telecom services within their respective countries did not resonate well in leading telecom markets like those of South Africa, Mauritius and Botswana. For these countries and other more developed countries the framework proved to be outdated and inadequate.

In terms of liberalization, access for new entrants was provided by tightly controlled licensing procedures. This managed approach resulted in limited entry, and duopoly or tight oligopoly structures. The granting of access to competitive operators using a licensing process was also subject to considerable political interference, from national telecom ministries and ministers responsible. This damaged the credibility of the commitment of national governments to the entire telecom liberalized process.

The regional organization of telecom regulators, the TRASA, emerged as a top-down donor driven initiative. While it was able to coordinate participation in, and acceptance of, the 1998 regional reform initiatives, non legal status precluded it from contributing to more than information sharing across the SADC region. In addition its dependence on donor funding further compromised its ability to effectively support the NRAs facing incumbent dominance with competition problems.

The model regulation, on interconnection and pricing, were adopted in September 2000. This document contained basic regulatory principles like transparency and non-discrimination and specified methods for implementing these principles. However, little of what was set out in the model regulation was used and it was considered to be inadequate for dealing with the real complexities of interconnection and pricing in the SADC region.

#### **8.2.3.4 Institutional arrangements in the Southern African Development Community**

The system of governance that evolved in 1998 included new rules of the game, set out in the SADC Model Policy Bill, and involved the formation of a new key player, TRASA. The SATCC opted to allocate functions and responsibilities between the national and regional levels. In the case of the SADC, all regulatory functions were done at the national level.

The largest omissions in the SADC with respect to governance was the absence of the provision of a solid legal foundation for the telecom liberalization process, coupled with inadequate supporting institutions, i.e. the weak SATCC and no regional judiciary. The outcomes of the SADC process, for example, the telecom policies, and regulations were not legally binding for the SADC member countries.

The SATTC nonetheless served to assist national governments and their regulators in developing their national markets. Private negotiations between operators with respect to commercial agreements were problematic, and new entrants resorted to regulators, the national courts and in the case of South Africa to the WTO in an attempt to obtain redress.

#### **8.2.3.5 Actors in the Southern African Development Community**

The incumbents within the SADC have hostile attitudes towards new entrants, however, by using anti-competitive practices they managed, to maintain their market dominance. This incumbent's

hostility resulted in new entrants seeking relief from the NRAs, their national judiciaries and at times even from international organizations.

With respect to interactions between NRAs and regional organizations, the latter was generally perceived as non-credible. This can be seen, in the lack of effort made by the SADC states to participate meaningfully in the SATCC decisions, to transpose regulatory principles into national legislations, and to implementing regulatory decisions. Further the leading countries in the area felt the regional policy frameworks lagged behind reform developments in their countries and was not substantive enough to address the complex regulators issues within their telecom sectors.

Leaving interconnection arrangements and pricing to private negotiations constrained competition. Various disputes arose between the incumbent and new entrants concerning interconnection pricing. In some instances national and international organizations were requested to try to solve the disputes, In SADC the VANs approached the WTO to settle a dispute between the South African incumbent operator, Telkom.

### **8.3 Comparing the treatment of the substantive regional regulatory issues**

We return to the regulatory issues raised at the end of each of the case studies for comparison. The issues include the following; regional policy framework, regulatory institutional structure, role of regional organizations of telecom operators, roles of the NRAs, market power, access regulation, price regulation and interconnection regulation.

In our approach we will identify the treatments that are common to the three regions and those that specifically affect regional regulation. We will also distinguish between common and specific treatments across the three regions. In the next section we will examine the impact of these regulatory issues on regional regulation.

#### **8.3.1 The regional policy framework**

In terms of commonalities, all three regions created regional policy frameworks that were directed towards economic objectives such as greater or increased competition and investment; social objectives such as network development; and technical objectives such as harmonization around standards, across a regional level.

In each of the regions the telecom frameworks contained high level policy and regulatory principles, for example, the EU Framework for Communications, the SADC model framework and the OECS Treaty. These documents were considered to be fairly general with little value for practical implementation. Countries were still obligated to find innovative methods of implementation that, given their specific institutional contexts, would advance the principles agreed and fixed in the policy documents.

The differences in how the regional policy frameworks were treated were perhaps more substantive. An important distinction was the legal status afforded to each of the policy frameworks. The EU and the OECS policy framework were more similar in this regard. The EU and OECS had frameworks that were legally binding on participating member countries. This was not the case in the SADC, where the use of policy framework was considered to be voluntary and only morally binding on member countries.

The EU's framework has been recently overhauled, while the frameworks of the OECS (2000) and the SADC (1998) remained virtually untouched, although some minor changes have been made along the fringes, despite fundamental changes in technology, markets, services and operators within the telecom sector.

The evidence found in our case studies suggests that the changing or not doing so, of a framework in response to sector developments is crucial for the credibility of a policy framework in the telecom sector and for the willingness of regional member states to transpose and enforce the framework objectives in their countries.

The policy frameworks from our evidence are thought to serve as the driving forces behind regional organizations and their subsequent aims. The differences between the regulatory objectives in the different regions also appeared to be substantive.

The EU tended to emphasize reform initiatives like deregulation and flexibility as part of its post liberalization reform package. This served as an important driving force for the application of more competition laws to telecom and to objectives of the ERG.<sup>91</sup> The OECS tended to emphasize reform initiatives like competition and the use of cost based pricing as tools necessary to enable competition. The OECS's 2000 policy objectives served as an important driving force behind the breaking of C&W's monopoly, and the objectives of the ECTEL. The SADC, in turn, tended to emphasize reform initiatives like privatization and the setting up of supporting structures like the NRAs. These objectives largely determined how the TRASA was created.

In all instances the regional organization of telecom regulators was intended to harmonize regulatory principles with respect to specific policy frameworks.

### **8.3.2 Regulatory institutional structure**

Each of the three case study regions instituted a regional regulatory system with supporting regulatory structures. The process was comprised of policy adoption, policy implementation and policy control. The key structures were organizations like parliaments, regional and national;

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<sup>91</sup> In the case of IRG, it was the 1998 new liberalized framework.

regulators, national and regional; and judiciaries, national and regional. However, the case studies show that the mere presence of such systems and structures was not sufficient to ensure the effective regulation of a region's telecom sector.

The regulatory regimes created to facilitate effective regulation differed substantially across the case study regions. In the EU the regime was characterized by the adoption of principles at the EU level, European Parliament, Council of Ministers and implementation at a national level, the NRA's and shared responsibility for enforcement in national courts and the ECJ. In the OECS the regime was characterized by the adoption of principles at the OECS level, i.e. the OECS Authority, implementation at a national level by the NTRCs and shared responsibilities for enforcement in national courts and the Eastern Caribbean Supreme Court. In many respects the approaches by the EU and the OECS are more similar than to that of the SADC. In the SADC the regime was characterized by the adoption of principles at the SADC level, i.e. the SATCC, implementation at a national level, the NRAs, and national enforcement in national courts, there was no regional judiciary available to enforce non-compliance.

The distribution of functions between national and regional levels also differed enormously. In the EU, the EC was tasked with defining national telecom markets while the NRAs were tasked with assessing market structure, and where dominance existed, apply regionally agreed remedies. In the OECS tasks like spectrum management and numbering were allocated to the ECTEL, while other regulatory tasks were left to the NTRCs, i.e. pricing, interconnection, etc. Licensing was allocated as a dual competency in the OECS. This again was unlike the SADC where all regulatory tasks were left to the NRAs at the national level.

A difference in the contributions made by the courts to promoting compliance to the telecom regulations also played a significant role in each of the regions. At a national level a reliance on courts reduced flexibility and the possibility of self-regulation and cooperation across all regions. A major difference was the presence of a regional judiciary in the EU, the ECJ and the OECS, the OECS Supreme Court. No such institution existed in the SADC, hence, the need for firms to seek legal help from outside the SADC region in this case. In one instance in the SADC the VANs approached the WTO to settle a dispute with the South Africa incumbent operator. However, the presence of a regional judiciary seems to have created benefits and problems. In the case of the EU and the OECS the length of time they took to make decisions affected the functioning of the telecom markets. New entrants in particular were disadvantaged by court costs and delays, the incumbent operators used these delays to advance their interests. In the OECS we have evidence that the regional court served as a deterrent for C&W, who when faced with court action often chose to settle out of court.

### **8.3.3 The role of regional organizations of telecom regulators**

The roles performed by the regional organizations of telecom regulators were inextricably linked to their specific telecom framework. What seemed consistent across the regions was the regional organization's role as a regional mechanism of coordination for information sharing and broad participation in the regional regulatory processes. The principal output of framework usage in this regard seems to be regional regulatory principles intended to assist NRAs with implementing regional policy frameworks.

In the case studies we found that organizations differed substantially with respect to systems of governance. A varying measure of power was delegated in each region. Only the decisions made by ECTEL were legally binding on the OECS member states. The IRG, the ERG and the TRASA were only permitted to produce regional regulatory principles. The legal status of these principals was non-binding on members. Given that the capacity was limited to non-binding recommendations, the most that the organizations could hope for was mimetic transfers of practices unsupported by coercive measures. Both the ex-ante and ex-post mechanisms of control are used within the case study regions, typical of what one would expect in agency relations. The matter of agenda setting provides an interesting case in point. In the IRG, as one would expect agenda setting is done on a consensus manner. In the case of the ERG, the secretariat managed to wrest this function from the EC and minimized its input to one agenda point. In the case of the TRASA the secretariat, with support from donor agencies, took up this the function of setting the agenda in the early stages instead of the SATCC principals. In the case of the ECTEL, not surprisingly, the secretariat took responsibility for setting the agenda rather than the OECS secretariat.

The manner in which the regional organizations emerged was fundamentally different. The IRG emerged as a bottom up initiative, while the ERG, the TRASA and the ECTEL emerged as top down initiatives. Amongst the three organizations that emerged in a top down manner, considerable differences were further evident. The ERG emerged as an EC funded initiative, the TRASA emerged as an international donor driven initiative, while the ECTEL emerged as a World Bank funded initiative. In the case of the IRG, the NRAs drove the process of creating the IRG, while in the case of the ERG the EC served as the principal. In the case of the TRASA, the SATCC served as the principal even though the entire process was driven by USAID. In the OECS, the OECS Authority drove the process that created the ECTEL.

Differences were also evident with the main drivers for creating these organizations. In the case of the IRG it was to strengthen the capacity of the NRAs in relation to the EC and transnational operators. The IRG, regulators felt that they were being picked off one by one by transnational operators, which were better resourced than the individual regulators. The IRG was also set up to resist the perceived increasing dominance of the EC. The ERG was set up by the EU to advance regional reform in compliance to EU legislation. The ECTEL was set up to strengthen the capacity of the member states to negotiate with the incumbent operator, C&W. The ECTEL member states



felt overwhelmed by the entrenched monopoly position of C&W, with its superior resources. The TRASA was set up to coordinate the acceptance and implementation of regional reform in the SADC region.

We consider the differences found during our case studies between the various organizations stated aims and objectives to be substantive. In the case of the IRG, the NRAs are expected to discuss and share experiences and information on national implementation issues. The effect of this is expected to lead to regulatory harmonization and the consistent application of EU legislation. In the case of the ERG, the NRAs are expected to advise and assist the EC to consolidate the internal market. The ERG is thus expected to serve as an interface between the NRAs and the EC in such a way, that it contributes, to the development of the EU internal market and to the consistent application of the EU regulatory framework. In the case of the TRASA, the NRAs are expected to coordinate regulatory matters and exchange ideas, views and experiences on all aspects of regulation of the telecom sector throughout the Southern African region. The NRAs are also expected to promote the establishment and operation of economically sustainable telecom networks and services in the region. It is hoped that this will maximize the utilization of scarce resources in specialist areas of telecom and facilitate a uniform level of understanding on regulatory matters. Furthermore, the focus of the ECTEL seems to be the promotion of open competition in telecom through policy harmonization. The specific areas identified were fair pricing and the use of cost-based pricing methods by telecom providers. The ECTEL is also expected to monitor the provision of universal service in the OECSS.

#### **8.3.4 The role of National Regulatory Authorities and National Telecommunication Regulatory Commissions**

The national governments within each of the case study regions were responsible for the setting up of their own NRAs/NTRCs as a way to ensure economic, social and technical regulation.

The regulatory tasks and objectives were similar across the three regions. All the NRAs/NTRCs are to some extent engaged in controlling access to the market, controlling the behavior of operators in the telecom market, ensuring the performance of universal service obligations and settling disputes.

While the NRAs/NTRCs are similar in some respects, they also differ between case study regions in other respects. The NRAs/NTRCs were created by national legislation, organized separately from government, headed by un-elected officials and given powers over regulation while being subject to controls by their elected principals, both in the executive and the legislature. The NRAs/NTRCs also differ in terms of design, structure and processes; constitutional positions, ranging from being non-governmental departments to being legally entitled to independence; and areas of delegation.

A clear distinction of the NRA's/NTRC's roles emerged between the three case studies. In the EU, NRAs have shifted their focus from managing the defined role of individual licensed players,

typically incumbent monopolies, to managing the market environment. The aggressive application of competition laws to the telecom sector accelerated this. This focus is considerably softened in the OECS and the SADC where there are no well established competition authorities. The implication of this for regional regulation within the EU has meant that regulation of access and entry conditions have fundamentally changed to the extent that licenses are no longer required.

A second important change has been the shift to a regional focus. This shift is more evident in the EU and the OECS than in the SADC. For example in the EU 60% of all policy is set in Brussels while the NRA's engaged in regional regulatory matters on a daily basis, applying remedies, etc. In the OECS, the NTRCs participate in the regional licensing process and are supported by the ECTEL in most of their regulatory tasks. This is less so in the SADC where the NRAs tend to focus on national issues and participate in regional issues insofar as this provides networking opportunities and enhances information sharing.

### **8.3.5 Market power**

The problem of market power has been extremely challenging across each of the regions. The NRAs have had to contend with the resulting anti-competitive practices of incumbent operators. Our case studies highlight, how market powers created problems prior to reform, leading up to reform and after liberalization. The common approach to this, observed across the three regions, was to radically change the rules of the game.

In each of the three regions, market reform took the form of market liberalization which has included pro-competition policies, regional telecom frameworks; the setting up of new structures to coordinate competitive markets, regional organizations; and harmonizing regulatory principles around specific issues like price, interconnection and access regulation, etc.

The manner in which telecom sector reform was undertaken differed substantially across the three case study regions. In the EU full liberalization was realized in 1998, in the OECS markets were partially opened across all the states in 2000 and in the SADC, the process was more tightly managed with various levels of competition across the region. In addition the EU has abandoned its licensing regime and has replaced it with an authorization regime. Licensing regimes are still in place in the OECS and the SADC.

In the EU and the OECS the pro-competition rules driving reform are legally binding and enforceable by national and regional courts. This has not been the case in the SADC where rules are non-binding and not enforceable by national courts.

The OECS created the ECTEL as a regional regulator and empowered it to stimulate competition. In the EU and the SADC their regional organizations of telecom regulators, the IRG, the ERG and

the TRASA either have no formal powers, the IRG and the TRASA, or have less power, the ERG, to drive competition. In the case of the IRG and the ERG within the EU participation is voluntary.

The emphasis placed on regional regulatory principles also differed across the regions. The IRG provided PIBs on various regulatory issues like LLU, LRAIC, etc for the EU, ERG produced regulatory remedies. The ECTEL developed price caps and interconnection regulations for the OECSs while the TRASA developed model regulation on interconnection and tariffs for the SADC.

The three case studies show the extent to which these reform initiatives have been successful in addressing the problem of market power. In each of the cases, to varying degrees, incumbents were able to hinder the liberalization process, to provide barriers to new entrants and generally to undermine sector reform. What seemed to have an impact across all regions was the deployment of alternative technologies. In most instances these technologies, cable television (CaTv) in the EU and GSM in the SADC and the OECS, broke the monopoly power in their markets. We also observed the ability of incumbent tactics to “capture” new technologies and use them to regain or sustain their market shares. In some instances the incumbents have been able to maintain market share in the fixed telecom sector and to extend their influence in the mobile telephone sector. In general increasing the levels of competition across all sectors of the telecom market has proved elusive.

### **8.3.6 Licensing regulation**

The issue of access and entry conditions was extremely important across all the case study regions. It was acknowledged to be an artificial barrier to entry in the three case study regions. While all three regions worked at unifying access the manner in which they differed radically. The approach in the EU is radically different from those used in the OECS and the SADC.

In the EU the policymakers opted to abandon the licensing process in favor of simple registrations. New entrants could simply inform the NRAs (authorizations) of their intention to provide services. In the OECS policymakers opted to make licensing a dual competency across national and regional levels. The process included participation by the NTRCs, the ECTEL and the respective national ministries on each of the islands. In the SADC the policymakers opted to harmonize around a system of tight control for awarding licenses, in cases where licenses were awarded the process was often accompanied by periods of exclusivity for the incumbent.

Similarities between the OECS and the SADC included the use of administrative procedures to determine the amount of licenses that were awarded.

### **8.3.7 Price regulation**

The principle of cost base pricing was generally accepted across all the case study regions. Especially with respect to determining retail and wholesale tariffs for interconnection. The use of price caps as a regional tool is explicitly contained in all policy frameworks.

The transition to a regional price cap regime proved extraordinarily challenging across all three regions. The negotiations between the OECS Authority, and later the ECTEL, and the incumbent proved to be particularly problematic. After six years of discussions, negotiations and court cases, the parties finally arrived at a decision in 2004 to implement a price cap regime, but only in 2006.

In the SADC the problem of rate rebalancing constrained harmonization around a price cap regime. This initial focus on rates rebalancing meant that very little emphasis was placed on the actual adoption of a price cap regime, i.e. modeling, standards etc. The model regulation on tariffs that was developed proved to be inadequate for the real challenges facing regulators in countries like South Africa, Mauritius and Botswana.

## **8.4 Comparing the impact of the regulatory treatments on market performance**

Examining the similar and different treatments of regulatory issues (themes) across the three case study regions, allows us to specify the impact of the technological, socio-economic systems on regional regulation. The similarities of the treatment of regulatory issues may explain similarities in the impact of regional regulation between regions, inversely the difference may explain the different impacts regional regulation impact is assessed in terms of three main elements (EC 2003). Additionally we looked at what had happened over and above what should have happened. We looked at displacement, we looked at what had not happened which have happened in the absence of regional regulatory initiative. We also looked at effectiveness, had regional regulatory initiatives produced the expected result in the three case study regions.

### **8.4.1 The regional policy framework**

The legal status of the telecom framework mattered. Where the policy framework was legally binding, more benefits were created than where the policy framework was voluntary. This was especially evident in the OECS and in the EU. In these regions the members states were obliged by law to transpose their policy frameworks into national legislation, and the NRAs were obliged to implement the regulations, while if necessary, the courts were obliged to enforce the regulations. However between the EU and the OECS the commitment of the OECS states to implement national regulations was further enhanced by the regional regulation in force in that region. This commitment to implement its policy framework also shows the credibility of the OECS Authority and its policy framework.

In the case of the SADC the use of “moral pressure” to ensure implementation and enforcement of the framework was unsuccessful. The interference from national telecom ministries, and in some cases responsible ministers, meant that the SADC’s aim to stimulate regulation failed.

The regulatory objectives and reform focus of telecom reform mattered. The framework was more readily accepted and owned when the regional states in the SADC case study perceived it to be relevant for their market requirements. The SADC case shows that when leading countries like South Africa, Botswana and Mauritius perceive the framework to be inadequate and outdated, meaningful participation was minimal. Leading countries tended to act independently of other countries in their region. In contrast in the OECS region, all the states valued regulatory framework as relevant and cooperated to ensure its implementation. The huge economic disparities with the SADC meant that developing any regulatory framework that would meet the requirements of the participating states would be difficult. The EU addressed this problem by allowing greater discretion for member countries with respect to finding methods to implement the EU framework; this caused EU countries to participate in greater regulatory harmonization. This was shown in the LLU and the LRIAC cases.

#### **8.4.2 The regulatory institutional structure**

Our three case studies illustrate the difficulty of designing a model for allocating tasks across regional and national levels that will suit all the participating nations. The decision to allocate regulatory practices across levels produced greater benefits than centralizing tasks or leaving regulation up to national level.

The OECS case shows the benefits of centralizing the task of spectrum management and numbering to the ECTEL rather than allowing individual countries to do this in their own way. This meant that limited resources could be allocated across the OECS region in a more efficient manner. A decision to make licensing a dual competency meant that regional interests and respective national interest were incorporated in the process. For example, individual ministers could either accept or reject the ECTEL’s recommendation within the OECS, given their national market conditions. The tradeoff within the OECS region was a lengthy and time consuming licensing process.

The EU case shows the value of splitting some regulatory functions across two levels. The defining of markets was coordinated at a regional level while the actual assessment of markets and application of remedies were decentralized. This gives the NRAs the flexibility to hold back from regulation where market circumstances justify this action. It also introduced a new host of issues that many within the EU may not yet be prepared to deal with i.e. increased powers, efficient judicial review processes and higher levels of competition.

The SADC case shows the limitations of leaving all regulatory tasks to the NRAs. Huge regulatory incompatibilities remain across the SADC countries.

The presence of a regional judiciary in the EU and the OECS contributed towards greater regulatory certainty. This was not the case for the SADC; the region lacks a regional judiciary. The presence of the ECJ and the OECS Supreme Court provided the option of litigation to resolve problems, when the problems could not be resolved at a national level. The appeal by South African firms to the WTO to resolve a telecom dispute between them and the incumbent shows the extraordinary lengths that firms have to go to, to settle telecom disputes in the absence of a regional court of appeal. Thus the WTO recommendation, given the WTO's lack of legal standing in the region, remained recommendations and the incumbent could not be forced to comply with the WTO rulings.

A regional judiciary may also act as a deterrent, and thus a means of constraining anti-competitive behaviors. The case of the OECS shows how the OECS Supreme Court served as a deterrent and catalyst for negotiation. In one instance both C&W and the ECTEL opted to settle out of court rather than face a negative judgment that could impact the ECTEL's decisions and C&W's operations in other OECS member states.

Our case studies also illustrated the costs of litigation in terms of efficiencies. In the EU and the OECS reliance on the judiciary in all regional disputes seems to have reduced flexibility and the possibility of self regulation and cooperation. The length of time it took to hear cases caused delays, especially for new entrants many of whom did not have the deep pockets of more experienced incumbents, incumbents who often used the courts as a tactic to delay market competition.

#### **8.4.3 The role of regional organizations of telecom regulators**

While all four of the case study regional regulatory organizations seemed to accomplish their respective regulatory objectives, they differed in the degrees of efficiency with regards to effective regional regulation. To whom the real power was delegated seems to matter. The contribution by ECTEL in terms of regulatory tasks produced greater benefits than when the tasks were limited to information sharing (IRG and the TRASA) or regulatory coordination (ERG). This was evident in how the ECTEL addressed regulatory harmonization, licensing process, and the management of radio spectrum, the provision of more affordable telecom services; and the extent to which it advised the NTRCs and governments on regional policy matters.

The function of the ECTEL was far superior to the information gathering and learning that took place in the IRG and the TRASA regions. The IRG's role in contrast was limited to information sharing amongst the NRAs and the ERG's role to coordinate participation in the EU regulatory processes. The TRASA's role was limited to obtaining buy-in and coordinating participation in the SADC policy framework. The function of ECTEL also considered more beneficial than the speedy compilation of a regulatory document as produced by the ERG. The credibility of the TRASA was further undermined by its dependency on donor funding and the question of who actually constituted the driving influence, USAID or Botswana.

The case studies also showed us that greater coordination of telecom activities was accomplished through the ECTEL and the ERG. The ECTEL for example, worked alongside, and supported the NTRCs. The expertise at national level was enhanced by, advice and support, provided by the ECTEL, concerning regulatory matters like setting price caps, interconnection, etc.

The EU's ERG successfully coordinated the regulatory remedies guidelines in a relatively short time. The TRASA, in contrast was ineffective at coordinating harmonized regulator tools, the regulatory tools are considered irrelevant and ineffective in terms of guidelines for many of the SADC states.

The various regional organizations provided some direct benefits for their principal participants. The IRG and the TRASA regulators benefited primarily from information sharing. The ERG regulators coordinated and in time, implemented the 2004 regional policy, and the ECTEL regulators benefited from direct participation in their regional regulatory process.

#### **8.4.4 Market power**

The evidence from the case studies shows, that no single solution has been found for the treatment of market power, all the regions were seen to be equally ineffective in addressing the problem of anti-competitive incumbent behavior and their attitude of hostility towards rivals. While some of reform measures taken had a greater impact than others, the levels of competition within the telecom sectors in the case studies have not increased dramatically. One tactic that appeared to be more effective than others was the deployment of alternative technologies. Efforts in the EU have shown greater potential to realize effective competition than in the other two regions.

The process of identifying markets, on a regional level, assessing dominance, on a national level, and applying remedies, at a national level seems the most sensible approach. The major difficulty seems to be the time required to complete the stages and the fact that the approach represents a paradigm shift in the regulatory approach of the NRAs. In the OECS, a similar approach to that used in the EU stalled after the first stage. The incumbent managed to negotiate its way out of being declared an operator with significant market power in exchange for concessions with regards to a price cap regime.

#### **8.4.5 Regional licensing**

The manner in which the issues of regulating access were approached within the three case study regions mattered. The EU approach seemed more beneficial than those used in the OECS and the SADC. Opting for simple registration has lowered the transaction costs associated with regulating access, while a dramatic increase in the number of new entrants within the EU testifies to the effectiveness of this measure. This tactic of accepting registration, rather than forcing new entrants to acquire a license to enter the EU telecom sector, has also served to reduce the roles of the regulators to that of managing national resources like spectrum management and numbering tasks.

This approach seems relatively easy when compared to the lengthy licensing process inherent in the OECS system of the NTRCs, the ECTEL and when national ministers are involved. The evidence shows that after the initial allocation of licenses by administrative procedures, the number of new entrants in response to the new (expensive) licensing procedure mandated in this framework.

The OECS approach is still far superior to the approach adopted by the SADC countries. Here the process is tightly controlled and this has resulted in a duopoly for fixed services and at best, three licenses for mobile across the SADC. The licensing process is still highly regulated and vulnerable to political interference and the market power of the incumbents, some of whom still have governments as their majority share holders.

It must be mentioned that, in all three case study regions, the increasing number of new entrants did not necessarily translate into increased levels of competition. While liberalization did produce some new entrants, the lengthy process of awarding licenses limited entry and constrained levels of competition in all the three case study regions, with the exception of the EU after it introduced a notification procedure for new rivals to enter the telecom sector.

#### **8.4.6 Price cap regulation**

The treatment of price regulation was found to be important. The EU has done more in this regard by expanding the debate to the use of accounting systems. This was caused by the EU's particular problems with excessive mobile termination rates. The IRG has encouraged harmonization around current costs as a cost base, and LRAIC as a costing methodology, but progress is slow with respect to dealing with these issues.

In the OECS the matter of price caps revolved around the setting of cost based pricing for the incumbent. Despite much effort from all concerned, transition to such a system remains an elusive goal.

Despite these challenges more progress has been made in the OECS region than in the SADC region. The existing model regulation in the SADC still address aspects like rates rebalancing, and



does not address more complicated issues like accounting systems across a regional level. On a national level some countries like South Africa and Mauritius have made progress. Their learning experiences, however, have yet to be incorporated into the TRASA regulations.

## **8.5 Conclusions**

Our key objective in this chapter was to compare the technological socio-economic effects and treatments of regulatory issues across the three case study regions, the EU, the OECS and the SADC.

We began with a comparison of the various technological socio-economic systems and assessed the challenges and problems these created for regional regulation across the EU, the OECS and the SADC. These included institutions relating to the 4 layered model, informal institutions and technologies, formal institutions, institutional arrangements, and actors. The implications for regional regulation were mixed. We found that in some instances it had created benefits while in other instances it provided regional policymakers and regulators with extraordinary challenges. Recommendations with respect to overcoming some of these challenges will be provided in Chapter 9.

We then proceeded with a comparison of the underlying substantive regulatory issues in the regions and showed how each of the regional policy makers and regulators treated these issues. These included; regional policy framework, regulatory institutional structure, role of regional organizations of telecom operators, roles of the NRAs, market power, access regulation, price regulation and interconnection regulation.

The treatments of these regulatory issues were similar and different. The similarities helped to explain the impact of regional regulation while the differences helped to explain the differences in the impact of regional regulation. Recommendations aimed at improving the treatment of these issues, and for improving market performance in the international telecommunications sector are discussed in Chapter 9.



## **9. Conclusions**

### **9.1 Introduction**

This study was about designing efficient and effective institutions for multi-level, multi-actor and complex regional regulatory systems. We examined the effects of technological, socio-economic systems on telecom regional regulation and its subsequent impact on sector performance. We will now discuss the conclusions that can be drawn from our case study research.

### **9.2 Research findings**

Our research model assumes that technological, socio-economic systems, regional regulation and sector performance are interrelated within the telecom sectors. According to our model, technological, socio-economic systems affect regional regulation in fundamental ways, creating benefits and challenges for regional policymakers and regulators, and how regional regulators and policymakers respond to these issues has implications for sector performance within a telecom sector. In some instances sector growth has been stimulated in others sector growth has been constrained.

Our research questions were.

- What effect has technological, socio-economic systems, such as informal institutions, technologies, formal institutions, institutional arrangements and actors, had on regional regulation in the European Union, the Organization of Eastern Caribbean States and the South African Development Community?
- How has regional policymakers and regulators responded to the regulatory issues raised in the European Union, the Organization of Eastern Caribbean States and the South African Development Community?
- What has been the implication of the response for sector performances in the European Union, the Organization of Eastern Caribbean States and the South African Development Community?
- How has the various technological, socio-economic systems and treatment of substantive regulatory issues, by regional policymakers and regulators compared within the European Union, the Organization of Eastern Caribbean States and the South African Development Community?

Our literature research, and extensive knowledge of the telecom sector, was used to design and carry out three case studies on regional regulation in the telecom sector. Our three case study regions were chosen on the basis of their level of development with respect to the three telecom sectors. The EU case study, (chapter 5) represents a well developed telecom region, the SADC case (chapter 7) falls at the other end of the continuum, as an underdeveloped telecom region while the OECS case falls mid place between the two extremes, as a developing telecom region.

### **9.2.1 Technological socio-economic systems and regional regulation**

In chapter 8, drawing from chapters 5, 6 and 7, we described the impact of technological socio-economic affects on regional regulation in the telecom sector. In this section we will provide a short summary of the similarities and differences of the various institutions that we've found to be relevant for regional regulation in the telecom sector.

#### **9.2.1.1 Informal institutions and regional regulation**

In total five informal institutions were deemed to be important for our investigation of regional regulation; the culture of the dominant operators, the attitude of mistrust on behalf of telecom operators towards regional authorities, a regions cultural willingness to open up to international organizations, the amount of dependency on donor funding and the strength or lack of, value placed on competition in the regions.<sup>92</sup>

We found that two informal institutions had particular influence *across* the three case study regions; the culture of dominant operators and the strength of the value given to competition. With respect to incumbent dominance, although we noted a slight downward trend in terms of market share, incumbents with significant market power pervaded fixed telecom markets. With respect to competition, we found that in each of the regions, the policymakers expressed the value attached to competition differently. In the EU value was seen in terms of developing an information society based on a European knowledge economy. In the OECS value was seen in terms of the positive effects of simultaneously opening up fixed and mobile markets to competition across the OECS. In the SADC value was seen in terms of the opening of mobile markets across the region.

We also found informal institutions that had influence *in* specific regions. In the EU, the attitude of mistrust towards the EC saw the creation of IRG by the NRAs as a non statutory regulatory authority and the creation of ERG in a top down move by the EC as a rival to the IRG. In the OECS the attitude towards the OECS authority was more trusting, yet not sufficient to provide consensus with respect to the creation of the ECTEL. The OECS members insisted that NTRCs be created to take care of their national interests. In the SADC the attitude towards SATCC was one of mistrust; the SADC members did not find the decisions made by this body sufficiently credible to be translated into national regulatory instruments.

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<sup>92</sup> The various institutional elements were identified using a combination of industry experience, literary review and interviews with industry experts.

### **9.2.1.2 Technology and regional regulation**

In total three aspects of technology were deemed to be important for our investigation of regional regulation; technology neutrality, the deployment of alternative technologies, and network modernization.

These three technology aspects were found to be important for all three regions, however, within the regions the three aspects of technology were treated differently and varying degrees of emphasis were placed on their importance. With respect to technology neutrality we found that the notion of technological neutrality was strongly emphasized in the EU. Here it was considered to be a cornerstone for accelerating broadband diffusion. In the case of the OECS and the SADC the notion was accepted more implicitly. The issue of technological design received less emphasis in the OECS and the SADC, new entrants were allowed to use technologies of choice.

Alternative technologies in the OECS and the SADC regions essentially took the form of GSM. In the EU, with its focus on developing an information society, the accelerated rollout of broadband was considered to be key. Here, it was supported by providing access, to the business and domestic markets, in the form of DSL, ISDN, Fiber to the Home (FTTH) and cable television (CaTV).

The inability of incumbent operators to respond to technological change was found to be important in the SADC and the OECS regions. In these regions incumbent operators were forced to modernize their outdated telecom infrastructure, in response to the perceived threat of competition from new entrants. In the EU, the telecom markets had matured and technology change in the form of broadband was considered to be a key step to maintaining an advanced telecom sector.

### **9.2.1.3 Formal institutions and regional regulation**

In total four formal institutions were deemed to be important for our investigation of regional regulation; regional telecom regulatory frameworks, market liberalization, creating regional organizations of telecom regulators and the setting up of specific regulatory best practices adopted in each of the regions such as access, interconnection, local loop unbundling and tariffs.

While all three case study regions adopted a regional policy framework, the varying levels of competition and maturity within the case study regions meant that the objectives set out in the framework were fundamentally different. The EU framework was characterized by an emphasis on deregulation, technology neutrality and flexibility. The OECS framework was characterized by an emphasis on competition, fair pricing and the use of cost based pricing methods. In the SADC the framework was characterized by an emphasis on commercializing and privatizing incumbent operators and unbundling the regulatory functions.

The goals of market reforms across the three case study regions were generally geared towards greater, or increased, competition, investment and network development. The approach used to accomplish these goals, however, differed substantially. The move from monopoly to competition was characterized by incremental steps. For example, the process of opening up the markets was

more tightly controlled in the SADC and was accompanied by periods of exclusivity. This was not the case in the EU, where the process was more liberal, for example, no restrictions were placed in the number of entries. In the OECS the liberalization process included elements of both the EU and the SADC approach. It was controlled in the sense that the number of licenses were set by an administrative arrangement. It was liberal in the sense that all those who applied, including new entrants, entered the markets almost simultaneously.

With the establishment of regional organizations of telecom regulators we showed that the accompanying systems of governance reflected the particular historical telecom traditions of a region with respect to institutional context and a reform path. While regional organizations of telecom regulators were essentially set up to coordinate the harmonization of regulatory practices amongst the NRAs, the actual functions performed by these organizations differed considerably in our three case study regions. These ranged from improving decision-making efficiency (ERG), and developing regulatory expertise and facilitating credible commitment (ECTEL).

The harmonization of regulation across the case study regions had a different focus. Harmonization was directed towards regulatory issues like licensing and tariffs (ECTEL), local loop unbundling (LLU) and long run incremental costs (LRIC) in IRG, regulatory remedies (ERG) and interconnection and tariffs (TRASA). Since regional telecom policies contained high level regulatory principles only, the regional and national regulators were still expected to apply their own methods when implementing the regional policies.

#### **9.2.1.4 Institutional arrangements and regional regulation**

In total two aspects of institutional arrangements elements were deemed to be important for our investigation of regional regulation; the distribution of competencies across two levels, national and regional, and the regulatory processes used in each of the case study regions.

With respect to the distribution of competencies across national and regional levels of government, we found that this was greatly influenced by the features of the specific legal foundation for regional telecom sectors and the supporting institutional structures. The EU for example, only allowed the IRG and the ERG to coordinate harmonization of regulatory practices. This was also the case in the SADC with the TRASA. The OECS opted to go a step further, it allowed the ECTEL to take on some key regulatory tasks such as licensing and setting price caps. The regulatory task of licensing was considered to be a dual competency within the OECS, i.e. spread over the national and regional authorities.

Considerable variance was found in the regulatory process used in the three case study regions. In the EU, policy adoption was the responsibility of national governments, policy implementation was done by the NRAs, and policy enforcement was the responsibility of national and regional courts. In the OECS, policy adoption was the responsibility of a centralized authority, policy implementation was the responsibility of NRAs and a regional regulator, while policy was enforced by national and regional courts. In the SADC policy adoption was promoted by a centralized authority, policy implementation was responsibility of national regulators and policy enforcement was left to national courts. There was no regional judiciary in the SADC region. The essential

difference with respect to the regional organizations of telecom regulators was the extent to which their decisions were legally binding on the NRAs. Only decisions made by the ECTEL in the OECS case were enforceable. This was not the case for the IRG, the ERG in the EU and, the TRASA in the SADC.

#### **9.2.1.5 Actors and regional regulation**

In total three aspects of actors were deemed to be important for our investigation of regional regulation; the interaction between incumbents and rivals, the interaction between governments and incumbents and the interaction between national and regional authorities.

With respect to the interaction between incumbents and rivals we found similarities across the three regions. The incumbents all seem to perceive rival firms as threats and as such opted for anti-competitive behavior towards them. In the EU this took the form of delaying LLU and charging excessive prices for mobile termination. In the OECS it took the form of delaying interconnection and flooding the market (mobile) with products prior to competitive entry. In the SADC it took the form of withholding bandwidth from competitors and interconnection delays.

With respect to the interactions between incumbents and national governments we found differences that were influenced by the extent to which incumbents were publicly or privately owned. In the SADC, and to a lesser extent in the EU, national governments still champion their incumbents, who can be a significant source of revenue for the national government, and as such provide significant political support. This was not the case in the OECS where the incumbent (Cable and Wireless) was a private monopoly, here the attitudes of the national governments were considerably more antagonistic.

Looking at the distribution of tasks between private and public orderings we found that regulatory tasks were increasingly left to the market. This was seen in the decision to withdraw regulation in the case of licensing, choice of technologies and interconnection contracting. These transactions were left to firms as part of commercial arrangements within the EU.

On the issue of interactions between national and regional actors in the case study regions, we found similarities with respect to mistrust towards regional authorities. In the EU mistrust could be seen in the lack of political will to create a regional regulator and in the creation of the IRG by the NRAs. In the OECS some mistrust could be seen in the political will to create NTRCs in addition to the ECTEL. In the SADC, the proposed regional regulations were not seen as credible by the national governments and little to no effort was done to implement the SATCC decisions.

#### **9.2.2 Regulatory issues and sector performance**

In total seven regulatory issues were deemed to be important for our investigation of regional regulation; the regional policy framework, the regulatory institutional structure, the roles of regional organizations of telecom operators, the roles of the NRAs with respect to market power, access regulation, price regulation and interconnection regulation. These were described in detail in chapter 8.

### **9.2.2.1 The regional policy framework**

With respect to a regional policy framework we found that the legal status of the framework did not matter if it was legally binding for national governments, i.e. within the EU and the OECS. Where compliance to a framework was voluntary, in the SADC, fewer benefits were found. In addition the regulatory objectives and focus of the framework mattered in the sense that the policies espoused in the framework were more readily accepted and implemented when countries perceived them to be relevant for their market requirements. This was especially evident in the OECS case.

### **9.2.2.2 The institutional structure**

With respect to institutional structure, all the regional case studies illustrated the difficulty of designing a model for the allocation of tasks across regional and national telecom sector levels. What was evident were the greater benefits derived from allocating tasks across both levels (OECS) rather than leaving all task fulfillment to the national level, SADC. Furthermore the presence of a regional judiciary mattered and contributed towards greater certainty with respect to the implementation of regional national regulations, the EU and the OECS, than where such an institution was absent, for example, SADC. Within the EU and the OECS the regional judiciary at times served to delay compliance by firms to regional regulators.

### **9.2.2.3 The role of regional organizations of telecom regulators**

With respect to the role of regional organizations of telecom regulators we found that all four regulatory organizations seemed to have accomplished their regulatory objectives. The extent, to which these regulators created greater efficiencies, however differed considerably. In this respect the contribution by the ECTEL seems to have provided greater benefits than in the case of the ERG, the IRG and the TRASA. Greater coordination of regulatory activities were accomplished by the ECTEL and the ERG. Despite this the organizations did provide direct benefits for their respective principals. The IRG and the TRASA regulators benefited primarily from information sharing, the ERG coordinated the fast implementation of the EU's 2004 policy framework, and the ECTEL regulators benefited from the advice, support and active participation provided by the ECTEL.

### **9.2.2.4 Market power**

With respect to market power, the regional case studies illustrate how difficult it is to address the problem of market power. In all three regions the regulatory tools were found to be ineffective with respect to anti-competitive incumbent behavior and the attitude of hostility adopted by incumbents towards rivals. While some reform measures had a greater impact than others, the levels of competition within all three case study regions have not increased dramatically. A move that seemed to be more effective (than others) was to deploy alternative technologies, in the EU broadband deployment, in the SADC and the OECS narrowband deployment.



### **9.2.2.5 Access regulation**

With respect to access regulation within the case study regions how regional regulators approached the issues of regulating access did seem to matter. In the EU the approach was more beneficial than the approaches adopted in the OECS and the SADC. In addition the EU approach to regulation was simple when compared to the lengthy licensing processes in the OECS. However, the OECS approach is superior to the approach adopted by the SADC states. In the SADC the process was tightly controlled and resulted in a duopoly for fixed services and three licensees for mobile across the SADC region.

## **9.3 Policy issues and challenges**

As can be seen from the above, national experiences with regional regulation have been mixed. Regional regulation has provided certain benefits, with respect to improving regional performances, but enormous challenges remain with respect to the effectiveness of regional regulation in the telecom sector. We will now discuss the challenges common to the three regions, followed by a discussion of those relevant for one or two of the regions.

### **9.3.1 Challenges common across all three regions**

#### **9.3.1.1 The problem of market power and dominant incumbent behavior**

The market structures of the case study regions were generally characterized by monopoly for fixed telephony and oligopoly for mobile telephony. In the SADC region the respective national incumbents, dominated the national fixed markets while transnational operators, from South Africa, and some European operators, and national incumbents dominated the mobile markets. In the OECS a regional incumbent (Cable and Wireless) dominated the national fix markets and new entrants and the incumbent dominated the national mobile telecom markets. In the EU national incumbents dominated the national telecom markets in some European countries and transnational operators held dominance in the mobile markets.

The NRAs in all three case study regions have had to contend with anti-competitive practices by dominant operators. The policy response to market power was common across all regions, market reform based on pro-competition policies and regulation with the provision of institutional structures. The manner, in which the treatment of market power was undertaken, differed substantially, between the regions. A real increase in levels of competition across all sectors within the case study regions has proven to be an elusive goal. The ongoing reforms have done little to prevent operators with market power from abusing their dominant positions.

#### **9.3.1.2 The problem of allocating the appropriate functions and tasks across national and regional jurisdictions.**

No best practices could be discerned regarding which tasks would be better performed at which level, i.e. national or regional. In the EU the EC was tasked with defining the telecom markets while the NRAs were tasked with assessing dominance and the application of remedies. In addition only minimal tasks, facilitating participation by the public and advising the EC were delegated.

In the OECS regulatory tasks such as spectrum management and numbering are delegated to the ECTEL, who is tasked with assisting the NTRCs in their regulatory tasks, i.e. pricing, interconnection. In addition licensing in the OECS's was allocated as a dual competency between ECTEL and the NTRCs.

In the SADC there is no delegation of regulatory tasks to regional authorities. In addition TRASA is only responsible for the informal sharing of information amongst NRA's.

None of the case study region approaches efficiently address the question of allocation. Even in the OECS, where a regional regulator exists there were noticeable inefficiencies. For example, both the NTRCs and the ECTEL are involved in the licensing process. For some, licensing is considered cumbersome and lengthy.

#### **9.3.1.3 The problem of formulating regional regulatory tools**

In total four regional regulatory tools were deemed to be important for our investigation of regional regulation; access regulation (ECTEL), price regulation (SADC), interconnection regulation (EU and the SADC) and local loop unbundling (EU). In some instances the use of these tools proved to be more effective than in others insofar as they advanced regional policy objectives. In general the use of regulatory best practices has not worked effectively. The contributions made by the IRG, the ERG and the TRASA were not legally binding and as a result did not serve to advance regional policy objectives. The case studies showed that for a variety of reasons, member states chose not to transpose regional policies into national instruments. The formulation of best practices by ECTEL, with the intention to harmonize methods and principles was a difficult process. In particular the incumbent succeeded in frustrating the price cap and its implementation using tactics such as withholding information and court challenges.

#### **9.3.1.4 The problem of the independence of regional organizations**

At the start of the case study research the assumption was made that regulatory independence and transparency would give rise to regulatory decisions that would be acceptable to all the national regulators within a region. This assumption was based on the premise that the regulatory organizations would have a formal legal status and be mandated by the national governments, within their regions, to carry out and regulate the reforms set out in their regional regulatory frameworks. In the SADC, the TRASA had no formal legal standing and were not recognized in the SADC constitution. In the EU only the ERG has a formal legal status. The ECTEL was the most independent regulatory body although questions have been raised about the role of the Board of Directors in running the day-to-day operations of the ECTEL.

### **9.3.1.5 The problem of time taken by national and regional judiciaries to resolve disputes between operators.**

To date (2006) no alternative mechanisms or means of transforming existing mechanisms with respect to shortening the length of time required to obtain court rulings on matters of dispute, have emerged. This is particularly problematic in the EU and the OECS where lengthy trials to resolve disputes are common. Incumbents have learnt to use the courts to delay compliance and wait out decisions. The long periods of uncertainty that are part of waiting for decisions to be made by courts, have in some instances harmed potential new entrants. In many cases new telecom operators did not have the resources to await delayed court decisions. There is no regional judiciary in the SADC, here the incumbent used national courts to their advantage. Our case studies highlight the adverse effects of this manipulation of the legal process on new entrants and competition alike.

### **9.3.2 Challenges specific to the three regions**

#### **9.3.2.1 The European Union**

The EU was faced with all the institutional constraints inherent in an economically developed region; as such its biggest challenge remains the extraordinary complexity of its various telecom sector regulatory systems, for example the presence of one informal regulator, the IRG and one EU mandated regulator the ERG.

Within the EU, at the time of our case study, the member states were at different stages of the reform process, some leading reform while others lagged behind. The various EU states exhibited economic strengths, which resulted in the EU countries having different priorities and requirements. In the EU for example, the total GDP of Germany, France and the UK was substantially higher than that of the remaining twelve EU countries studied for our research. This heterogeneity meant that the adoption, implementation and enforcement of the EU's regulatory objectives for the telecom sector, across the wide divides to be found within the EU, would be extremely difficult.

We considered the regulatory objectives of the EU to be largely inappropriate. For example, much of the regulation was directed towards improving flexibility and regulatory density, two goals that remains largely unrealistic. With respect to flexibility, we found a rigid system that was not capable of supporting the dynamic regulation. With respect to regulatory density we found an increase in regulatory intensity rather than a decrease.

In addition the EU's regulatory system is comprised of multiple actors, it is excessively complex and it requires sophisticated regulatory instruments to be set in place in the EU's policy objectives. These complexities were most evident in the EU's response to the problems of LLU which was harmonized around a costing approach and the application of predefined remedies.

As regulatory forums the IRG (voluntary bodies set up by NRAs) and the ERG mandated primary activities that were directed towards making sense of this complexity and trying to harmonize

regulatory practices around the new policy framework. Given the regional organizations' system of governance and lack of real powers in particular, they could not be expected to do more than share information and coordinate participation in the EU policy framework.

As a means of improving the integration of regulatory principles with the competition law, the roles of the NRAs changed fundamentally as regulatory tasks shifted from the regulator to competition authorities. The new system has yet to be tested, early signs (2006) suggest that it may not be able to provide the type of robust response to regulatory challenges as intended when the new framework was drafted.

The presence of two regulatory bodies, the IRG and the ERG, within the EU has added to the transaction costs of regulation, increased the complexity of the regulatory setting, and changed the operating procedures of the NRAs. While cooperation and participation in the EU regulatory activities has been good to date, questions still remain about the transparency and legality of decisions made by the IRG within the EU.

The EU's PIBs on LLU and LRAIC provided by IRG were not found to have contributed directly towards regulatory harmonization. Our results show that the varying methods of implementation invoked by the NRAs had not achieved the regulatory principles espoused in the EU's regional telecom framework.

#### **9.3.2.2 The Organization of Eastern Caribbean States**

The OECS were faced with all the institutional constraints inherent in an economically developing region; as such its biggest challenge remains the design of its regulatory system.

The actual policy framework is scattered across various documents and covers different periods. (ECTEL Treaty and the Agreements with Cable and Wireless) In addition the objectives of the policy framework have been directed towards promoting competition, harmonizing policies and developing cost-based pricing methods since its inception in 2000. Some of these objectives have become largely irrelevant given the progress made in the region since 2000.

The OECS's regional regulatory system lacks transparency and accountability with respect to policymaking by the OECS Authority. In addition the role of the Board of Directors is unclear and seems to undermine the independence of the ECTEL. In practice the board of directors seems to be running the day to day operations of the ECTEL.

The regulatory focus on NTRCs is still very much directed towards regulating the conduct of the incumbent C&W. Even in this role the effectiveness of ECTEL has been brought into question as can be seen in their numerous failures to constrain the incumbent. The recent (2005) increase in levels of competition within the OECS region suggests that the regulation of markets rather than incumbents also needs to be considered.

The ECTEL's initial effectiveness has also been greatly reduced by the market power of the incumbent. Despite receiving real powers, its lack of adequate regulatory tools has undermined any

real authority it might have to introduce efficient regional regulation. The formulation of effective regional regulatory tools, that can be used to advance the objectives of a regional telecom policy, is perhaps the biggest challenge at present for the OECS region.

The initial licensing procedure, and dual licensing processes, used within the OECS region allowed for equity and participation by all, and came at the expense of speed and efficiency. A process once designed to be a conduit for change, is now considered to be a barrier to competition. In addition the introduction of newer technologies, WiFi and VoIP, has rendered access to the OECS's regulation unenforceable.

The failure to implement a cost based price cap regime within the OECS region remains a cause for concern. Once a price cap is introduced, and regulators succeed in enforcing it, discussions on wholesale and retail pricing and ex-ante and ex-post design considerations will become important.

### **9.3.2.3 The Southern African Development Community**

The SADC was faced with all the institutional constraints inherent in an economically developing region; as such the regions biggest challenge remains their dependence upon international donor funding.

The problem of varying economic strengths across participating countries has been a major challenge for those attempting to develop, strong SADC telecom markets. In the SADC the total GDP of South Africa is greater than the rest of the SADC states combined. This meant that the various countries had different priorities and requirements. South Africa and Mauritius for example, required more a sophisticated framework and different tools from those that might be useful for the other SADC states. In addition the member countries were at different stages of the telecom sector reform process at the time of the case study, some leading reform while others following behind.

The SADC's policy framework emphasized reform objectives like commercializing and privatizing incumbent operators, and separation between regulation and operation of telecom services within its respective countries. While this may have been useful for the majority of the SADC countries it has proved to be outdated and inadequate for leading telecom markets like South Africa, Mauritius and Botswana. Progress towards meeting some of these objectives has been a difficult task, for example, privatization, regulatory independence and universal services within the SADC, government ownership of incumbent operators has been a serious obstacle for market integration to date (2006). Many of the governments are still the majority shareholders in incumbent operators.

The SADC framework lacked a solid legal foundation; as such the outcomes of the regional regulatory processes, i.e. the model regulations were not felt to be credible. This is evident in the high level of failure to comply with the demand to set up national (legal) regulatory structures based on the framework by member countries. This may be explained by the fact that the national governments have been reluctant to hand over some of their authority to regional authorities. As such compliance with all the telecom policies and regulations setup within SADC is voluntary and not binding on member states.

The SADC also lacked a key supporting regulatory structure in the form of a regional judiciary. While the national judiciaries were active in telecom disputes it was evident from our research that the region required something more, a higher court of appeal. When problems of enforcement arose at a national level the parties by default, were forced to seek help from international organizations like the WTO.

The SADC's approach to market liberalization greatly constrained competition since it comprised tightly controlled entry followed by periods of exclusivity. Access was also restricted to the awarding of one or two licenses at a time. The national telecom markets as a result tended to consist of monopoly or duopoly fixed markets coupled with tight oligopoly structures in mobile markets.

As a regulatory forum the TRASA's primary activities were directed towards information sharing around the 1998 new policy framework. Given the restrictions of its system of governance it could not have been expected to achieve more. TRASA's impact on regulatory harmonization has thus been minimal, a result that has been compounded by its complete dependence on donor funding and expertise for its survival.

In general the NRAs across the SADC met many problems in their attempts to enact national regulation based on the regional telecom sector framework. These problems made the ideal of regional regulations and across regional enforcement something that might be achieved in a more perfect future. This resulted in the NRAs participation in regional initiatives being limited largely to information sharing and acquiring an increased understanding of regional issues. An additional problem for the SADC region was that the regional participation in the regional regulatory body, TRASA, frequently took the form of participation by someone from the communications ministry and not someone drawn from the NRA of a member state.

SADC's harmonized regulatory tools were largely ineffective for supporting NRAs. The SADC response to the problems of interconnection was considered to be overly simplistic and inadequate. The NRA's encouraged private negotiations between firms despite the presence of incumbents of the SMP. The SADC response to the problem of price regulation was equally inadequate. SADC's model regulation focuses more on rate rebalancing than the actual substantive issues involved in price cap regulation.

Further the policy framework issued by the SADC and its regulation, implemented in 1998, were considered to be outdated by the time of the case study in 2006. In particular the accompanying regulations were implemented in 1998 and considered outdated and largely irrelevant by the NRAs.

#### **9.4 Reflections on the theoretical framework**

The purpose of this study was not to develop new theories, it was rather to apply existing theories and concepts to a new phenomenon, regional regulation in the telecom sector, with the intention of defining this phenomenon. In particular we were interested in the design of regional regulatory systems and the technological socio-economic conditions that shape (ineffective) effective and efficient regional regulation.

We chose to use a pluralistic approach for our research, given the problems inherent in designing complex regulatory systems and solving the underlying regulatory issues. In many instances the design problem extended beyond mere pricing issues, into more substantive issues like legal foundations and providing supporting institutional structures. Such issues fall outside the scope of general economics theory, but can be dealt with from the perspectives of institutional economics and political science.

Incorporating various technological socio-economic systems in our research strategy, allowed us to obtain a better understanding of the technological socio-economic setting associated with regional telecom sector regulation. Our primary contribution to this field is therefore our attempt to illustrate the use of pluralism and to show how it can be applied to analyze regional and national regulatory issues in the telecom industry.

#### **9.4.1 Comments on the use of our 4-layered model**

The framework was useful for incorporating concepts from economics and political science into our analysis. Our approach was centered on our 4-layered model, adapted from Groenewegen (2005) and inspired by Williamson (1998). We used the 4-layered model to operationalize institutions within regional regulators and, to examine the implications of this on their performance.

We began by operationalizing technology socio-economic systems into informal, formal, institutional arrangements and actors (levels 1 and 4). This in turn allowed us to separately analyze the relationships between the various types of technological, socio-economic systems and regional regulation. Following our theoretical model, technological, socio-economic systems affect regional regulation in fundamental ways, creating benefits and challenges for regional policymakers and regulators. The responses made by regional regulators and policymakers to these substantive regulatory issues, have had implications for sector performances in each of the regions studied in our three case studies. In some instances the treatment of the substantive regulatory issues has enabled sector growth, in other instances the responses have constrained sector growth. We therefore assume an interrelationship between technological, socio-economic systems, regional regulation and sector performance in our research model.

#### **9.4.2 Comments on the usability of the 4-layered model**

We experienced a number of difficulties when we attempted to operationalize the various institutions and concepts using our model. The task of first (artificially) isolating technological socio-economic elements for the purpose of analysis and later integrating them to make recommendations that was difficult.

The notion of appropriateness and congruency amongst the levels of institutions were useful. For example, in the EU the formal rule required a “flexible regulatory system” that could be adapted to deal with dynamic changes. This objective was difficult to attain in the EU context, given the extraordinary complexity and sophistication of the EU system. It was evident that this objective would not be realized within the EU without having to make compromises on other objectives.

The operationalization of some of the technological socio-economic systems for purposes of analysis proved to be difficult at times. This was especially true with respect to the informal institutions present in the case study areas such as culture and values.

In contrast to Scott (1994) and Maitland (2003) we found it more difficult to separate out the institutions that affected the performances of the telecom industry from those that affected the telecom firm. Although we were able to do so conceptually, in practice the differences were fuzzy and difficult to define in the field. For example, formal rules like authorizations within the EU, affected the industry and increased levels of new entrants. At the same time it also affected the strategies of firms with respect to maintaining market share, in the case of incumbents, or capturing market share, in the case of new entrants.

In general we found making the distinction between levels 1 and level 4 of our model to be conceptually difficult. For example mistrust, could be due to a culture, as in the case of the EU where a culture of mistrust existed between NRA's and the EC. At the same time mistrust, could be part of the shared mental map of individual NRAs towards the EC. We had to take great care not to use concepts drawn from levels 1 and level 4 interchangeably.

Although technology was placed in level 1 of our model we found that it might have been better placed in level 4. According to Williamson's original model, change in level 1, occurs very slowly over time ( $10^2 - 10^3$  years). Response times become shorter moving down the levels until at level 4 change occurs almost daily. The dynamics and fast pace of technological change in the field of telecom today (2006) supports the idea of placing technology in level 4 of our model.

The model was used to help us identify technological, socio-economic systems and to treat them interdependently. At some point in our research we were required to leave our model behind and address the substantive regulatory issues pertinent to the regional telecom sector. We found it very difficult to decide when to leave the model behind, i.e., when we had got as much as possible from using this research technique. Our approach included using the model to help us make decisions, followed by looking at the implications of these decisions for regional regulation. This we argued allowed us to identify the substantive regulatory issues relating to regional telecom sector regulation and set them apart. Having done this we could assess how each of our case study regions had addressed the specific regulatory issues. We then went on to compare the various regional treatments used for telecom sector regulation in chapter 8 of this thesis.



## **9.5 Recommendations**

### **9.5.1 Recommendations regarding policy**

The following recommendations are based on the analysis of regional telecom sector regulation given in Chapter 5 of this thesis. These recommendations are intended to be used as guidelines to improve the prospects for effective regulation of regional telecom systems and achieving the end goal of improved sector development in the three case study regions.

#### **9.5.1.1 Policy recommendations for the European Union**

The recent overhaul of the EU's telecom sector policy framework and institutional restructuring means that the EU is at present (2006) undergoing a process of transition. Some of these processes, for example shifting components of economic regulation from sector specific authorities to general competition authorities, require fundamental changes to be made in the EU's operational procedures. In addition the role of NRAs has been fundamentally shifted from that of managing incumbent firms as per their license agreements to managing the market environment. While this has afforded the NRAs the flexibility to forbear from regulation where market circumstances are justified, it also introduced a host of new issues that many are not yet prepared to deal with in the EU. These issues include aspects like increasing the power of the judiciary to provide an efficient judicial review process and promoting higher levels of competition. What has become very apparent from our case study is a need within the EU to strengthen the supporting institutions required to drive the new regulatory objectives set out in the EU framework document of 2004.

To do this we propose that the role and functions of the ERG be redefined, and that the ERG be upgraded to a legally mandated EU regional regulator for the telecom sector. Powers commensurate to such a function should be delegated to the ERG. The ERG currently has no formal competencies except to coordinate participation within the EU telecom sector. The ERG's decisions are currently non-binding on participating countries. The ERG should be given new objectives, with a focus placed on issues relevant to a regional telecom sector regulator. It should also be given the 'legal teeth' to enforce its credibility and allow ERG management to run an effective regulatory organization, with well defined access to national courts and the ECJ in the cases of national failure to comply to EU telecom regulation and where EU sector regulations have failed.

The call for a regional regulator for the EU telecom sector was first made in 1998, followed by another in 2000. At this time there was a lack of political will within the EU to set up such a regulator. Political and technological developments within the telecom sector, since 2000 have change such that perhaps now (2006) such a suggestion would be more readily received by the EU. It is now possible to set in place a technical structure that can be used to support a legally mandated EU regulator.

This recommendation has the potential to enhance the EU's regional system of governance for the telecom sector. In particular such a regulator should help the EU to overcome the problems inherent in the treatment of the existing substantive regulatory issues with respect to the use of harmonizing

regulatory tools within the EU. For example, a regional regulator would be particularly useful, and more likely to be considered independent, and hence credible, than the EC when market definitions are revised within the sector. This would still leave the NRAs with the responsibility for determining whether effective competition exists, within their state, whether it is characterized by SMP and if not, determining which remedies to impose.

A regional regulator could formally assist the NRAs, with the task of implementing existing regulation with respect to LLU and LRAIC. This combination of regional and national regulators can be used to constrain the ability of incumbents to negotiate and delay implementation of telecom regulations. Failure to mandate a responsible EU regulator will result in the continued problem of dominance in the local access network in the case of LLU and further accelerate the trend in the EU towards the use of LRIC/LRAIC methodologies. A regional regulator can also serve as a mechanism that can be used to resolve disputes with an incumbent in a manner that does not disadvantage new entrants.

#### **9.5.1.2 Policy recommendations for the Organization of Eastern Caribbean States**

Two problems, discussed in detail in chapter 6, relating to the OECS regulatory framework became apparent in our case study research. One, the OECS policy framework is scattered across various documents covering different periods, (ECTEL Treaty, and Agreements with Cable and Wireless). Two, the objectives of the policy framework have been directed towards promoting competition, harmonizing policies and developing cost-based pricing methods since its inception in 2000.

We recommend that the existing framework documents be reviewed with a view to collating them to form an integrated document. The fact that the existing framework dates back to 2000 also means that it is considered dated within the OECS region. Part of the review should involve the formulation of regulatory objectives to address the regulatory problems identified in our case study research. In addition the OECS Authority needs to establish a mechanism to ensure that regulation, in all areas of its telecom sector, is regularly and systematically reviewed. As competition develops within the region the regulation of the telecom market they should rely on competition law, while sector specific regulation should be periodically reviewed to minimize regulatory failure. In the interim the ECTEL needs to define a set of performance indicators that it can use to evaluate market competition and these indicators must be updated, and changes should be published, on a regular basis. The ECTEL should be used to monitor and evaluate conditions of competition within the OECS member's telecom markets.

Part of the new OECS regulatory objectives should be aimed at promoting infrastructure competition. This should either take the form of encouraging use of an alternative technology or of encouraging competition in the local loop. The OECS has been able to achieve competition in mobile telephony, and in the region mobile telephony is seen as an alternative to fixed telephony. The introduction of fixed competition, however, will provide a more efficient basis for competition in the long term within this region. To do this the OECS should consider either advancing cable as an alternative to outdated fixed technology or promote mandatory unbundling. Thereafter, the OECS should assess its effectiveness over a period of time to provide an incentive for new entrants to invest in their own networks.

While the system of governance initially set up has served the OECS region well in the initial stages of telecom sector reform some concern remains with respect to the transparency of the decisions made by the OECS Authority, and the role the Board of Directors have played in the day to day running of the ECTEL. We thus recommend the policy adoption processes within the OECS and the ECTEL be made more transparent. This lack of transparency may have been helpful for dealing with the regions incumbents. However, today's changed circumstances require a more transparent and accountable manner of policymaking within the OECS region, especially with respect to participation by all the regions telecom operators. To ensure sufficient independence with respect to ECTEL, the role and functions of the Board of Directors need to be clarified. The ECTEL currently runs the day-to-day activities of the regulator and it guides the operation of the ECTEL's secretariat. The ECTEL should be given a set of limited objectives and it should focus mainly on procedural issues rather than occupying itself with operational matters. This would enhance the overall credibility of the ECTEL and allow its management to run an effective regulatory organization. This should free the ECTEL secretariat to focus on advancing regional markets without interference from the collective national interests represented by the Board of Directors. While these two aspects were not problematic during the first stage of regional reform they may become issues as market penetration within the telecom sector increases in the OECS region.

The present process of using (lengthy) court appeals to rule in cases where problems arise should be streamlined and shortened. With respect to the judiciary within the OECS we found that at the time of our case study (2002-2004) it took an appeal to the regions' Supreme Court to get ruling on telecom matters. This is a matter of concern, especially for new entrants with low budgets facing established incumbents with more financial clout. The incumbents in this region have the resources to wait-out decisions, however, long periods of uncertainty and waiting for decisions is potentially harmful for new entrants, who may not have the resources to await outcomes and thus leave the market, a tactic that favors the incumbent. The slowness of the court national and regional suggests that there is a need for a supplementary mechanism to speed up the decision making process in legal disputes between operators and regulators. We recommend that a court of arbitration, as was initially envisaged in the First Agreement of the OECS be used for this purpose. Such a solution should speed up local dispute processes and produce more equity between the incumbent and new entrants. The small island environment suggests that an alternative means to dispute resolutions may be appropriate in the OECS.

During the initial stages of regional reform the OECS's, NTRCs focused primarily on regulating the incumbent. Our case study shows the extent to which curbing the power of the incumbent has challenged the NTRCs. This inability of the NTRCs to address the problem of market power has made using regulatory tools like price regulation and interconnection within the region remains problematic. When the OECS's or its NTRCs went to court they did not fare well in disputes with the incumbent C&W litigation against 4 of the 5 NTRCs was decided in favor of C&W. We recommend a review of the tasks of the ECTEL and the NTRCs with respect to their preoccupation with regulating the dominant incumbent. A shift in their focus from regulating C&W to applying standards that enhance competition and opportunities to participate in the market at any level would be more appropriate. The decision to withdraw the assessment into SMP should therefore be restored and the market analysis should be undertaken. This would impose on C&W all obligations

required of SMP and operator and would allow for more effective regulation of asymmetric power in the OECS's region.

The ECTEL's effectiveness has been greatly reduced by the market power of the incumbent. Despite having been given a mandate, ECTEL's lack of adequate regulators tools serves to constrain their ability to produce and police efficient regional regulations. The need to formulate "appropriate" regional regulatory tools to advance the objectives of its telecom policy will provide the biggest challenge for ECTEL within the OECS region.

ECTEL's initial licensing procedures and dual licensing processes did allow for equity and participation by all, all they did was to reduce the speed and efficiency of the licensing process. A process designed to be a conduit for change has become a barrier to competition, additionally the introduction of newer technologies, WiFi and VoIP, has rendered the present access regulation unenforceable. With respect to access regulation we recommend that the dual licensing procedures are reviewed and that an authorizations regime be put in their place.

The OECS should introduce a price cap regime as soon as possible, the decision to delay its implementation should be re-examined. The ability of the incumbent to negotiate and fix prices until 2006 has not facilitated the making of an effective price cap plan. This decision should be revisited with the view of introducing a rate-based regime as soon as possible. Failure to do so, will result in the ECTEL states being locked into an outdated price regime while prices for telecom services are expected to drop steadily elsewhere. Once a price cap is introduced, and the regulators acquire experience with enforcing it, further discussions on wholesale and retail prices and ex-ante and ex-post design considerations would become important.

### **9.5.1.3 Policy recommendations for Southern African Development Community**

The following recommendations are based on the analysis presented in Chapter 7. These recommendations are intended to improve the prospects for efficient regional regulation, and the end goal of sector development, in the SADC.

The framework needs to be updated and concentrated in one document. Currently the documentation is spread over various documents (SADC Model Bill and Regulations) some of which were adopted as early as 1998. Since then little significant revisions has been done despite changes in the SADC's telecom markets and advances in telecom technologies. The objective of the SADC regulatory process is still (2006) directed to promote the early stages of liberalization, i.e. commercialization, privatization and setting up the NRAs. Regulation within the SADC region should now be directed towards promoting a greater reliance on markets with the SADC encouraging competition for discretionary services and providing regulation for basic and essential services. Making the SADC policy framework legally binding on member countries is an important first step that needs to be taken before any significant progress can be made with respect to telecom sector regulation in this region.

This is a fundamental change that will require the SADC member states to give up some of their national authority to a regional regulatory authority. Making the policy framework binding on the

SADC member states will require a host of supporting institutional structures to be set up within the SADC region. The SADC will need to start this process of reform by, first setting up a regional regulatory authority and following this with the formation of a regional court of appeal, or another formal regional judiciary. This regional judiciary should be mandated to deal, among other things, with matters pertaining to telecom sector regulation, and disputes, in a speedy manner that does not allow incumbents to use the court as means to retain their dominant positions. Such a court of appeal would provide strong legal foundations on which to build effective regulations for the telecom sector in the SADC region. In the interim a transitional mechanism would be useful to assist in the setting up of a regulatory system it should transnational legal disputes between operators and regulators arise. The EU and the OECS cases show the net benefits to be gained from having a regional judiciary. Once in place a regional judiciary would minimize the need for operators to seek third party help with regulation enforcement outside the regions.

In the case of the SADC, we recommend the setting up of a mandated regional regulatory authority. Since the TRASA has developed some capabilities in this field, their role and functions should be redefined and upgraded to become the regional regulator. Powers commensurate to such a function should be delegated to the TRASA, currently it has no formal competencies except that of sharing information. The TRASA's decisions are currently also non-binding on participating countries. The TRASA needs to be given new objectives, and to focus on issues relevant to a regional regulator.

The setting up of a regional regulator would necessitate a fundamental shift in the role of the SADC's NRAs. In terms of scope, a shift from a national orientation to a regional orientation is required. In terms of institutional change, a shift from sector regulation to competition rules will be required.

In addition existing institutions within SADC should be reviewed with the view of strengthening their capabilities. These include, institutions like the Council of Ministers and the SATCC. These should be strengthened to allow for more rigorous and active policy adoption. The SADC member states in turn should be committed to greater cooperation between states, to transposing regional regulation guidelines into national regulatory instruments.

In terms of minimizing political interference, and in particular shielding the NRAs from the day to day political interference by government, we recommend that the NRAs are given greater independence. In the case of the SADC regulators this would entail adequate funding being found and reporting structure based on government bodies i.e. national parliament rather than directly to national ministries (Ministers) as in the case now.

The role and functions of international funders and donors within the telecom sector needs to be clearly defined. In some instances the relevance of their contributions in the SADC context has been questioned (Mosedale 2004). In other instances projects have been started but then become unsustainable due to the withdrawal of donor funding. For example the setting up of SADC's current policy framework, model regulations and the TRASA was part of such a World Bank funded project. However the necessary reviews and revisions of this project have not been done since the SADC member states have not been able, and in some instances willing, to continue the work. In

the case of the SADC and the TRASA the telecom market should rely on competition law and sector specific regulation should be periodically reviewed to minimize regulatory failure.

South Africa's participation in the development of a strong regional market is key. Disregarding international funders or donor funds and loans, South Africa is the only state with the resources to participate meaningfully in regional activities. During the first period of regional reform, South Africa preferred to follow rather than to set the pace and participate in regional activities. In many respects South Africa's markets are more developed, and its operators more active in the region than its regional neighbors. One of the key contributions that could be made by South Africa, could be to incorporate its regulatory experiences in the telecom sector in the existing SADC policy framework and regulations. For example, South Africa addressed some of the difficulties with interconnection and price regulation. In many respects South Africa's participation in the SADC could offset the need to source funds for some of the telecom sector reform projects. For example, South Africa could fund the secretariat for the TRASA, which for many years has been in the hands of BTA due to insufficient funding.

With respect to telecom market access a system where general authorizations, rather than one where licenses are given on a competitive basis, should be considered. We recommend that the present licensing regime be replaced by an authorizations regime, this will to some extent address the problem of the tightly controlled licensing regime that has been harmonized across the SADC region. As is the case in the EU, new entrants should be allowed to simply inform the NRAs of their intention to provide telecom services. Such a move will serve to overcome some of the earlier difficulties identified in the SADC case study. For example, this should help to restrict the jurisdiction the NRAs to areas where natural resources, i.e. numbering and spectrum in the case of mobile, are involved. In addition this should eliminate much of the political interference that is presently causing problems for the regulation of the regional telecom market. An influx of new entrants would mean that the NRAs would have to direct their resources towards pricing and interconnection.

The SATCC within the SADC should establish a mechanism to ensure that regulation in all areas of the telecom sector is regularly and systematically reviewed. The existing SADC policy framework was formulated in 1997, and remains largely unchanged until today, 2006.

### **9.5.2 Recommendations for further research**

Any future telecom sector market will have to contend with the problem of market concentration. If regional regulation is to have significant impact on the sector, it would have to address the problem of monopoly power effectively.

Important changes within the telecom sector have occurred within the telecom sector since this study was started in February 2001. Changes in technologies have made convergence and VoIP, especially, a reality. Changes in markets have resulted in the expanding of national markets into regional markets. Changes in organizations have resulted in the setting up of supporting regional structures like regional organizations of telecom regulators. In addition the forces driving these changes have grown increasingly stronger.

While we have some evidence that the regional level has fundamentally transformed the two level structures of the telecom sector into a three level structure, many issues remain unclear. One such issue was raised earlier, that of 'how regional regulation, as a new form of governance, should relate to the larger issues of global governance'. The issue of VoIP can best be used to illustrate the prospects for regional regulation as a new form of governance for the telecom sector.

VoIP is a new technology that supports voice telephony over the Internet. With VoIP voice information is transmitted in digital form in discrete packages, instead of using the traditional protocol set up for the fixed telephony network. VoIPs main advantage is that users can connect from anywhere and make phone calls without incurring typical analog telephone charges, this is a particular saving for those making long-distance calls. VoIP is considered to be the last step in the convergence process of voice data and multimedia (Melody 2005). VoIPs introduction and its increasing use have moved telecom, if indeed it can still be called telecom regulation, into uncharted territory.

The regulation of VoIP hinges on a numbering plan, number portability and interconnections arrangements over IP networks. In the early stages of its adoption VoIP was treated as an IT application where public IP Internet exchanges were well established and still outside the purview of regulation. NRAs have taken a 'wait and see' approach to VoIP and are viewing it as a small-scale experiment. However, important regulatory questions have been raised with respect to the use of VoIP. For example: How will VoIP software be bundled with hardware, VoIP over WiFi or Skype or PDA? Will this software be proprietary, i.e. owned by a specific vendor, or open? Will regulators have to provide telephone numbers, considered to be a scarce resource to VoIP providers? If you move to a different supplier, will it be possible to take a number with you? Will public service obligations be extended to these providers as is the case for telecom companies? The implications of this question will have far reaching consequences for regulators. Larger scale implementation of VoIP would challenge existing definitions of markets, and by extension, the tests for dominance and significant market powers.

While it is accepted that some of the tasks relating to VoIP might be best done at a national level, this does not necessarily mean that other tasks will be carried out better at a regional or even international level. What is clear, is that policymakers attempting to determine such things as the levels of government intervention required to regulate VoIP and the tasks to be performed by regulators would have to consider the following.

- *Granting access to networks:* whether through licensing or general authorizations to provide services, would still be crucial. This could be either a national or regional competency. It could also be a concurrent competency as in the case of the OECS.
- *The regulation of markets:* or services after entry, attending to issues like interconnection, would also be important. Providing standards or best practices for VoIP, this could either be done by industry or regulators and at all three levels, national, regional and international.

- *The issues of infrastructure:* rights of ways, etc, and advancing public interests, universal service obligations, etc. will grow in importance. These issues can probably be best dealt with at a national level.

If VoIP is regulated as a service offered by telecos there is a larger problem. One that demonstrates the challenge to, and also shows the limitations of, regional regulation. Using VoIP users can make phone calls without incurring extra charges for long-distance and international calls. This places VoIP outside national jurisdiction and extends it beyond regional jurisdiction. The regulation required to manage VoIP may prove to be too pervasive and complex for regional regulation. VoIP will almost certainly require the regulatory tasks to be spread across three levels of governance within industry and the government.

Any recommendations for future studies of regional regulation must take into account the new information economy. In this study we have raised the issues of regional drivers and reforms and their implications for sector performances. In the process we have addressed the interrelationships between technological, socio-economic systems, regional regulation and sector performances. Our research provides an initial study on the early experiences actors involved in regional regulation as a new institution in the ongoing reforms of regional telecom markets and we have assessed the implications on regional regulation sector performance.

A recommendation for future studies would be to extend and develop an in-depth understanding of some of the issues discussed in this thesis.

- *Technological socio-economic systems:* we need to know more about the effects of these systems. In the context of this study we have only attempted to determine the effects of technological socio-economic systems on regional telecom systems. We need to know and determine the drivers of these systems.
- *Regional reform:* we still have much to learn about how regional reforms have been carried out. In our study we first identified the regional reform initiatives that we thought were common to all three case study regions and then proceeded to describe them. There is still work to be done, to identifying other regional reform initiatives and assess their impact on national and regional markets.
- *Regulatory harmonization:* we still need to understand more about the alignment of principles used in regional regulation and practice. In our study we merely identified the harmonized principles used in regional regulation and very superficially considered how well the principals had promoted regional harmonization in the telecom sector. More work could be done on the regulatory methods implemented by regulators in response to these principles and the extent to which these have been effective. The harmonization of regulatory principles with regulatory practice by regional regulators has proved to be a greater challenge than for example the harmonization of technical standards using international regulation. The differences in these challenges and their effects on markets need to be further explored.



- *Sector performances:* we need to explore further the questions relating to telecom sector development. In our study we considered some indicators, telephone and broadband penetration, investment, etc. using aggregation. Considerable work needs to be done into the use of appropriate regional indicators or benchmark standards coupled with distinguishing more clearly between national and regional boundaries in the telecom sector. Further research may well be needed to determine the effects of technological socio-economic systems and regional regulation on the development of competitive regional markets. The role of firms and the effects that regional regulation has had on their regional operations should be investigated. In particular how might the harmonized policies have benefited some national champions at the expense of others, i.e. determining ‘winners and losers’. Our IRG and the ECTEL cases show how an attitude of conflict between operators (incumbents) and national governments (in the case of the OECS) and regulators (in the case of the EU) was a strong driver of reform. The creation of regional organizations has provided new opportunities to lobby and advance corporate interests for telecom firms. This was clearly evident in the responses received to the calls for comments from the ERG and the ECTEL.

In conclusion, regional telecom sector regulation is still in its infancy and as such still lacks formation. In time, and given continuous experimentation, regional telecom sector regulation is expected to develop a fuller and more distinct mature form.



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## Appendix A: Survey Questionnaire for National Regulatory Authorities on the use of Principles of Implementation and Best Practices

Dear Participants,

### Some Comments:

- The answers to these questions should enable us to understand the regulators position on the main issues of Local Loop Unbundling (LLU) and Forward Looking Long Range Incremental Costs (FL-RAIC) - in the context of the Principles of Implementation and Best Practice (PIB) on LLU and FL-RAIC respectively.
- It is intended to assess the extent to which regulators find the PIB's on LLU and FL-RAIC useful and relevant (or unnecessarily constraining) within their specific regulatory context.
- Part A addresses questions relating to IRG/ERG aims, objectives, tasks & services, Part B addresses questions relating to the PIB's on LLU while Part C addresses questions relating to the PIB's on FL-RAIC.

### Part A

#### IRG/ERG Aims & Objectives

##### Section 1: Questions on Aims & Objectives

The IRG has the following as its objectives; to share experience and information, to discuss national implementation issues, to harmonize regulatory practice across Europe, to ensure consistent application of European legislation by issuing so called PIB's and to provide horizontal coordination on a voluntary basis.

1.1 In your opinion, given the efforts that has taken place thus far will the IRG meet its objectives with regards to:

IRG Aims & Objectives		Yes	No
1.	To share experience and information		

2.	To discuss national implementation issues		
3.	To harmonize regulatory practice across Europe		
4.	To ensure consistent application of European legislation by issuing so called PIB's		
5.	To provides horizontal coordination on a voluntary basis.		

Comments:
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The ERG has the following as its objectives; to advise and assist the Commission in consolidating the internal market. The ERG is expected to provide an interface between NRA's and the commission in such a way as to contribute to the development of the internal market and to the consistent application in al Member states of the regulatory framework.

1.2 In your opinion, given the effort that has taken place thus far will the ERG meet its objectives with regards to:

ERG Aims & Objectives		Yes	No
1.	To advise and assist the Commission in consolidating the internal market		
2.	To provide an interface between NRA's and the commission in such a way as to contribute to the development of the internal market and to the consistent application in al Member states of the regulatory framework.		
3.	To foster cooperation between NRA's		
4.	To cooperate with regulatory authorities and groups in other regions		

Comments:
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## Section 2: Questions on Services & Tasks

2.1 How important do you rank the following services provided from IRG?

Services rendered by IRG			
Services and tasks performed	Useful	Of some use	Of little use
1. Development of effective regulatory guidelines			
2. Formulate input documents to European Commission			
3. Publish working papers			
4. Maintain a website			
5. Lobby the European Commission on behalf of NRA's			
6. Formulate position papers for members			
7. Undertaking ad-hoc requests for members			
8. Run or co-ordinate training courses and seminars.			
9. Provide technical support to members and industry			
10. Hold public consultations			
11. Hold public hearings			

12. Publish consultative documents			
13. Facilitate sharing of information, experience and expertise among members			
14. Facilitate development of harmonized standards throughout the region			
15. Facilitate the implementation of harmonized standards throughout the region			
16. Establish a common view and action plan for the region			
17. Coordinate the activities of regulators in the region			
18. Assist in the development of efficient communication systems throughout the region			
19. Cooperate with regulatory authorities and groups in other regions			

Comments:

2.2 How important do you rank the following services provided from ERG?

Services rendered by ERG			
Services and tasks performed	Useful	Of some use	Of little use
1. Development of effective regulatory guidelines			
2. Formulate input documents to European Commission			
3. Publish working papers			
4. Maintain a website			
5. Lobby the European Commission on behalf of NRA's			
6. Formulate position papers for members			
7. Undertaking ad-hoc requests for members			
8. Run or co-ordinate training courses and seminars.			
9. Provide technical support to members and industry			
10. Hold public consultations			
11. Hold public hearings			
12. Publish consultative documents			
13. Facilitate sharing of information, experience and expertise among members			
14. Facilitate development of harmonized standards throughout the region			
15. Facilitate the implementation of harmonized standards throughout the region			
16. Establish a common view and action plan for the region			
17. Coordinate the activities of regulators in the region			
18. Assist in the development of efficient communication systems throughout the region			
19. Cooperate with regulatory authorities and groups in other regions			
Comments:			

**Part B:**

**Local Loop Unbundling**

### Section 1: General questions on unbundling

- 1.1 What forms of unbundling did you recommend?  
 Full unbundling  Shared access  
 High-speed bit stream access  Other (Please specify)

Comments:

- 1.2 Did you recommend a reference unbundling offer?  
 Yes  
 No

Comments:

- 1.3 Did you recommend the use of service level agreements?  
 Yes  
 No

Comments:

### Section 2: Questions on Collocation

- 2.1 What type of collocation did you recommend?  
 Physical  Virtual  
 Distant  Other (Please specify)

Comments:

- 2.2 Are beneficiaries able to choose their own type?  
 Yes  No  
 It depends (Please specify)

Comments:

- 2.3 Which forms of collocation have proven to be most popular?  
 Physical  Distant  
 Virtual  Other (Please specify)

Comments:

- 2.4 Are alternative space provided for the same price cost as physical collocation?  
 Yes  No  
 It depends (Please specify)



Comments:

- 2.5 What access to collocation facilities did your recommend?  
 Escorted  Unescorted  
 It depends (Please specify)

Comments:

- 2.6 On what basis is space for collocation allocated?

Comments: abuse or lose clause, etc.

- 2.7 Do you have to approve the space allocation system?  
 Yes  No  
 It depends (Please specify)

Comments:

- 2.8 In terms of availability of space is there a clearly defined procedure for verifying unavailability?  
 Yes  No  
 It depends (Please specify)

Comments:

- 2.9 Is there an obligation to allocate space within a certain period?  
 where collocation space has already been constructed  
 where no space is available  
 It depends (Please specify)

Comments:

- 2.10 Are rentals for collocation space charged at market geographic price levels?  
 Yes  No  
 It depends (Please specify)

Comments:

- 2.11 What do you include in miscellaneous costs?  
 in-cable spectral management  MDF extensions  
 Other (Please specify)

Comments:

[Empty text box]

2.12 What main benefits did you meet from applying the PIB's on Collocation to your activities?

Benefit 1  
Benefit 2

Comments:

2.13 What main difficulties (unnecessary constraints) did you meet when applying the PIB's on Collocation to your activities?

Difficulty 1  
Difficulty 2

Comments:

**Section 3: Questions on Ordering**

3.1 Have you recommended the use of an electronic system for ordering been recommended?  
 Yes  No  
 It depends (Please specify)

Comments:

3.2 What is the electronic system generally used for?  
 Submitting orders  Processing orders  
 Fault handling  Scheduling appointments  
 Other (Please specify)

Comments:

3.3 Is there an obligation for notified operators to provide unbundling services within a certain period?  
 days – when services already exist .....  
 days when services do not exist .....  
 It depends (Please specify)

Comments:

3.4 Are new entrants expected to pay for pre-order enquiries into the technical feasibility for unbundling?  
 Yes  No  
 It depends (Please specify)

Comments:

- 3.5 Are new entrants expected to show actual customers?  Yes  No  
 It depends (Please specify)

Comments:

- 3.6 What are the requirements for the timeframe in which to new entrants must provide advance capacity planning?  
 Amount of working days .....  
 Period for months in advance .....  
 It depends (Please specify)

Comments:

- 3.7 What main benefits did you receive from applying the PIB's on Ordering to your activities?

Benefit 1  
Benefit 2

Comments:

- 3.8 What main difficulties (unnecessary constraints) did you experience when applying the PIB's on Ordering to your activities?

Difficulty 1  
Difficulty 2

Comments:

**Section 4: Questions on Fault Reporting**

- 4.1 What do you recommend as a reasonable time for repairing faults?  
 number of days .....  
 number of weeks .....  
 Other (Please specify)

Comments:

- 4.2 What sanctions (type) do you recommend for failing to provide lines/repair faults?  
 number of days .....  
 number of weeks .....  
 Other (Please specify)

Comments:

- 4.3 Are parties expected to pay for investigating faults?  Yes  No

It depends (Please specify)

Comments:

4.4 Have you recommended the use of an electronic system for fault reporting been recommended?

Yes  No  
 It depends (Please specify)

Comments:

4.5 What main benefits did you receive from applying the PIB's on Fault Reporting to your activities?

Benefit 1   
Benefit 2

Comments:

4.6 What main difficulties (unnecessary constraints) did you experience when applying the PIB's on Fault reporting to your activities?

Difficulty 1   
Difficulty 2

Comments:

### Part C:

#### Forward Looking Long Range Incremental Costs

##### Section 1: Questions on Network Topology

1.1 Which approach (model) did you recommend?  
 Top down  Bottom up  
 Modified approach (please specify)

Comments:

1.2 What main benefits did you receive from applying the PIB's on Network Topology to your activities?

Benefit 1   
Benefit 2

Comments:

1.3 What main difficulties (unnecessary constraints) did you experience when applying the PIB's on Network Topology to your activities?

Difficulty 1
Difficulty 2

Comments:
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**[Questions specific to Top Down]**

**Section 2: Questions on Cost Allocation**

- 2.1 When ensuring cost causal allocation – do you use Activity Based Costing (ABC)?  
 Yes  
 No

Comments:
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- 2.2 Which costs have you considered as common?

Comments:
-----------

- 2.3 What is the % of common costs in the total of the costs?

--

Comments:
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**[Questions specific to Bottom Up]**

- 2.4 Does the bottom up take into account:  
 The existing network topology (scorched node)  
 An ideal topology (scorched earth)       Other (please specify)

Comments:
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- 2.5 How do you estimate the common costs?  
 with international benchmarks       with data from cost accounting  
 with data supplied by other operators       Other (please specify)

Comments:
-----------

**[Questions specific to Top Down, Bottom Up or Modified]**

- 2.6 How do you estimate the network investment that is not directly recorded?  
 with international benchmarks       with data from cost accounting  
 with data supplied by other operators       Other (please specify)

Comments:
-----------

2.7 Was the bottom up model reconciled with the top-down one?

- Yes
- No

Comments:

2.8 What main benefits did you receive from applying the PIB's on Cost Allocation to your activities?

Benefit 1

Benefit 2

Comments:

2.9 What main difficulties (unnecessary constraints) did you experience when applying the PIB's on Cost Allocation to your activities?

Difficulty 1

Difficulty 2

Comments:

### Section 3: Questions on Increments

3.1 How have you defined the increment?

- Individual product
- Services
- Elements
- Collection of products
- Components
- Other (please specify)

Comments:

3.2 What main benefits did you receive from applying the PIB's on Increments to your activities?

Benefit 1

Benefit 2

Comments:

3.3 What main difficulties (unnecessary constraints) did you experience when applying the PIB's on Increments to your activities?

Difficulty 1

Difficulty 2

Comments:

### Section 4: Questions on Common Costs

4.1 Which approach have you recommended?

- Distributed FL-LRIC
- Mark-up

Consumption based allocation       Other (please specify)

Comments:

- 4.2      Have you recommended the use of combinatorial tests?  
 Yes  
 No

Comments: What revenues are compared to what costs?, Must large numbers of tests be carried out.

- 4.3      What main benefits did you receive from applying the PIB's on Common Costs to your activities?

Benefit 1  
Benefit 2

Comments:

- 4.4      What main difficulties (unnecessary constraints) did you experience when applying the PIB's on Common Costs to your activities?

Difficulty 1  
Difficulty 2

Comments:

## Section 5: Questions on Long Run and Forward Looking

- 5.1      How have you defined the long run?

Comments:

- 5.2      What have you proposed with regards to forward looking?  
 Current Cost Methodologies (CCM)  
 Other (please specify)

Comments:

- 5.3      What have you proposed with regards to asset valuation?  
 Modern equivalent asset (MEA)  
 Other (please specify)

Comments:

- 5.4      Which capital maintenance concepts have you recommended?  
 OCM                                       FCM  
 Other (please specify)

Comments:

5.5 Which surrogates have you recommended?

Comments:

5.6 What main benefits did you receive from applying the PIB's on Long Run and Forward Looking to your activities?

Benefit 1  
Benefit 2

Comments:

5.7 What main difficulties (unnecessary constraints) did you experience when applying the PIB's on Long Run and Forward Looking to your activities?

Difficulty 1  
Difficulty 2

Comments:

## Section 6: Questions on the Weighted Average Cost of Capital

6.1 Did you recommend on the use of WACC?

- Yes  
 No

Comments: Please write these recommendations – give the WACC you recommended for the latest tariffs and the method you used to determine it.

6.2 For the WACC do you use the Beta and Risk premium:?

- Of the sector (please specify in "comments" how you define it)  
 Of the market (please specify in "comments" how you define it)  
 Other (please specify)

Comments:

6.3 What main benefits did you receive from applying the PIB's on WACC to your activities?

Benefit 1  
Benefit 2

Comments:



6.4 What main difficulties (unnecessary constraints) did you experience when applying the PIB's on WACC to your activities?

Difficulty 1
Difficulty 2

Comments:
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## Appendix B: Response from the IRG NRA's on the use of Principles of Implementation and Best Practices

Table B-1 IRG aims and objectives answers

COUNTRY	To share experience and information	To discuss national implementation issues.	To harmonize regulatory practice across Europe.	To ensure consistent application of European legislation by issuing so called PIB's.	To provide horizontal coordination on a voluntary basis
Estonia	Yes	Yes	Yes	Yes	Yes
Finland	Yes	Yes	Yes	No	Yes
Belgium	Yes	Yes	Yes	Yes	Yes
Sweden	Yes	Yes	Yes	Yes	Yes
Spain	Yes	Yes	Yes	Yes	Yes
Netherlands	Yes	Yes	No	Yes	Yes
Switzerland	Yes	Yes	Yes	Yes	Yes
Scotland	Yes	Yes	Yes	Yes	Yes
United Kingdom					

Table B-2 ERG aims and objectives answers

COUNTRY	To advise and assist the Commission in consolidating the internal market	To provide an interface between NRA's and the commission in such a way as to contribute to the development of the internal market and to the consistent application in all member states of the regulatory framework.	To foster cooperation between NRA's	To cooperate with regulatory authorities and groups in other regions
Estonia				
Finland	Yes	Yes	Yes	Yes
Belgium	Yes	Yes	Yes	Yes
Sweden	Yes	Yes	No	No
Spain	Yes	Yes	Yes	Yes
Netherlands	Yes	No	Yes	Yes
Switzerland	Yes	Yes	Yes	Yes
Scotland	Yes	Yes	Yes	Yes
United Kingdom				

**Table B-3 Importance of IRG services answers**

<b>Services rendered by IRG</b>				
	<i>Services and tasks performed</i>	<i>Useful</i>	<i>Of some use</i>	<i>Of little use</i>
1	Development of effective regulatory guidelines	6	2	0
2	Formulate input documents to European Commission	6	1	1
3	Publish working papers	6	2	
4	Maintain website	3	3	1
5	Lobby the European Commission on behalf of NRA's	6	2	0
6	Formulate position papers for members	6	2	0
7	Undertaking ad-hoc requests for members	4	4	0
8	Run or co-ordinate training courses and seminars.	3	4	1
9	Provide technical support to members and industry.	4	3	1
10	Hold public consultations	5	3	0
11	Hold public hearings	5	3	0
12	Publish consultative documents.	5	3	0
13	Facilitate sharing of information, experience and expertise among members.	8	0	0
14	Facilitate development of harmonized standards throughout the regions.	4	3	1
15	Facilitate the implementation of harmonized standards throughout the region.	4	3	1
16	Establish a common view and action plan for the region.	5	3	0
17	Coordinate the activities of regulators in the region.	6	2	0
18	Assist in the development of efficient communication systems throughout the region.	4	4	0
19	Cooperate with regulatory authorities and groups in other regions	4	3	1

**Table B-4 Importance of ERG services answers**

<b>Services rendered by ERG</b>				
	<i>Services and tasks performed</i>	<i>Useful</i>	<i>Of some use</i>	<i>Of little use</i>
1	Development of effective regulatory guidelines	6	2	0
2	Formulate input documents to European Commission	5	2	0
3	Publish working papers	4	3	0
4	Maintain website	4	2	1
5	Lobby the European Commission on behalf of NRA's	5	2	0

6	Formulate position papers for members	6	1	0
7	Undertaking ad-hoc requests for members	3	4	0
8	Run or co-ordinate training courses and seminars.	3	2	1
9	Provide technical support to members and industry.	2	3	1
10	Hold public consultations	6	1	0
11	Hold public hearings	6	1	0
12	Publish consultative documents.	6	1	0
13	Facilitate sharing of information, experience and expertise among members.	6	0	0
14	Facilitate development of harmonized standards throughout the regions.	3	2	1
15	Facilitate the implementation of harmonized standards through the region.	3	2	1
16	Establish a common view and action plan for the region.	3	2	1
17	Coordinate the activities of regulators in the region.	4	2	0
18	Assist in the development of efficient communication systems throughout the region.	3	2	1
19	Cooperate with regulatory authorities and groups in other regions	1	4	1

**Table B-5 Reference offers and service level agreements answers**

<b>COUNTRY</b>	<b>Forms of unbundling</b>	<b>Did you recommend a reference unbundling offer?</b>	<b>Did you recommend the use of service level agreements?</b>
Estonia	High-speed bit stream access, Shared Access	yes	No
Finland	Full unbundling, high-speed bit stream access, shared access	yes	No
Belgium	Full unbundling, high-speed bit stream access, shared access	yes	Yes
Sweden	Did not answer this question		
Spain	Full unbundling, high-speed bit stream access, shared access	yes	Yes
Netherlands	Full unbundling, shared access	yes	Yes
Switzerland	Full unbundling, high-speed bit stream access, shared access	yes	
Scotland	Did not answer this question		
United Kingdom	Did not answer this question		

**Table B-6 Collocation answers**

<b>COUNTRY</b>	<b>What type of collocation did you recommend?</b>	<b>Are beneficiaries able to choose their own type?</b>	<b>Which forms of collocation have proven to be most popular?</b>	<b>Are alternative space provided for the same price cost as physical collocation?</b>	<b>What access to collocation facilities did you recommend?</b>
Estonia	Physical	No	Physical	No	Escorted
Finland	Physical	It depends (market players are supposed to agree that	Physical		Escorted
Belgium	Physical, Distant, Co-mingling	Yes	Other, co-mingling	It depends (co-mingling is intended to be cheaper)	Escorted, Unescorted, it depends Physical: access badge Co-mingling: escorted
Sweden	Did not answer this one				
Spain	Physical, Distant (including co-mingling Virtual collocation not required by Spanish LLU Regulated	It depends (subject to space availability)	Physical	No	It depends (Escorted access to sites without personnel or surveillance means.
Netherlands	Physical, distant, Virtual	Yes	Physical	No	Unescorted
Switzerland	Did not answer this one				
Scotland	Did not answer this one				
United Kingdom	Any communication providers found to have SMP is required to provide network access. In terms of local loop unbundling, BT has thus far been required to provide physical and distant collocation.	In general yes, however it is possible that Physical collocation will not always be possible due to limitations of the MDF site.	Most providers choose to collocate their equipment in the same site as the SMP Providers own equipment	No, at present charges depend on the work that the SMP communications provider has to carry out in order to provide unbundling.	Engineers that are appropriately qualified are allowed unescorted access to exchanges.

**Table B-7 Space allocation answers**

COUNTRY	On what basis is space for collocation allocated?	Do you have to approve the space allocation system?	In terms of availability of space is there a clearly defined procedure for verifying unavailability?	Is there an obligation to allocate space within certain period?	Are rentals for collocation space charged at market geographic price levels?
Estonia	Estonian National Communications Board has not interfered yet.	No	No	No there is no obligation to allocate space within a certain period	Yes
Finland	Based on practical need	No	No	It depends on market players are supposed to agree that	No
Belgium	First asked, first to become but lose clause if not used in 6 months.	No	Yes	Where collocation space has already been constructed, where no space is available.	No
Sweden	Did not answer				
Spain	Use or lose considered. Scarce space allocated using modified FIFO discipline	Yes	It depends on seldom used: New entrants may visit the sites Administration officials can check	Where collocation space has already been constructed.	Yes
Netherlands	First come first serve principle	It depends on. In principal no, but if there are problems, telecom operators can ask OPTA to mediate or to make a decision	Yes	Where no space is available	Yes
Switzerland	ULL is still not available in Switzerland	ULL is still not available in Switzerland	ULL is still not available in Switzerland	ULL is still not available in Switzerland	ULL is still not available in Switzerland
Scotland				It is not specified for the time being	

United Kingdom	This has not been an issue in the UK communications providers with SMP are required to meet all reasonable requests for access. In the event that a site was oversubscribed requests for space might not be reasonable.	Not in particular cases	Yes, Operators can request the status of space availability at any exchange at any time. Should BT declare that space is unavailable it is required to inform the regulator giving the particular circumstances?	Yes, in all situations	Yes, market price for industrial space or the price that BT charges itself (if relevant) which ever is lower.
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**Table B-8 Electronic systems for ordering answers**

COUNTRY	Have you recommended the use of an electronic system for ordering?	What is the electronic system generally used for?	Are new entrants expected to pay for pre-order enquiries into the technical feasibility for unbundling?	Are new entrants expected to show actual customers?
Estonia	Yes	Submitting orders, Processing orders	No	No
Finland	It depends on availability (not available by small operators)	Submitting orders, Processing orders	No comment	No
Belgium	Yes	Submitting orders, Fault handling, scheduling appointments	It depends on (not if there is an order following enquiry.	No
Sweden	Q not answered			
Spain	Yes	Submitting orders, fault handling, , all kinds of orders	No, pre-orders considered	
Netherlands	Yes	Submitting orders, Fault handling, processing orders	It depends on. If the line is functioning ok, and the new entrant wants a test, he has to pay. If there is a technical problem and the problem is in the domain of the incumbent, the incumbent has to pay.	Yes
Switzerland	Q not answered			
Scotland	Q not answered			
United Kingdom	Q not answered			

**Table B-9 Fault reporting answers**

COUNTRY	What do you recommend as a reasonable time for repairing faults?	Are parties expected to pay for investigating faults?	Have you recommended the use of an electronic system for fault reporting?
Estonia	Days	No, the parties must pay after repairing the fault or breakdown and only the party who caused the fault or breakdown	Yes
Finland	Depend case by case	No	No
Belgium	Days	No	Yes
Sweden	Did not answer		
Spain	2 days, recently reduced to 1 day for some cases (faults which can be solved at the MDF Site)	No	Yes, web-based

Netherlands	days	No	Yes
Switzerland		Did not answer	
Scotland		Did not answer	
United Kingdom		Did not answer	

**Table B-10 LRAIC (approach) answers**

Country	Which approach (model) did you recommend
Estonia	Top down/Bottom up
Finland	
Belgium	Top down/Bottom up
Sweden	
Spain	Top down
Netherlands	Top down/Bottom up
Switzerland	
Scotland	Modified
United Kingdom	Top down/Bottom up/Modified

**Table B-11 LRAIC (common cost) answers**

Country	When ensuring cost causal allocation - do you use Activity Based Costing (ABC)?	Which costs have you considered common?	What is the % of common costs in the total of the costs?	Does the bottom up take into account :	How do you estimate common costs?	How do you estimate the network investment that is not directly recorded?	Was the bottom up model reconciled with the top down one?
Estonia	Yes	Common fixed costs are costs which are associated with the provision of all services and are not attributable to a single specific product or service.	5	Scored node	With data from cost accounting	With international benchmarks	Yes
Finland							
Belgium	Yes	The common costs in the top down model of the BIPT are equal to the costs of the facilities & business services (purchasing, logistics, fleet, facilities management...) , information technology (IT	20	Scored node	With data from cost accounting	With data from cost accounting	

		Support) and management groups. These management groups are: group staff, group finance, group general counsel, group human resources, group industrial relations, group business development (coordination of initiatives with regard to the development of the Belgacom group via alliances, partnerships, group communication, regulatory and public affairs, group secretariat (general secretariat under the authority of the president of the board of directors), product & process management.					
Sweden			30				
Spain	Yes	Market development: terminal subsidy.				With data supplied by other operators	
Netherlands	Yes	KPN considers common those costs which are common to all its activities (retail, wholesale, etc.)		Scored node			No
Switzerland	Yes	Confidential - Common costs aren't directly attributable to one ore more products, but to the entirety.		Modified scorched node via top down approach	With data from cost accounting	With data supplied by the operator and benchmarks	
Scotland				Scored node	With international benchmarks/With data from cost accounting/With	With international benchmarks/With data from cost accounting/With	

					data supplied by other operators	data supplied by other operators	
United Kingdom	Yes/No	Those marred in the provision of more than one increment or those costs that are not incremental.	n/a	Scored node			Yes

**Table B-12 Increments answers**

Country	How have you defined the increment
Estonia	Services
Finland	
Belgium	Services
Sweden	
Spain	
Netherlands	Services
Switzerland	
Scotland	Services
United Kingdom	Dependent on purpose of work and the item being addressed

**Table B-13 Common costs answers**

Country	Which approach have you recommended?	Have you recommended the use of combinatorial tests?
Estonia	Mark-up	No
Finland		
Belgium	With top-down - fully distributed CCA costs. With bottom up – mark ups	No
Sweden		
Spain		No
Netherlands	Mark-up	No
Switzerland	Mark-up	No
Scotland	Mark-up	
United Kingdom		Yes

**Table B-14 Long Run and Forward Looking answers**

COUNTRY	How have you defined long run?	What have you proposed with regards to forward looking?	What have you proposed with regards to asset valuation?	Which capital maintenance concepts have you recommended?	Which surrogates have you recommended
Estonia	A period in which all input factors are essential for the functioning of the economic unit adaptable	Current Cost Methodologies	Modern Equivalent Asset	OCM	

Finland					No
Belgium	The time horizon over which all costs are variable.	Current Cost Methodologies	Modern Equivalent Asset		No
Sweden	Did not answer				
Spain		Current Cost Methodologies			Yes
Netherlands	The time horizon over which all costs (including all capital investments) are variable.	Current Cost Methodologies	Modern Equivalent Asset		Yes
Switzerland	The time horizon over which all costs are variable.	Current Cost Methodologies	Modern Equivalent Asset	OCM	ULL is still not available in Switzerland
Scotland		Current Cost Methodologies	Modern Equivalent Asset		
United Kingdom	The time horizon over which all costs are variable (or avoidable).	Current Cost Methodologies	Modern Equivalent Asset	FCM	Yes, market price for industrial space or the price that BT charges itself (if relevant) which ever is lower.

**Table B-15 Weighted Average Costs of Capital answers**

Country	Did you recommend the use of WACC?	For WACC do you use the Beta and Risk Premium?
Estonia	Yes	
Finland	Yes	
Belgium	Yes	Of the sector/of the market
Sweden		
Spain		
Netherlands	Yes	
Switzerland	Yes	Of the sector
Scotland	Yes	Of the sector
United Kingdom	Yes	Beta and risk premium of the incumbent BT



## Appendix C: Survey Questionnaire for SADC NRA's on the use of Model Regulations

Dear Participants,

### Some Comments:

- The answers to these questions should enable us to understand the regulators position on the main issues of Interconnection and Tariffs - in the context of the model regulation on Interconnection and Tariffs respectively.
- It is intended to assess the extent to which regulators find the model regulations on Interconnection and Tariffs useful and relevant (or unnecessarily constraining) within their specific regulatory context.
- Part A addresses questions relating to the model regulation on Interconnection while Part B addresses questions relating to the model regulation on Tariffs.

### Part A:

#### Model regulation on Interconnection

##### Section 1: General questions on transparency

- 1.1 Are interconnection agreements between operators made public?
- Yes  No
- It depends (Please specify)

Comments:

- 1.2 If yes how are interconnection agreements made public?
- Public registries  Publications
- Other (Please specify)

Comments:

##### Section 2: General questions on non-discrimination

- 2.1 What forms does discrimination in interconnection arrangements take?
- Incumbents providing unfair arrangements to new entrants (for example new entrant B obtains better arrangements than new entrant C).
- Incumbents providing more favorable interconnection arrangements to an incumbent's own operations or affiliated than to competitors?
- Incumbents providing insufficient network capacity to interconnecting operators as compared to an incumbent's own service?
- Incumbents treating competitors as customers rather than as peers or co-carriers?

Other (Please specify)

Comments:

- 2.2 Which remedies did you recommend with regards to non-discrimination?
- Interconnection agreements should be made public.
  - Insist that interconnecting carriers be treated on an equal and reciprocal basis as peers and not customers.
  - Insist that incumbents construct sufficient capacity to handle growing demand.
  - Introduce accounting separation.
  - Ensure that incumbents who provide wholesale and retail include the same amount it charges to its competitors for international in its own retail rates
  - Other (Please specify)

Comments:

### Section 3: General questions on Cost orientation

- 3.1 What approaches to interconnection charges have you recommended?
- Forward-looking incremental costs (LRIC, LRAIC, etc.).
  - Historical accounting costs.
  - Bill and keep.
  - Other (Please specify).

Comments:

- 3.2 Which Cost Base have you recommended?
- Historic costs
  - Current costs
  - Best practices
  - LRIC
  - Forward looking
  - Other (please specify)

- 3.3 Which Cost Standard have you recommended?
- Fully distributed costs
  - LRIC
  - Embedded distributed costs
  - Current costs accounting
  - Other (please specify)

### Section 4: Questions on Network Topology

- 4.1 Which approach (model) did you recommend?
- Top down  Bottom up
  - Modified approach (please specify)

Comments:

[Questions specific to Top Down]



- 4.2 Does the top down approach take into account?
- The existing network topology (scorched node).
  - An ideal topology (scorched earth).
  - Other (please specify).

Comments:

**[Questions specific to Bottom Up]**

- 4.3 Does the bottom up take into account:
- The existing network topology (scorched node).
  - An ideal topology (scorched earth).
  - Other (please specify).

Comments:

**[Questions specific to Top Down, Bottom Up or Modified]**

- 4.4 Was the bottom up model reconciled with the top-down one?
- Yes.
  - No.

Comments:

**Section 5: General questions on interconnection procedures**

- 5.1 What approaches to interconnection arrangements have you recommended?
- Regulatory prescription (ex-ante) of interconnection arrangements.
  - Negotiation between operators.
  - Establishment of general regulatory guidelines for operators to negotiate.
  - Regulation mediation to facilitate operator negotiated agreements.
  - Regulatory decisions to resolve interconnection disputes.
  - Regulatory review and approval of negotiated arrangements.
  - Other (Please specify).

Comments:

- 5.2 What has been your role in interconnection negotiations?
- Establishing guidelines in advance of negotiations.
  - Setting default interconnection arrangements in advance of negotiations.
  - Establishing deadlines for various stages of the negotiations.
  - Other (Please specify).

Comments:

## Section 6: General questions on unbundling

- 6.1 Did you recommend unbundling?  
 Yes  No

Comments:

- 6.2 If yes - what forms of unbundling did you recommend?  
 Full unbundling  Shared access  
 High-speed bit stream access  Other (Please specify)

Comments:

### Part B:

#### Model regulation on Tariff

##### Section 1: General questions on rebalancing

- 1.1 Have rate rebalancing occurred?  
 Yes  No  
 It depends (Please specify).

Comments:

##### [Questions if rate rebalancing has occurred]

- 1.2 How long has the transitional process taken?  
 0 - 18 months  18 months - 3 years  
 3 - 5 years  5-7 years  
 It depends (Please specify).

Comments:

- 1.3 Where has the most rebalancing occurred?  
 Residential  Business  
 Long distance  International  
 Other (Please specify).

Comments:

- 1.4 Has rebalancing resulted in lower overall prices for consumers?  
 Yes  No  
 It depends (Please specify)

Comments:

1.5 What form of price regulation have you recommended?

- Discretionary price setting
- Rate of return regulation
- Price cap regulation
- It depends (Please specify)

Comments:

**[Questions if rate rebalancing has not occurred]**

1.6 How long is the transitional process expected to take?

- 0 -18 months
- 3 - 5 years
- It depends (Please specify).
- 5-7 years
- 18 months - 3 years

Comments:

1.7 What form of price regulation have you recommended?

- Discretionary price setting
- Rate of return regulation
- Price cap regulation
- It depends (Please specify)

Comments:



## Appendix D: Results from the TRASA on the use of Model Regulations

**Table D-1 Public/private interconnection agreements answers**

Member State	Public/Private	How are they made public
Angola	Did not respond	
Botswana	Public (upon request only)	
DRC	No regulator exists	
Lesotho	Private	Not applicable
Malawi	Public	Publications
Mauritius	Private	Not applicable
Mozambique	Public	Public registries
Namibia	Did not respond	
Seychelles	Did not respond	
South Africa	Public	Publications
Swaziland	Did not respond	
Tanzania	Private	Not applicable
Zambia	Did not respond	
Zimbabwe	Private	Not applicable

**Table D-2 Forms of discrimination answers**

Member State	Incumbents providing unfair arrangements to new entrants (for example new entrant B obtains better arrangements than new entrant C).	Incumbents providing more favourable interconnection arrangements to an incumbent's own operations or affiliated than to competitors?	Incumbents providing insufficient network capacity to interconnecting operators as compared to an incumbent's own service?	Incumbents treating competitors as customers rather than as peers or co-carriers?	Other (Please specify)
Angola	Did not respond				
Botswana	√	√	√		
DRC	No regulator exists				
Lesotho		√			
Malawi		√			
Mauritius		√	√		
Mozambique	√	√	√	√	
Namibia	Did not respond				
Seychelles	Did not respond				
South Africa	√				
Swaziland	Did not respond				
Tanzania	√	√			
Zambia	Did not respond				

Zimbabwe				√	
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**Table D-3 Remedies to discrimination answers**

	Interconnection agreements should be made public.	Insist that interconnecting carriers be treated on an equal and reciprocal basis as peers and not customers.	Insist that incumbents construct sufficient capacity to handle growing demand.	Introduce accounting separation.	Ensure that incumbents who provide wholesale and retail include the same amount it charges to its competitors for international in its own retail rates	Other (Please specify)
<b>Member State</b>						
Angola	Did not respond					
Botswana	√	√		√		
DRC	No regulator exists					
Lesotho		√				
Malawi	√	√			√	
Mauritius	Did not respond					
Mozambique	√	√	√	√	√	
Namibia	Did not respond					
Seychelles	Did not respond					
South Africa	√	√		√		
Swaziland	Did not respond					
Tanzania			√	√	√	√
Zambia	Did not respond					
Zimbabwe		√		√		

**Table D-4 Cost orientation of interconnection answers**

Member State	Cost Approach	Cost Base	Cost standard
Angola		Did not respond	
Botswana	LRIC	LRIC	LRIC
DRC		No regulator exists	
Lesotho	FLRIC	Historic costs	Current costs accounting
Malawi	FLRIC + Regional benchmarking	Historic Costs	LRIC
Mauritius	FLRIC/Historical Costing	Forward Looking	LRIC
Mozambique	FLRIC/Benchmarking	LRIC/Best regulatory practices	LRIC
Namibia		Did not respond	
Seychelles		Did not respond	
South Africa	FLRIC	LRIC/FLRIC	LRIC
Swaziland		Did not respond	
Tanzania	FLRIC	LRIC/FL	FDC/EDC
Zambia		Did not respond	
Zimbabwe		Did not respond	



**Table D-5 Interconnection costing typology answers**

Member State	Model Approach	Typology
Angola	Did not respond	
Botswana	Ongoing	
DRC	No regulator exists	
Lesotho	Top down	Scorched node
Malawi	Bottom up	Scorched node
Mauritius	Bottom up	Scorched node
Mozambique	Did not respond	
Namibia	Did not respond	
Seychelles	Did not respond	
South Africa	Top down	Scorched node
Swaziland	Did not respond	
Tanzania	Modified	Scorched node
Zambia	Did not respond	
Zimbabwe	Top down	Scorched earth

**Table D-6 Regulators role in interconnection negotiations answers**

<b>Member State</b>	Regulatory prescription (ex-ante) of interconnection arrangements.	Negotiation between operators.	Establishment of general regulatory guidelines for operators to negotiate	Regulation mediation to facilitate operator negotiated agreements.	Regulatory decisions to resolve interconnection disputes.	Regulatory review and approval of negotiated arrangements.	Other (Please specify)
Angola	Did not respond						
Botswana		√	√		√		
DRC	No regulator exists						
Lesotho	Did not respond						
Malawi		√	√	√			
Mauritius	√	√	√				
Mozambique	√	√	√	√	√	√	
Namibia	Did not respond						
Seychelles	Did not respond						
South Africa		√	√				
Swaziland							
Tanzania		√	√		√		√
Zambia	Did not respond						
Zimbabwe		√	√	√	√		

**Table D-7 Interconnection approaches recommended answers**

Member State	Establishing guidelines in advance of negotiations	Setting default interconnection arrangements in advance of negotiations	Establishing deadlines for various stages of the negotiations	Other (Please specify)
Angola	Did not respond			
Botswana	Did not respond			
DRC	No regulator exists			
Lesotho			√	
Malawi		√	√	√
Mauritius	√		√	
Mozambique	√	√	√	
Namibia	Did not respond			
Seychelles	Did not respond			
South Africa	√		√	
Swaziland	Did not respond			
Tanzania	√	√		√
Zambia	Did not respond			
Zimbabwe	√		√	

**Table D-8 Local loop unbundling answers**

Member state	Unbundling	Form on unbundling
Angola	Did not respond	
Botswana	No	Not applicable
DRC	No regulator exists	
Lesotho	Yes	Full unbundling
Malawi	Yes	Not specified
Mauritius	Yes	Not specified
Mozambique	Yes	Full unbundling/Shared access/High-speed bit stream access.
Namibia	Did not respond	
Seychelles	Did not respond	
South Africa	No	Not applicable
Swaziland	Did not respond	
Tanzania	Yes	Full unbundling
Zambia	Did not respond	
Zimbabwe	Yes	Full unbundling

**Table D-9 Tariff rebalancing answers**

	Has rebalancing occurred	How long has process taken	Where has the most rebalancing occurred	Has it resulted in lower prices for consumers	What form of price regulation have you recommended	How long is process expected to take
Angola						
Botswana	It depends	Ongoing	NA	NA	NA	NA
DRC	No regulator exists					
Lesotho	It depends	Ongoing	Local distance, long distance, International	No	Price cap	Indefinite
Malawi	No				Price cap	
Mauritius	Yes	18 months - 3 years	Residential, Business, International	Yes	Price cap, Discretionary price setting.	
Mozambique	No				FL-LRIC/benchmarking	
Namibia	Did not respond					
Seychelles	Did not respond					
South Africa	No				Price cap	18 months - 3 years
Swaziland						
Tanzania	Yes	3-5 years	Residential, International	Yes (I)/No (R)	Price cap	
Zambia	Did not respond					
Zimbabwe	No	18 months and ongoing	Residential, Business	No	Cost based tariffs (COSITU model)	18- 3 years

## Samenvatting

Telecommunicatietechnieken, markten en diensten zijn allen de nationale grenzen overstegen. Ingrepen voor markthervormingen moesten daarop volgen en strekken zich in de meeste gevallen uit over en voorbij de traditionele nationale jurisdicties. Tijdens dit proces, is de regulering van telecommunicatie veranderd in een in toenemende mate veelzijdig, veel niveaus en veel actoren omvattend complex systeem. Begrijpelijkerwijs hebben deze ontwikkelingen vragen opgeworpen over het bereik en de mogelijkheden van nationale regulering sinds er verschillende vormen van regionale regulering zijn ontwikkeld om bepaalde elementen van nationale regulering te ondersteunen, aan te vullen en in sommige gevallen te vervangen.

Dit proefschrift beoordeelt de effecten van technologische, socio-economische systemen op regionale telecomregulering en de navolgende gevolgen op prestaties van de bedrijfstak. Het hoofddoel is het beschrijven en analyseren van de eerste ervaringen met regionale regulering als een nieuwe instelling in de voortgaande hervorming van de telecommunicatie bedrijfstak en het vaststellen van de gevolgen voor de prestaties van regulering en ontwikkeling van de industrie. De periode van 1995 tot 2004 representeert een belangrijke leerfase in het proces van regionale regulering in de telecommunicatie.

De studie adresseert de volgende onderzoeksvraag: Welk effect hebben technologische, socio-economische systemen, zoals informele instituties, technieken, formele instituties, institutionele arrangementen en actoren, gehad op regionale regulering in de Europese Unie (EU), de Organisatie van Oost-caraïbische Staten (OECS) en de Ontwikkelingsgemeenschap voor Zuidelijk Afrika (SADC)? Hoe hebben regionale beleidsmakers en toezichhouders gereageerd op regelgevingsvraagstukken die ontstonden in de EU, OECS en SADC? Wat zijn de gevolgen geweest van het antwoord op de bedrijfstakprestaties in de EU, OECS en SADC? Hoe verhouden zich de verschillende technologische, socio-economische systemen en de behandeling van substantiële regelingsvraagstukken door regionale beleidsmakers en toezichhouders binnen de EU, OECS en SADC?

Het empirisch onderzoek is uitgevoerd met behulp van kwalitatieve analyse ondersteund met enige kwantitatieve gegevens. Case studies, interviews en enquêtes zijn als onderzoeksmethoden gekozen, waarbij deze technieken zijn verbonden aan een langdurige ervaring uit arbeid in de telecommunicatie industrie. De drie onderzoeksregio's zijn gekozen op grond van hun ontwikkelingsniveau met betrekking tot de drie telecommunicatie bedrijfstakken. De EU case study vertegenwoordigt een goed ontwikkelde telecommunicatie regio, de SADC case bevindt zich, als een onderontwikkelde telecommunicatie regio, aan het andere einde van het continuüm, terwijl de OECS case zich halverwege deze uiterste bevindt als een zich ontwikkelende telecommunicatie regio.

Het theoretische kader dat is gebruikt is samengesteld uit de neoklassieke markttheorie, industriële organisatie theorie, institutionele economie, politieke wetenschappen en openbaar bestuurskunde. Dit heeft de theoretische benadering inherent pluralistisch gemaakt. Als

vertrekpunt past het onderzoek een gelaagd model toe, overgenomen van Groenewegen (2005) en geïnspireerd door Williamson (2000). Dit maakt het mogelijk om instituties te conceptualiseren en andere concepten onder te brengen in elk van de lagen en hen op spaarzame wijze in te zetten.

Volgens het onderzoeksmodel beïnvloeden technologische, socio-economische systemen regionale regulering op fundamentele wijze, door baten te creëren en uitdagingen voor regionale beleidsmakers en toezichthouders, en hoe regionale toezichthouders en beleidsmakers op de vraagstukken reageerden heeft gevolgen voor de bedrijfstakprestaties binnen een telecommunicatie bedrijfstak. In sommige gevallen is groei van de bedrijfstak gestimuleerd in andere is de bedrijfstakgroei geremd.

De studie belicht de gemeenschappelijke en specifieke uitdagingen over de drie regio's. Uitdagingen over de drie regio's omvatten vraagstukken als marktmacht en gedrag van de dominante gevestigde partij, allocatie van de toepasselijke functies en taken over nationale en regionale jurisdicties, het opstellen van regionale regelgevende instrumenten, de onafhankelijkheid van regionale organisaties en de doorlooptijd die wordt genomen door nationale en regionale rechtsorganen om disputen te beslechten tussen operators. Uitdagingen die specifiek zijn voor elk van de regio's waren de buitengewone ingewikkeldheid van de verschillende telecommunicatie bedrijfstakreguleringsystemen in de EU, de duplicatie van sommige reguleringstaken op regionaal niveau en dat van nationale staten en de afhankelijkheid van SADC lidstaten van internationale hulpfinanciering.

De studie beveelt aan om de ondersteunende instellingen te versterken die vereist zijn om de nieuwe reguleringsdoelstellingen voort te voeren, zoals uiteengezet in de respectievelijke regionale kader documenten. Om dit mogelijk te maken stelt dit onderzoek voor dat de rollen en functies van de regionale organisaties en telecom toezichthouders worden hergedefinieerd en waar vereist opgewaardeerd tot een wettelijk gemandateerde regionale reguleringsautoriteit voor de telecommunicatiebedrijfstak. Bestuurstaken evenredig met zo'n functie zullen moeten worden gedelegeerd. In sommige gevallen zullen de regionale organisaties nieuwe doelen moeten worden gegeven, met de focus gericht op relevante vraagstukken voor een regionale telecommunicatiebedrijfstak toezichthouder. Aan hem zullen ook de 'wettelijke tanden' moeten worden gegeven om zijn geloofwaardigheid af te dwingen en zijn regulerende bestuur toe te staan om een effectieve regulering organisatie te leiden. In de gevallen dat nationaal niet wordt voldaan aan regionale telecom regulering en falende regionale bedrijfstak regulering, dient goed omschreven toegang tot de nationale rechtbanken en de regionale rechtspraak te worden verzekerd. Hoewel deze aanbevelingen de mogelijkheid bieden om de regionale systemen van bestuur van de telecommunicatiebedrijfstak te verbeteren, erkennen wij dat zij ook noodzaken tot fundamentele wijzigingen in de bestaande systemen van bestuur.

De conclusie van deze studie is dat regionale regulering nog in de kinderschoenen staat en als zodanig nog vormgeving ontbeert. Het valt te verwachten dat regionale regulering van de

telecommunicatiebedrijf in de loop der tijd en op voorwaarde van voortdurende speelruimte zich kan ontwikkelen in een rijpere en meer op zichzelf staande vorm.





## Summary

Telecom technologies, markets and services have all grown beyond national boundaries. Market reform initiatives have had to follow and in most instances extend beyond and across traditional national jurisdictions. In the process, telecom regulation has been transformed into an increasingly multi-level, multi-actor and multi-faceted complex system. Understandably, these developments have raised issues of the scope and capabilities of national regulation as different forms of regional regulation have been developed to assist, supplement and in some cases replace, certain elements of national regulation.

This study examines the effects of technological, socioeconomic systems on telecom regional regulation and its subsequent impact on sector performance. The main purpose is to describe and analyze the early experiences of regional regulation as a new institution in the ongoing telecom sector reform and to assess its implications for regulatory performance and industry development. The period 1995 to 2004 represents an important learning phase in the process of regional regulation in telecom.

It addresses the following question: What effect has technological, socio-economic systems, such as informal institutions, technologies, formal institutions, institutional arrangements and actors, had on regional regulation in the European Union, the Organization of Eastern Caribbean States and the South African Development Community? How has regional policymakers and regulators responded to the regulatory issues raised in the European Union, the Organization of Eastern Caribbean States and the South African Development Community? What has been the implication of the response for sector performances in the European Union, the Organization of Eastern Caribbean States and the South African Development Community? How has the various technological, socio-economic systems and treatment of substantive regulatory issues, by regional policymakers and regulators compared within the European Union, the Organization of Eastern Caribbean States and the South African Development Community?

The empirical investigation is carried out using qualitative analysis supported by some quantitative data. We chose to use case studies, interviews and surveys, coupling these techniques with an extensive experience of working in the telecom industry. Our three case study regions were chosen on the basis of their level of development with respect to the three telecom sectors, The EU case study, represents a well developed telecom region, the SADC case falls at the other end of the continuum, as an underdeveloped telecom region while the OECS case falls mid place between the two extremes, as a developing telecom region.

The theoretical frameworks used were drawn from neoclassical market theory, industrial organization theory, institutional economics, political science and public administration. This made the theoretical approach inherently pluralistic. As a point of departure, the research applied a layered model adopted from Groenewegen (2005) and inspired by Williamson

(2000). This allowed for the conceptualization of institutions and other concepts under each of the levels and to use them in a parsimonious manner.

## **Curriculum Vitae**

Andrew Barendse was born in Cape Town, South Africa on 21 September 1966. He is a graduate of Garlandale Senior Secondary School in Cape Town. Directly following his matriculation in 1985 Andrew joined Telkom, a telecom operator, and after an apprenticeship of 3 years received a Certificate of Proficiency (telecom electrician) in January 1989. In Telkom Andrew held positions in network planning (technical officer, Jan 1986 – Dec 1991), computer and management training (lecturer, Jan 1992 – Sept 1995), corporate customers business (sales account manager, Oct 1995 – Jan 1998) and in regulatory and government relations (senior manager, Feb 1998 – Aug 2001).

During this time he also studied on a part-time basis at various tertiary institutions in Cape Town, Pretoria and Johannesburg. Andrew received a national technical diploma in telecom (light current) from Maitland Technical College (1989-1991), a Diploma in Tertiary Education from the University of Pretoria in December 1995, Bachelors in Education (B.Ed) Degree from the Randse Afrikaanse University (1996-1997), a Masters in Business Administration (MBA) Degree for the University of Cape Town's Graduate School of Business (1999-2000). In 2001, Andrew was offered a position as a PhD researcher at the Delft University of Technology in the Netherlands.

Andrew joined the Economics of Infrastructures section at the faculty of Technology Policy and Management in September 2001. During his time at Delft he participated in teaching (selected lectures in managerial, regulatory and institutional economics), supervising bachelors and master's research reports and in publishing papers. He also participated in research projects for the Ford Foundation, the World Bank and CIPESA.

Andrew is currently an Assistant Professor in the Economics of Infrastructures section in the faculty of Technology Policy and Management at Delft. In addition he is a Council member of the European Association of Evolutionary Political Economy. His research interest includes regional regulation with a special interest in the telecom industry, business and government relations, corporate political strategies in network industries and institutional economics with applications to government policy (regulation and competition).