

WDR Dialogue Theme 2003

Discussion Paper WDR 0303

**Regulation and Investment:
Sri Lanka Case Study,
including a Pilot Assessment
of the Telecom Regulatory
Environment**

September 2004*

**Rohan Samarajiva & Anupama
Dokeniya, with a new annex by
Sabina Fernando, Shan
Manikkalingam & Amal
Sanderatne**

Comments invited, please post them to:
research@regulateonline.org or to the Online Discussion Forum at:
www.regulateonline.org/dialogue/ under the topic **Case studies 2003**

The World Dialogue on Regulation for Network Economies (WDR)

The World Dialogue on Regulation for Network Economies (WDR) Project was initiated by *infoDev* which is providing foundation funding (IBRD, World Bank Grant Agreement # 546-011501). Additional foundation support is provided by the ITU Telecommunication Development Bureau (BDT), the International Development Research Centre (IDRC, Canada), and the LIRNE.NET universities: the Technical University of Denmark; the Delft University of Technology, the Netherlands; the London School of Economics, UK; and the University of Witwatersrand, South Africa.

The WDR Project is managed by the Learning Initiatives on Reforms for Network Economies (LIRNE.NET), a consortium of university-based research and training centers, administered at the Center for Information and Communication Technologies (CICT), Technical University of Denmark.

The World Dialogue on Regulation for Network Economies (WDR) facilitates an international dialogue to generate and disseminate new knowledge on frontier issues in regulation and governance to support the development of network economies.

Contact:

WDR Project, LIRNE.NET
Center for Information and Communication Technologies
Technical University of Denmark, Building 371
DK 2800 Lyngby, DENMARK

Phone: +45 4525 5178
Fax: +45 4596 3171
Email: info@regulateonline.org

WDR Project Coordinator Merete Aagaard Henriksen: henriksen@lirne.net.
WDR <www.regulateonline.org>
LIRNE.NET <www.lirne.net>

© 2003/4 The World Dialogue on Regulation for Network Economies (WDR)

**REGULATION AND INVESTMENT:
SRI LANKA CASE STUDY INCLUDING A PILOT
ASSESSMENT OF THE TELECOM REGULATORY
ENVIRONMENT**

World Dialogue on Regulation 2003

**Rohan Samarajiva, Anupama Dokeniya,
Sabina Fernando, Shan Manikkalingam & Amal Sanderatne**

TABLE OF CONTENTS

1.0 INTRODUCTION.....	4
1.1 Investment and Regulatory Risk.....	6
1.2 Sources and Limitations of Data.....	8
2.0 TELECOM REGULATORY ENVIRONMENT & INVESTMENT, 1993-2002.....	9
2.1 Fixed Sector.....	9
2.2 Mobile Sector.....	12
3.0 CONCLUDING COMMENTS.....	15
REFERENCES.....	18
ANNEX 1: TELECOM INVESTMENTS IN SRI LANKA, 1993-2002 ..	19
ANNEX 2: WORLD BANK: PRIVATE INVESTMENT DATA FOR TELECOMMUNICATIONS.....	20
ANNEX 3: SUGGESTED METHODOLOGY ON TELECOM REGULATORY ENVIRONMENT	21
ANNEX 4: THE PILOT STUDY ON TELECOM REGULATORY ENVIRONMENT.....	22
ANNEX 5: EXAMPLE FORM	29

*

* The authors wish to thank, Susrutha Goonesekera, Chamath Goonawardene and Radley Dissanayake of the Public Interest Program Unit of the Ministry for Economic Reform, Science and Technology; Kapila Sri Chandrasekera (formerly Sri Lanka Telecom) and Janaka Jayalath of Mobitel; Dayantha De Mel and Tyrone De Silva of DFCC Bank; Mel Gunasekera and Shafraz Farook of Lanka Business Online; Gamini Gunawardene of Ceycom Global; Lillemor Larsen and Mahinda Ramasundera of SUnTel; Thirukumar Nadarasa of Hutchinson; Dumindra Ratnayake of Celltel; Sanjiva Senanayake of IFC; Shanker Somasunderam of Lanka Bell; and Dr Hans Wijayasuriya of MTN Networks; and all the anonymous participants of the TRE pilot study.

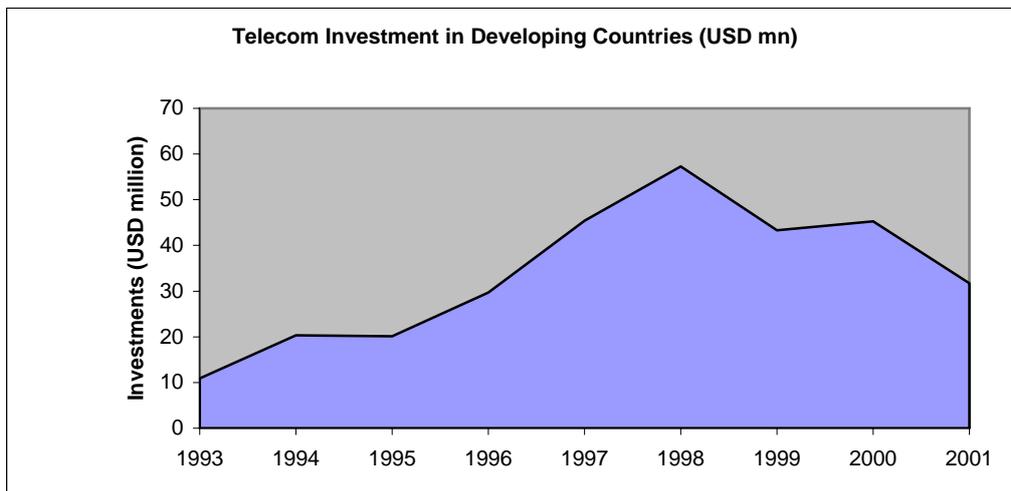
REGULATION AND INVESTMENT: SRI LANKA CASE STUDY INCLUDING A PILOT ASSESSMENT OF THE REGULATORY ENVIRONMENT

World Dialogue on Regulation 2003

1.0 INTRODUCTION

The collapse of the information and communication technology bubble in 2000 and the consequent malaise poses significant challenges to developing countries, most of whom are in the midst of reforming their telecommunications sectors to increase private, including foreign, investment. In most developing countries, pro-competitive regulation in the telecommunications sector is still at a nascent stage. Even as regulators are establishing competition-oriented regulatory mechanisms and grappling with issues of regulatory autonomy and competence, private investment in the telecom sector is declining from the high of 1998 (see Figure 1).

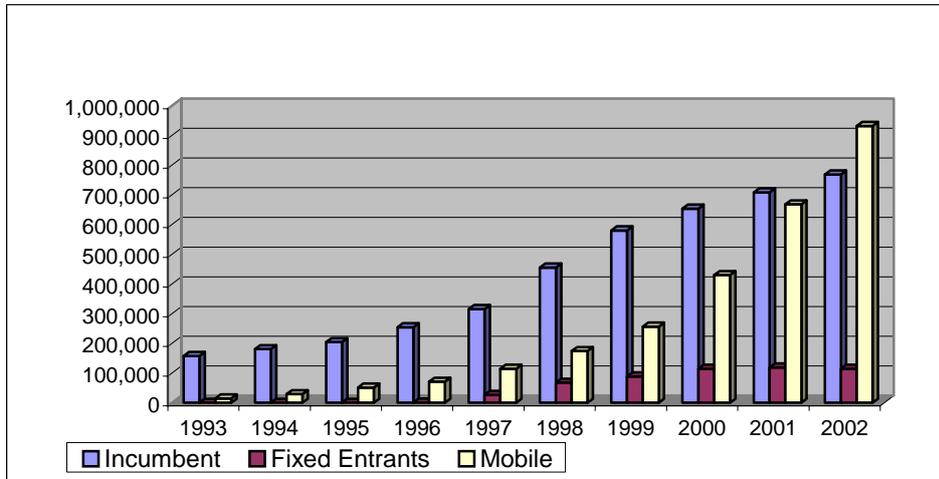
Figure 1: Trends in Telecom Investment in Developing Countries (1993-2001)



Source: Private Participation in Infrastructure Database, The World Bank

Sri Lanka embarked on telecom reforms in 1980 with the bifurcation of posts and telecom service provision by the government. The first private operator entered the market in 1989, when Celltel, a mobile operator, was licensed. In 1991, a new law, created a regulatory agency and converted the Department of Telecommunications into a corporation, Sri Lanka Telecom (SLT). Since 1991, numerous operators have been licensed including three fixed operators, four mobile operators, over 5 facilities based data operators, over 20 non-facilities based data operators and over 30 external gateway operators. In 1996, an amendment to the 1991 Law strengthened the autonomy of the regulatory agency; two fixed operators were licensed by a transparent process to compete nationally with SLT, albeit limited to wireless in the local loop. In 1997, the incumbent, now a company known as Sri Lanka Telecom Limited (SLTL), was partially privatized by the sale of 35 per cent of equity to NTT of Japan, which was also contracted to manage the company for five years. Since the 1991 legislative reforms, over USD 1300 million has been invested in the telecom sector; fixed teledensity has increased from below 1 to almost 5; mobile teledensity has increased from below 0.1 to over 5. The telecom sector is today one of the highest growth sectors in the economy.

Figure 2: Growth in Telecom Subscribers, 1993-2002

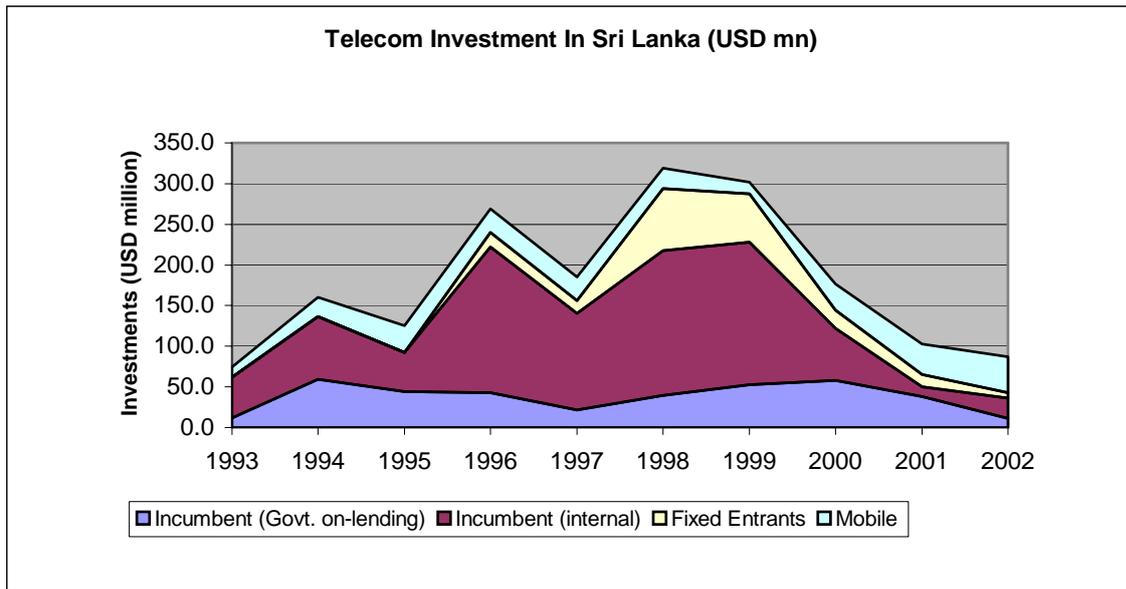


Source: Telecommunications Regulatory Commission of Sri Lanka

Given Sri Lanka's long experience in telecom reforms, relative to most developing countries, a detailed analysis of the telecom regulatory environment and the pattern of investment is likely to yield useful insights on the theme of the 2003 World Dialogue on Regulation.

From the beginning of the reforms in 1980 until 1996-97, the fixed telecom sector in Sri Lanka was constituted by an integrated, government-owned monopoly, with marginal roles played by data operators. Investment by the incumbent was driven by government decisions on how much revenue the firm was allowed to reinvest and on the nature and extent of multilateral, bilateral and other forms of credit and aid that were received. With privatization and the adoption of a more serious approach to competition-oriented regulation in 1996-97, there has been a transition from the reliance on government-raised investment funds to commercial investment. Investment by other operators exceeded that of SLTL for the first time in 2002 - possibly indicating the start of a more normal market-based process. The mobile sector was subject to the dynamics of investment markets since its inception. During the period of this study, the incumbent did not directly participate in the mobile sector, though it held a 40 per cent share in one of the operators after the termination of a Build-Operate-Transfer (BOT) agreement in 1996. The overall pattern of incremental investment in the fixed and mobile sectors is shown in Figure 3.

Figure 3: Trends in Telecommunications Investment, 1993-2002



Sources: Company Financial Reports, External Resources Department, Milne et al (1998)

1.1 Investment and Regulatory Risk

The first public listing of a telecom company in Sri Lanka occurred in 2003, outside the time period covered by this study. The study therefore focuses on foreign direct investment in, and reinvestment of internal funds by, operators.

At the point of investment, investors consider risks associated with three environments:

- Macro-level or country
- Regulatory, and
- Commercial

The macro-level or country risk is defined as factors that may affect the entire economy, such as inflation and foreign exchange risk, as well as overall political stability.

Regulatory risk is a term of art, defined by Spiller and Levy (1994) to refer to risk emanating from government action, including but not limited to the actions of the actual sector-specific regulatory agency with authority over the industry in question.

Commercial risk is comprised of factors such as demand, effect of substitutable products and services, and performance of competitors. The focus of this case study is the regulatory environment within which telecom operators and potential new entrants function, that is, a subset of the overall regulatory risk environment here described as the "Telecom Regulatory Environment" (TRE) that includes only the telecom-specific aspects.

How good or bad the TRE is, is based on perception. Different factors affect perceptions of the TRE. They include the context of the investment (new or incremental), and the nature of sub-sector (e.g., mobile is seen as posing a higher risk in market terms, but posing a lower risk in TRE terms because the investment can be recovered faster than in the fixed sector). While the expected returns from mobile investments are higher, it is a fact that mobile investments have been made in some of the most volatile and uncertain environments, such as the Congo and Somalia.

The manner in which an investor looks at the TRE is different at the moment of making

the investment and subsequently. Prior to committing the investment, the investor has considerable negotiating power vis a vis the government. But this changes radically after the initial investment is made, especially in a capital-intensive industry such as telecom. Investment decisions after entry are driven to a great extent by the desire to protect and enhance the initial investment. Once a firm is in a market, deterioration in the TRE might depress the level of investment, but will not necessarily lead to no investment or to withdrawal.

There is no one-to-one relation between TRE and investment. Macro-level factors such as national economic crises (e.g., Argentina) can have major effects on telecom investment. In the case of Sri Lanka, the civil war was a major macro-level factor, but it was more or less constant across the period under study.¹ Exchange rates did vary - the value of the local currency decreasing from less than LKR 50 to a US dollar to over LKR 90. However, this too was a gradual process, not the result of a crisis. Because Sri Lanka was not affected by major macro-level changes during the period under consideration, it is assumed that they were not determinative of the pattern of telecom investment.

Investment can also be affected by factors endogenous to a company. Seeing that every facilities-based voice and data operator in Sri Lanka has significant equity participation by one or more international firms (as shown in Table 1), decisions internal to the parent company most obviously affect investment by the operator in Sri Lanka. For example, changes in Telia's global investment strategy, to a focus on Northern Europe, could have affected Suntel's investments. The recent financial travails of Millicom may have had a significant effect on Celltel's investments in the past 2-3 years. Unlike in the case of macro-level risk, endogenous factors are not uniform across operators.

TABLE 1: Major/Strategic Investors in Fixed and Mobile Operators, 1993-2002

Operator	Major/strategic investor	Percentage of equity
SLTL	NTT [Japan] (management contract 1997-2002)	35% in 1997; subsequently added 0.5% of worker shares
Suntel	Telia [Sweden], Telecom AB [Sweden], C-Tech [Hong Kong], IFC [World Bank], Metropolitan Agencies [Sri Lanka], NDB, Kelmarsh [Sweden], NDB (Ayojana) Venture Inv [Sri Lanka]	55%, 16%, 11%, 7%, 4%, 3%, 3%, 1%
Lanka Bell	Trans-Asia Tel [Singapore], AIDEC [Japan], MIEL [Singapore], Nortel [Canada] & Others	47%, 20%, 18%, 7% & 8%
MTN (Dialog)	Malaysian Telekom [Malaysia]	100%
Celltel	Millicom [USA]	100%
Mobitel	Telstra [Australia] (until 2002); SLTL	Telstra 60%; SLTL 40%
Lanka Cellular Services (LCSL)	Singapore Telecom [Singapore] to 1997; Hutchison [Hong Kong] from 1997	100%

Melody (2003) describes the components of a good regulatory environment. It can be

¹ However, Celltel reported in an interview that the LTTE attack on the international airport in 2001 caused the parent company to suspend an approved investment.

stated without doubt that there is no country, developing or developed, which fully satisfies the criteria of good telecom regulation. It is also relatively clear that developing countries, characterized by general weaknesses in governance, will exhibit greater deviations from the standards of good regulation and will thus have a poorer TRE.

In this case study, the regulatory environment is assessed in terms of five dimensions,² across three time periods³, with respect to the fixed and mobile sectors. The assessment is relative and country specific, in that the environment in each period is seen in relation to the other periods, not in relation to an abstract ideal or international best practice. The summary assessment for each dimension is expressed on five-point scale as poor, unsatisfactory, neutral, satisfactory and excellent.

The first licenses under the 1991 Law were issued in 1991 by the Minister on the recommendation of the Office of the Director General of Telecommunications (ODGT). The ODGT performed its regulatory functions under a powerful Ministry and was not an independent regulatory agency (see, Samarajiva, 1997). The entry of two new fixed operators in 1996 marked a significant change in the market. In that year, the 1991 Act was amended to give a greater degree of autonomy to the regulator, replacing the ODGT with the better-resourced Telecommunications Regulatory Commission of Sri Lanka (TRCSL). The government also issued a national telecom policy in 1996. The 1996 Policy committed the government to certain actions by the end of 1999. Sri Lanka's WTO commitments more or less reproduced the national telecom policy commitments. While consultations on a new telecom policy commenced in 1999, no significant policy decisions were taken until 2002, making the 2000-2002 period something of an interregnum. The appointment of a former Managing Director of SLTL as Director General of Telecommunications in 1999 and subsequent TRCSL actions that were seen as favoring the incumbent led to increasingly negative perceptions of the TRCSL. These facts justify the identification of 2000 as a watershed in regulatory developments in Sri Lanka.

2003 proved to be a significant year for telecom policy and regulation in Sri Lanka, with the opening of the international market, the promulgation of Interconnection Rules, the first assignment by auction of 1800 GSM frequencies, and so on. At the same time, the acquisition of the remaining 60 per cent of Mobitel's equity by the incumbent fixed operator has roiled the markets and created considerable concern among operators. Regulatory actions and inaction in this regard appear to have resulted in a deterioration of the TRE. However, this study does not directly address 2003 developments because there has been no time for the changes in the TRE to have affected investment decisions, and because the investment data for 2003 are fragmentary and incomplete. For example, in April 2003, MTN, the largest mobile operator, announced additional investments of USD 90 million over a period of three years (*Sunday Times*, 2003, April 20). In October 2003, Mobitel announced that it was launching its 1800 GSM network with a four-year USD 200 million investment plan (*Daily Mirror*, 2003 October 2). The network was launched with much fanfare in November 2003. Celltel, the oldest and second largest mobile operator, announced an investment program that commits USD 4 million in its first phase ending in December 2003 (*Ceylon Daily News*, 2003 October 8). VSNL, a major Indian operator entered the sector with an initial investment commitment of USD 2 million (*Daily Mirror*, July 22 2003). While these investments suggest a generally positive reaction to the recent changes in telecom policy and regulation, it is too early to draw definitive conclusions.

1.2 Sources and Limitations of Data

² Market entry; access to scarce resources; interconnection; tariff regulation; regulation of anti-competitive practices

³ 1993-1996; 1997-1999; 2000-2002

TRE is based on perception. Ideally, TRE would be measured by collecting data on perception of the TRE from a representative and informed group of respondents. That has not been done in this particular pilot study. The summary assessments are those of the senior author who has attempted to provide the reasoning behind the assessments in the text. For a more detailed discussion of the *ideal* methodological aspects, please see Annex 3.

In this study, investment refers to investment in network infrastructure and excludes investment such as that made by NTT to acquire an equity stake in SLTL. Incremental network investment is specifically required to be reported to the TRCSL, for purposes of calculation of license fees. However when crosschecked with other sources, such as financial statements, significant discrepancies were evident. The data that is of the highest quality in the opinion of the authors has been used for this study, with footnotes to indicate qualifications and concerns.

The investment data is supplemented by interviews conducted with the operators in Colombo in September 2003. The interviews focused on the factors that affected investment decision-making by the operators. Specific reference to the financial data of one mobile service operator i.e. Lanka Cellular Services (LCSL) has not been included in the study at their request.

2.0 TELECOM REGULATORY ENVIRONMENT & INVESTMENT, 1993-2002

2.1 Fixed Sector

2.1.1 Telecom Regulatory Environment

There was no competition in the fixed sector until 1996 and investment decisions by the fully government-owned incumbent prior to 1997 were driven by a logic different to that relevant to the present discussion. Therefore, the TRE in the 1993-96 period is not discussed.

Market entry

Fixed competition was introduced in 1996, with the transparent licensing (for the first time in Sri Lanka) of two fixed access operators, Suntel and Lanka Bell. Except for international telephony and the right to connect end-users by wire, their licenses were equivalent to that of the incumbent. They were assured of a duopoly on service provision solely by wireless local loop for five years, subject to a further extension on good performance. The wireline exclusivity for five years, given in the course of the SLTL privatization, resulted in a freeze on new entry in the fixed sector. The government honored its commitments in the 1996-99 period. The regularization of the issuance of frequencies to SLTL for fixed wireless access in the 1997 modification of its license diluted the WLL duopoly commitment. The hope that international telephony revenue streams would be improved by the issuance of at least one additional international telephony license was not realized because the government postponed the international market opening to August 2002, subject to the completion of rate rebalancing and SLTL stymied interconnection based on claims of exclusivity over international telephony. The regulatory environment in 1996-99 with regard to market entry is assessed as unsatisfactory.

No major changes occurred with regard to market entry in 2000-02, justifying continuation of the same assessment.

Scarce Resources

The two new entrants were given the frequencies they requested. The incumbent was refused frequencies outside the band specified in its license, but was not denied frequencies in the permitted 800 MHz band and not displaced from some of the other bands that it already occupied. The TRCSL completed the procurement of the Automated Frequency Monitoring and Management System with World Bank assistance in 1999. The regulatory environment in 1996-99 with regard to scarce resources is assessed as satisfactory.

Both Lanka Bell and Suntel began to request frequencies from different bands in the 2000-02 period but received varied responses: Lanka Bell was issued frequencies in the 1900 CDMA band outside normal procedures, while Suntel's requests for frequencies were denied. The regulatory environment in 2000-02 with regard to scarce resources is assessed as unsatisfactory.

Interconnection

The new entrants commenced operations with an interim two-year interconnection determination that was based on a sender-keeps-all arrangement for domestic calls, a 35 per cent discount on outgoing international calls and no termination fees from incoming international calls. In 1998, following mediation, the TRCSL issued a determination that allowed for measured compensation to replace the sender-keeps-all arrangement, subject to satisfaction of specified conditions, a 20 percent discount on outgoing international calls and LKR 9.50 per minute termination charge per incoming international minute. This determination was implemented by the new entrants, but only to a certain extent. SLTL appealed the determination in the courts, but failed to stay it. The regulatory environment in 1996-99 with regard to interconnection is assessed as unsatisfactory.

Subsequently, the new entrants enabled massive bypass of the incumbent's international gateway by other operators and the interconnection regime became a mess of law suits, technical measures and counter-measures. The regulatory environment in 2000-02 with regard to interconnection is assessed as poor.

Tariff Regulation

The new entrants were exempt from tariff regulation in 1996-99. The government's commitments to SLTL re tariff rebalancing were kept, with two 25 per cent increases in domestic revenue, including the doubling of rentals, delivered in March 1998 and April 1999. The regulatory environment in 1996-99 with regard to tariff regulation is assessed as excellent.

The situation did not change for the new entrants much, except for an attempt by the Minister of Commerce and Consumer Affairs to roll back tariff increases outside the law in 2002, which was accepted by Lanka Bell but not by Suntel. The incumbent's tariff decisions were subject to considerable delays, including a one-year delay in the case of the fourth rate rebalancing decision. The final step in rate rebalancing, which should have been completed in 2002, was thus only completed in late 2003. The regulatory environment in 2000-02 with regard to tariff regulation is assessed as poor.

Regulation of Anti-competitive Practices

The existence of cross subsidies allows for anti-competitive practices by the incumbent. The government's delay in removing such cross subsidies according to the schedule given in the 1996 policy, and indeed the assurance of cross subsidies through the international "exclusivity," harmed the new entrants. The incumbent's delays and discrimination in interconnection, including technical disruptions were contained to a certain extent by the TRCSL. The incumbent was found to have violated a license

condition with anti-competitive implications and paid approximately USD 1 million in compensation to subscribers. The regulatory environment in 1996-99 with regard to anti-competitive practices is assessed as neutral.

The TRCSL failed to investigate or act on the collusive memorandum of understanding among the three fixed operators which was initiated in 2001. The regulatory environment in 2000-02 with regard to anti-competitive practices is assessed as unsatisfactory.

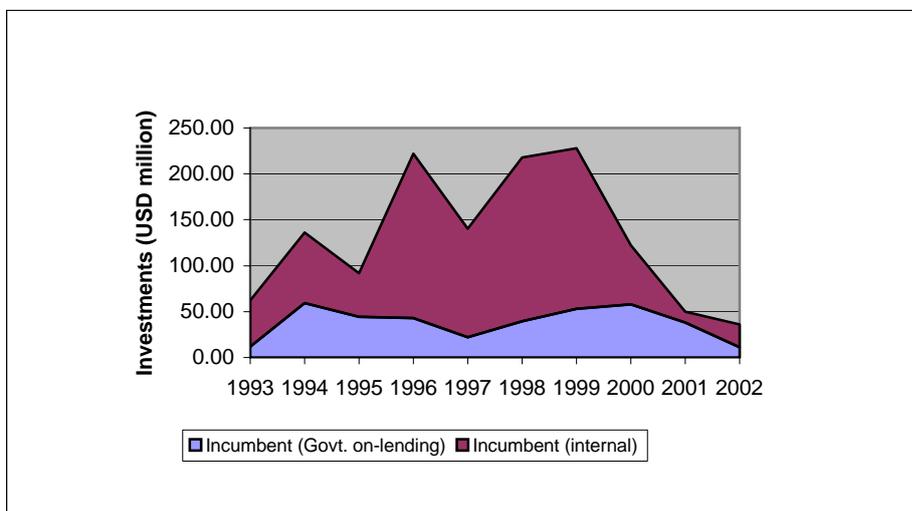
TABLE 2: Telecom Regulatory Environment Assessment: Fixed Sector

	1997-1999	2000-2002
Market entry	Unsatisfactory	Unsatisfactory
Access to scarce resources	Satisfactory	Unsatisfactory
Interconnection	Unsatisfactory	Poor
Tariff regulation	Excellent	Poor
Regulation of anti-competitive practices	Neutral	Unsatisfactory

2.1.2 Investment

The incumbent's investment constituted sector investment prior to 1996. Prior to 1997, it was governed by factors internal to the Government. However, Government funds continued to play a role even after privatization and the introduction of competition, despite their anti-competitive effects.

Figure 4: Sources of Incumbent's Investments

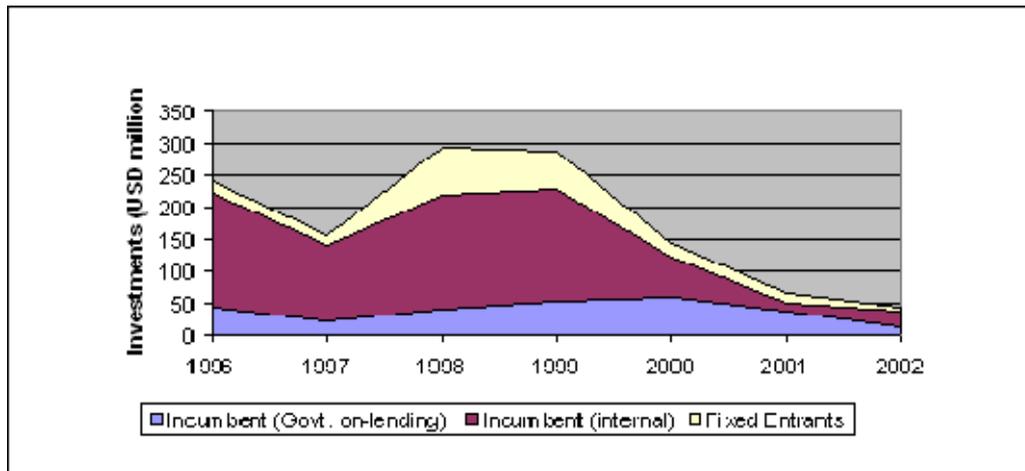


Sources: SLTL Financial Reports, External Resources Department, Milne et al (1998)

Investment in the fixed sector peaked in 1998 and 1999, when both the incumbent and the new entrants invested heavily. With the new entrants, this is to be expected, given the upfront investment required to establish fixed networks. The incumbent's response too, is predictable. Contrary to the widely held perception that government on-lending was the main source of capital, the data indicates that SLTL reinvested *its own* funds in a substantial way. The peak of government on-lending disbursements occurs in 2000, as both new entrant and incumbent internal investments begin to decline. The stated

reason for the reduction of internal investment is unhappiness about “not receiving the total sum paid by foreign operators for terminating calls” in Sri Lanka (de Mel, 2000, p. 2). While this suggests a choice being made, close analysis of the financial data indicates that the incumbent actually suffered a colossal loss of revenue due to bypass, which was remedied only by the collusive MOU with the new entrants. The decline in investments by the new entrants may be attributed to the failure to implement the 1998 interconnection determination and the consequent serious deterioration of the regulatory environment.

Figure 5: Investments by Incumbent and Fixed Entrants, 1996-2002



Sources: SLTL Financial Reports, External Resources Department, Milne et al (1998)

2.2 Mobile Sector

2.2.1 Telecom Regulatory Environment

Market Entry

Mobile licensing between 1989 and 1996 lacked transparency; there was no explicit market entry policy. Even when there were policy statements, they were not adhered to. For instance, the statement of the Secretary of the Ministry of Posts and Telecommunications that only three mobile licenses would be issued, was contradicted by the issuance of the fourth license, in an ad hoc manner like all previous ones, in 1994 [Samarajiva 1997; 49]. The regulatory environment in 1993-96 with regard to market entry is assessed as unsatisfactory.

The 1996 policy stated that entry would be reviewed in 1999. Practice reflected policy, with no additional entry permitted. When Singapore Telecom (parent company of Lanka Cellular) wished to exit the market, the TRCSL allowed the buyer, Hutchison, to bring in second-hand equipment, contradicting previous stated policy prohibiting second-hand equipment. The regulatory environment in 1997-99 with regard to market entry is assessed as satisfactory.

The promised review did not occur and a new policy on market entry was not issued. However, no further market entry was permitted, in effect continuing the 1996 policy. The regulatory environment in 2000-02 with regard to market entry is assessed as neutral.

Scarce Resources

Access to frequencies in 1993-96 was relatively unproblematic, with requested frequencies for TACS, ETACS, AMPS and GSM 900 standards being issued along with the

system licenses. The quantities varied, with MTN as the last operator receiving only 5 MHz, compared to the 10 MHz issued to others. Monitoring and management was rather rudimentary in the absence of an automated frequency monitoring and management system. The regulatory environment in 1993-96 with regard to access to scarce resources is assessed as neutral.

In 1998, MTN was issued additional 2.5 MHz. The AFMM system was procured. The regulatory environment in 1997-99 with regard to access to scarce resources is assessed as satisfactory. This assessment also applies to 2000-02.

Interconnection

The incumbent gave interconnection to the mobile new entrants on extremely unfair terms: the mobile operators had to pay the entire cost of the links as well as inflated costs of the switch interface; fixed termination was set at national retail prices in fixed services (generally double that of local retail); no payments were made for mobile termination of domestic or international calls; no discount was offered for international calls originated on the mobile networks. The regulatory environment in 1993-96 with regard to interconnection is assessed as poor.

Following a participatory process, the TRCSL issued and implemented a fixed-mobile interconnection determination and related tariff decisions in 1999. The onerous fees for interconnection links were removed; fixed termination was set at the considerably lower levels that had been decided on for fixed-fixed interconnection; a 20 per cent discount on outgoing international calls was made available; mobile termination fees, including that for international calls, were left to a public hearing which was to address the larger question of a calling-party-pays scheme. The regulatory environment in 1997-99 with regard to interconnection is assessed as satisfactory.

The second phase of the fixed-mobile interconnection proceeding, including the issuance of the decision of the public hearing committee, was not completed. In addition, the mobile operators were also caught up in the efforts of the incumbent to police international bypass through technical and legal means, though to a lesser extent than the fixed entrants. The regulatory environment in 2000-02 with regard to interconnection is assessed as neutral.

Tariff Regulation

In 1993-96 tariff regulation of mobile operators was sporadic and unsystematic, despite the legal requirement that all tariffs be approved by the TRCSL with the concurrence of the Ministers in charge of telecom and finance. For the most part, the operators were able to implement tariffs without regulatory involvement. The regulatory environment in 1993-96 with regard to tariff regulation is assessed as neutral.

Systematic implementation of tariff regulation provisions (amended in 1996 to require only consultation with the Minister in charge of telecommunications) began in 1998. In light of the sector's requirements for quick approvals and multiple tariff packages, the TRCSL also introduced a fast-track promotional tariffs approval procedure. The regulatory environment in 1997-99 with regard to tariff regulation is assessed as satisfactory.

In 2000-02, many of the mobile tariffs were approved through the promotional window, but considerable delays were experienced with regard to an increase in the basic tariff. The regulatory environment in 2000-02 with regard to tariff regulation is assessed as satisfactory.

Regulation of Anti-competitive Practices

Throughout the period under consideration, there was no activity (or complaints) regarding anti-competitive practices in the mobile sector, except for some concerns about tower and facilities sharing between the incumbent and Mobitel, the operator in which it held a minority share. The fact that the last entrant MTN rose to market leadership during this period is indicative of the low significance of these practices. The regulatory environment in all three periods with regard to anti-competitive practices is assessed as neutral.

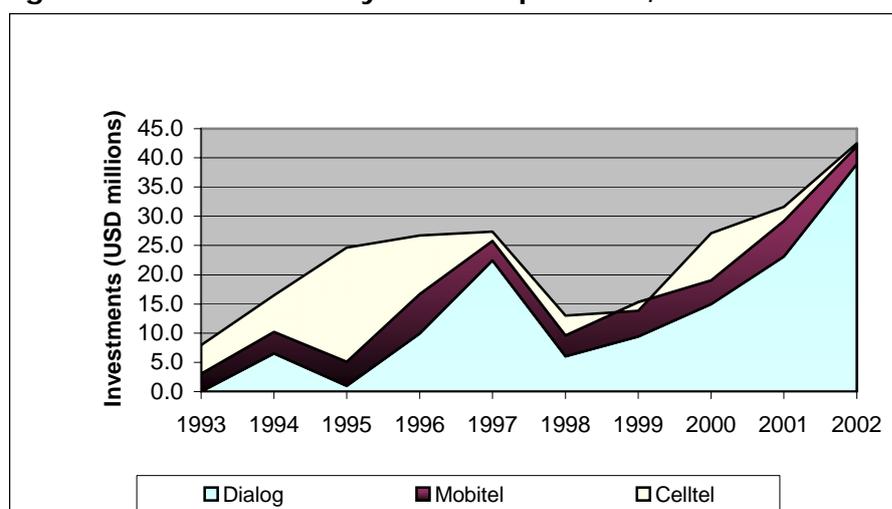
TABLE 3: Telecom Regulatory Environment Assessment: Mobile Sector

	1993-1996	1997-1999	2000-2002
Market entry	Unsatisfactory	Satisfactory	Neutral
Access to scarce resources	Neutral	Satisfactory	Satisfactory
Interconnection	Poor	Satisfactory	Neutral
Tariff regulation	Neutral	Satisfactory	Satisfactory
Regulation of anti-competitive practices	Neutral	Neutral	Neutral

2.2.2 Investment

Overall, mobile investment increased over the period being studied. Its peaks and valleys are explained more in terms of changes in standards, than in terms of TRE. For example Celltel's conversion to GSM in 2000 resulted in increases in their investments in those and subsequent years. Mobitel's introduction of DAMPS in 1999 is also reflected in the investment data. Dialog, which began operations in 1994, is the only operator that stayed with a single standard for the entire period. Celltel's increase in investments in the 1994/1999 period is considered to be an anticipatory response to Dialog's entry into the market. Dialog's investment patterns reflects the massive expansion of its network, from the smallest in 1994 to that carrying the most traffic in 1999, and then to the largest network by all measures by 2001. The perturbations in 1994-95 may be explained in terms of the change in ownership and control wherein Malaysian Telekom gained complete control of the company from its starting position of 80 per cent. The 1997 peak represents the primary network-building phase. The overall improvement in the regulatory environment may have also contributed to the pattern of increasing investment.

Figure 6: Investments by Mobile Operators, 1993-2002

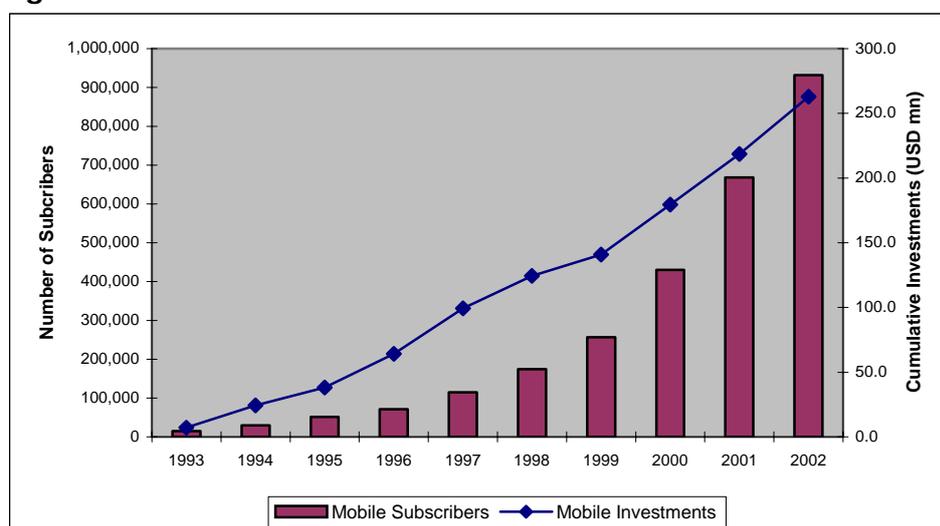


Sources: Company Financial Reports. Does not include data relating to LCSL.

3.0 CONCLUDING COMMENTS

The question of the effect of TRE on investment decisions makes sense only in an environment where market forces dominate. The mobile sector in Sri Lanka in 1993-2002 was dominated by market forces. Even though the incumbent held 40 per cent of the equity of Mobitel for part of the period, the mobile operator was managed by Telstra as an independent entity. The improved regulatory environment, primarily in the form of a substantially better interconnection regime implemented in 1999, may be seen as contributing to the overall increase in investment. The peaks and the valleys are explained primarily in terms of the overall growth of the sector, driven primarily by MTN, with technology changes contributing to the peaks. It may be surmised that the investments (and customer growth) would have been even higher if Calling-Party-Pays scheme was implemented, the remaining elements of the interconnection regime envisaged in the 1999 determination were implemented in 2000-02 and if 1800 MHz frequencies were cleared and assigned before 2002. The multiple announcements of mobile investments in 2003 suggest a degree of pent-up supply, possibly caused by the above factors.

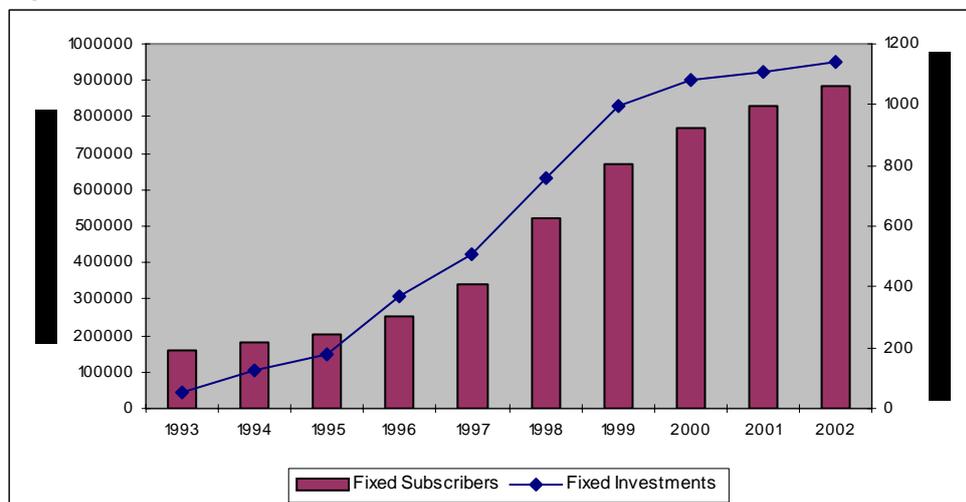
Figure 7: Investments and Subscribers in Mobile Sector



Sources: Company Financial Reports, TRC

The fixed sector in Sri Lanka prior to 1996 was constituted by a single government-owned monopoly corporation. Its investment decisions were not affected by perceptions of regulatory risk; its investments were driven by government decisions to allow reinvestment (and not take the net revenues to balance the budget) and negotiate multilateral, bilateral and suppliers' credits for the incumbent. Remnants of this practice remained in the post-privatization and liberalization phase in the form of government on-lending to the incumbent. Given the insulation of government disbursements from normal investment determinants, Figure 8 below excludes the government on-lending component.

Figure 8: Investment and Subscribers in Fixed Sector



Sources: Company Financial Reports, TRC, Milne et al (1998)

Incremental investments in the fixed sector were highest around the time of the entry of the two competitors. They invested in order to establish their networks and the incumbent mobilized internal funds to meet the competition and also to earn the incentives set out in the management contract. While the regulatory environment was not perfect, the hope of good regulation created by the legislative amendment and the early actions of the TRCSL could be seen as justifying investments by the new entrants. The natural hostility of incumbents to regulation that allows for competition could be seen as being balanced by the TRCSL's success in delivering substantial tariff increases amounting to an increase of more than 50 percent of domestic revenues over the 1998-99 period.

By 2000, the incumbent's attempt to frustrate the will of the TRCSL by appealing the interconnection determination had backfired, with the new entrants making massive bypass of international traffic by other operators possible. The proliferation of lawsuits, the marginalization of the TRCSL, and the perception of problems caused by the appointment of the former Managing Director of the incumbent to head the TRCSL resulted in a serious deterioration of the regulatory environment. In actual fact, by 2000, SLTL did not have internal funds to reinvest because of the enormity of bypass. The entrants had no reason to invest, shut out from international revenues for the most part (except for revenues derived from bypass and the minimal revenues from legal terminations) and besieged by the technical and legal offensives of the incumbent. The decline of investment in the fixed sector in Sri Lanka from 2000 is a stark illustration of the ill effects of poor regulation. By 2002, the extraordinary growth of the fixed network began to slow, and the fixed sector was overtaken by the mobile sector, despite the existence of massive unmet demand. There were 270,000 registered waiters for SLTL service in 2002. Other operators do not maintain waiting lists but have been able to gain new customers whenever they did extend their networks in rural areas.

SLTL turned the tide in 2001, with a collusive memorandum of understanding with the new entrants, which provided financial incentives for shutting out incoming traffic volumes brought in by the by passers. In contrast to the LKR 9.50 a minute that SLTL

opposed in 1998, it was paying in excess of LKR 17.00 per minute in exclusion payments to the new entrants by 2001. One could therefore expect that with large revenues being generated from international termination by all three fixed operators, investment should have picked up again. But this did not occur.

On the part of the new entrants, the increased revenues did not by themselves create a better regulatory environment conducive to a program of systematic investment. The MOU was a document of questionable legality that could have been annulled at any point by the government, the TRCSL or by SLTL itself. In addition, the new entrants were caught in a technology trap. Having invested in fixed wireless technology at a time of great hope and hype, they did not see the expected declines in unit prices as a result of the standards failing to gain broad acceptance. In fact, Suntel was driven to build an overlay data network in order to serve the data requirements of its corporate clients in 2000. The two firms had by this time given up their national ambitions and were settling into niche markets, focusing on survival rather than growth. All this contributed to the continuing malaise in the fixed sector.

The deterioration of the investment climate in the fixed sector could be attributed to the inability to improve the TRE, if not on all fronts, at least to create hope of progress. The primary causes may be identified as the ambiguities introduced by the "exclusivity" language in the privatization agreements and the failure of the TRCSL. If the basic policy objective is enhanced performance of the sector, priority must be given to increased investment rather than privatization yield. The USD 225 million realized by the 1997 privatization of the incumbent, which went to retiring government debt, must be seen in relation to the cumulative investments in the sector, amounting to more than USD 1000 million. Had the TRE been better, it is likely that even more would have been invested; the approximately 20 per cent tax levied on all telecommunications bills, which even now constitutes a major proportion of the government's sales-related taxation revenues, would have been even higher. Yet the tight integration of the Finance Ministry and the privatization agency resulted in privatization yield being given undue prominence, with deleterious effects on the telecom regulatory environment.

REFERENCES

Milne, Claire, Wirzenius, Arno, Young, Stephen and Jokinen, Jouku (1998) *Case Study of the Impact of the Changing International Telecommunications Environment on Sri Lanka*. International Telecommunications Union, Geneva, Switzerland.

<http://www.infodev.org/projects/telecommunications/243CTO/243a.pdf>

Melody, Bill (2003) *Stimulating Investment in Network Development: Roles for Telecom Regulation*, World Dialogue on Regulation. Discussion Paper

<http://www.regulateonline.org/pdf/wdr0301.pdf>

Samarajiva, Rohan (2000) The Role of Competition in Institutional Reform of Telecommunications: Lessons from Sri Lanka, *Telecommunications Policy*, 24(8/9): 699-717.

<http://www.tpeditor.com/contents/2000/24-8+9.htm>

Samarajiva, Rohan (1997) Institutional reform of Sri Lankan telecommunications: The introduction of competition and regulation, in *Telecommunication systems in Western Asia and the Middle East*, ed. E. Noam, pp. 38-61 (New York: Oxford University Press).

Levy, B., & Spiller, P. (1994). The institutional foundations of regulatory commitment: A comparative analysis of telecommunications regulation. *Journal of Law, Economics and Organization*, 10 (2), 201-246.

Sri Lanka Telecom Limited. Annual Reports

http://directory.slt.lk/slt_ir/investor/annual_report.htm

Lanka Business Online Reports

<http://www.lankabusinessonline.com/>

Ceylon Daily News (2003, October 8). \$ 4 million investment to widen Celltel's coverage

<http://www.dailynews.lk/2003/10/08/bus04.html>

Daily Mirror (2003, October 2). Mobitel dials a fresh change in Sri Lanka

<http://www.dailymirror.lk/2003/10/02/ft/2.html>

Daily Mirror (2003, July 22). Tata now ventures into Lankan telecom sector

<http://www.dailymirror.lk/2003/07/22/ft/2.html>

Sunday Times (2003, April 20). \$ 90 million boost to telecom industry

<http://www.sundaytimes.lk/030420/ft/3.html#1>

ANNEX 1: TELECOM INVESTMENTS IN SRI LANKA, 1993-2002

Telecom Investments in Sri Lanka, 1993-2002 (USD million)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Gov onlending	11.81	59.39	44.31	43	21.87	39.57	52.91	57.81	38.06	11.21
SLTL reinvestment	50.4	76.9	47.7	178.9	118.6	178.2	175	64.3	11.8	24.9
SLTL total	62.21	136.29	92.01	221.9	140.47	217.77	227.91	122.11	49.86	36.11
Suntel				17.8	15	30.2	23.6	17.2	13.6	4
Lanka Bell					0.83	45.96	35.68	4.74	1.71	2.9
Celltel	4.89	6.26	19.53	10.06	1.59	3.41	-1.5	8.06	2.46	0.49
Mobitel	3.05	3.68	4.09	6.77	3.34	3.61	5.89	4.03	6.09	3.02
Dialog		6.53	1.01	9.91	22.47	6.01	9.45	15	23.08	38.95
Total investment	70.15	152.76	116.64	266.44	183.7	306.96	301.03	171.14	96.8	85.47
T mobile invest	7.94	16.47	24.63	26.74	27.4	13.03	13.84	27.09	31.63	42.46
T non-SLTL inv.	7.94	16.47	24.63	44.54	43.23	89.19	73.12	49.03	46.94	49.36

Notes:

- 1) The data for the incumbent from 1996 to 2002 are from SLTL's annual reports. The data for the incumbent for the period 1993-1995 are from Milne et al (1998).
- 2) The incumbent's investments are broken down into investments from internal sources, and investments from on-lending by government. On-lending funds come from multilateral and bilateral agencies, and export credits. Most of these funds are earmarked for investment in network infrastructure by the incumbent. A small proportion has been directed towards reform measure and investment in spectrum management equipment in the late 1990s. The amount shown above reflects total funding from multilateral and bilateral agencies and export credit.
- 3) Investment data for new fixed and mobile entrants was procured directly from the companies. For Mobitel data for the period 2000-2002 is from financial reports. Data prior to 2000 is from investment figures reported to the TRCSL by the companies. For Lanka Bell, the entire dataset is from the figures reported to TRCSL. LCSL data is not included.

ANNEX 2: WORLD BANK: PRIVATE INVESTMENT DATA FOR TELECOMMUNICATIONS

Year	Bangladesh	India	Sri Lanka
1990	110	0	0
1991	6	0	0
1992	0	0	0
1993	0	0	41.6
1994	0	96.7	2
1995	30	309.2	18
1996	165.4	306.6	164
1997	74	1806	43
1998	26	503.9	38.3
1999	142.7	682	113.3
2000	74.1	452.7	160.4
2001	51.3	2720.3	10.8
2002	60.9	3811.5	65.5
2003	740.4	10688.9	656.9

All data in USD millions

ANNEX 3: SUGGESTED METHODOLOGY ON TELECOM REGULATORY ENVIRONMENT

As stated in the main text, the ideal method for collecting data on TRE would be by collecting data on perception of the TRE from a *representative* and *informed* group of respondents. This has not been done in the case study. The summary assessments of the TRE in the case study are those of the senior author who has attempted to provide the reasoning behind the assessments in the text.

TRE assessment would have to be conducted in a manner that captures perception of efficacy relatively accurately. It is a measure of opinion. The objective should be to capture the relevant representative opinions. TRE assessment for individual countries would be useful; assessments conducted using uniform methods for several countries would be even more useful. The recommended steps for the conduct of comparative TRE assessments are:

- 1.0 Assemble group of experts to agree on the overall method, including dimensions of TRE, the assessment scale, weights, and assessment periods.
 - 1.1 The dimensions used in this study are based on the Reference Paper of the GATS Protocol 4. The elements of regulation identified in the Reference Paper are: competitive safeguards; interconnection; universal service; licensing; independent regulator; and allocation of scarce resources. Because tariff regulation was mentioned by many operators as an important regulatory function and because universal service is not necessarily a core function, the former was substituted for the latter. Independent regulator was deleted because it is an overall measure, not a dimension. Licensing was renamed as market entry, as were several other dimensions.
 - 1.2 If it is possible, agree also on percentage weights for each of the dimensions so that an overall assessment can be derived.
 - 1.3 The group may wish to consider the appropriate units of assessment: one possibility is to use 3-4 year periods as in the present study, where the assessment is based on the entire period; the other is to score by year and add up the scores for the period.
 - 1.4 While TRE studies have value independently of investment studies, it may also be useful to define standards for collecting and reporting investment data.
 - 1.5 Ideally, this would be the result of a one-day face-to-face meeting. The conclusions of this group should be applicable to all TRE studies.
- 2.0 Perhaps with the same group as in 1.0, or with a regional group of experts, define the relevant time periods for a specific TRE study as well as the sectors for assessment. For example, the present study found different results for the TRE in the fixed and mobile sectors. A study the Internet Service Provider sector in Sri Lanka is likely to yield different results. This deliberation may occur via the Internet.
- 3.0 A national group of experts should be consulted to identify a representative group of respondents. This would include senior management from the operators (ensuring that they have direct or indirect knowledge of the sector for the entire period of study); key individuals from civil society or educational/research organizations with knowledge of the sector; representative persons from government entities connected to investment/privatization; knowledgeable persons from international financial institutions and private investment houses/banks; key journalists; credit-rating agency personnel with knowledge of the sector; selected knowledgeable consultants; and current or former members/senior staff of the regulatory agency. This deliberation may occur via the Internet.

Annex 4

PILOT ASSESSMENT STUDY ON TELECOM REGULATORY ENVIRONMENT

This study was undertaken as a test of the methodology suggested in Annex 3. The objective of this exercise was to assess the practical implications of carrying out such a study and also to enable a broad based evaluation of the telecom regulatory environment (TRE).

An assessment of the TRE is essentially a measure of opinion or perception and requires the collection of data from a representative and informed group of respondents. Whilst the original study incorporates the senior author's assessment of the TRE for specified dimensions across three time periods, the subsequent study and its conclusions provide an alternative broad-based measure of the TRE by enabling the participation of a representative and informed panel of respondents. In order to provide a case for a comparative assessment the study adopted a structure similar to the case study. The questionnaire which was sent out to participants is in Annex 5.

Design and structure of the study

Definitions

The Sri Lanka case study examines the telecom regulatory environment within which telecom operators and potential new entrants function. Thus the study focuses on a subset of the overall regulatory risk environment which would have otherwise included a consideration of the macro-level or country risks and commercial risk in addition to regulatory risk.

The case study evaluates the regulatory environment on the basis of five major dimensions across three time periods for both the fixed and mobile telecommunication sectors. The dimensions of the definition are based on the Reference Paper of GATS Protocol 4, which identifies the elements of regulation in terms of competitive safeguards, interconnection, universal service, licensing, independent regulator, and allocation of scarce resource. However the case study substituted tariff regulation for universal service since the former was considered by many operators as an important regulatory function and the latter was not necessarily a core function. Independent regulator was also not considered because it is an overall measure and not a dimension. Licensing was renamed as market entry. Several other dimensions were renamed too. Thus the dimensions under consideration were classified as market entry, access to scarce resources, interconnection, tariff regulation, and the regulation of competitive practices.

We considered asking only one question in the questionnaire that encompasses all five dimensions to get the overall assessment of the regulatory environment for each time period. But we decided that while this maybe a good way to elicit a summary response from the respondents we would not be able to capture the more nuanced aspects that are encapsulated by analyzing the respondents' opinion viz. a viz. each of the five dimensions for each time period of the regulatory environment. We also considered obtaining the respondents' views regarding the prioritization of the five dimensions but decided that we would give equal weight to all five dimensions since they capture different but important aspects of the overall telecom regulatory environment.

The three time periods 1993-1996, 1997-1999, 2000-2002 have been selected as the basis for assessment in order to keep the Panel study consistent with the framework of the case study. It is expected that in future, yearly panel studies will be undertaken and the period 2003-04 could possibly be the first such exercise. The TRE for the period

1993-96 for the fixed sector is also not discussed. This is because there was no competition in the fixed sector until 1996, and investment decisions by the fully government-owned incumbent prior to 1997 were driven by a logic different to that relevant to the present discussion.

Panel

Since the ideal format as suggested in the proposed methodology requires the collation of data from a representative and informed group of respondents, the process of identifying the members of the panel required serious consideration. Because the study was primarily intended as a demonstration of the methodology, it was decided to conduct proceedings on the basis of a small select group of informed individuals. However in order to ensure that this group, though small, would encompass all if not most of the related interests within the telecom sector, key stakeholders having both a direct and indirect interests were identified. This included banks, credit rating agencies, journalists, civil society representatives, academics, telecom operators and equipment manufacturers. Next, potential individuals were identified as representatives of these stakeholder groups. In targeting specific individuals, wherever there was a choice of selection from a group of two or three potential individuals, we opted to approach them on the basis of personal contacts within these groups. This approach facilitated access to these stakeholders and helped to obtain responses within specified deadlines. This was particularly important as LIRNEasia is a new entity and consequently was little known by stakeholders whose apprehensions could have undermined the panel study. This experience highlights the need to build a network of personal contacts in order to obtain best results in projects of this nature. Thus in the future if similar activity is engaged in on a large scale, it is imperative that effort be made to draw together a regional network of contacts who are able in turn to identify and facilitate the process of obtaining data. This would include the capacity to identify key interest groups (which may vary within regions), potential respondents operating within those groups and also to provide means to facilitate access.

Method of communicating with respondents

Determining the method or means of communicating with the respondents was a crucial step, particularly as the proposed participants represented a varied group, (e.g.: CEOs of companies, financial analysts, journalists, equipment suppliers, academics, civil society representatives) and therefore subject to varied time constraints, levels of experience and familiarity with the subject. The same considerations were also important in designing the questionnaire.

The means of communication used for the study were e-mail and fax followed by a telephone call. In some cases repeated telephone calls to the respondent were the only means to secure a completed response. The breakdown of many internet services in Sri Lanka due to the damage of the undersea cable, contributed both positive and negative elements to the conduct of the panel study. It was advantageous in that some of the more busy respondents were more amenable to respond to the questionnaire since they now had unanticipated free-time. The disadvantage was that e-mails, which was to be the primary mode of communicating the questionnaire to the respondents was now no longer possible and consequently, the second option of faxing the questionnaire to the respondents had to be utilized. This resulted in some added practical problems as the structure of the questionnaire had been designed for the convenience and easy use of email communication and not for fax. Matters relating to the design of the questionnaire are explored below.

There was some delay in obtaining responses which often required repeated telephone

calls to the respondents to ensure that responses were received within a reasonable time. Again, in obtaining responses in a timely fashion, personal contacts with the respondent made an important difference, both in terms of access to the respondent and the ease by which the importance of the panel study were underscored. The primary lesson learnt in this process was the importance of building networks of personal contacts in order to facilitate the process of obtaining responses in a timely manner. Subsequent communications with the respondents also made it possible to infer that the time required to answer the questionnaire varied. This was largely attributed to the differences in the levels of experience and familiarity with the subject matter in addition to varied levels of time constraints.

Design of the questionnaire

The design of the questionnaire was complicated by the problem of incorporating a ten year time period for assessment. An assessment of a ten year period invariably limited the consideration of the current actors operating in the industry given that many of them may or may not have participated in the industry during this period. Furthermore, it was a very long period for respondents to evaluate. However, utilizing a ten year period for assessment was justified by Sri Lanka's relatively long experience in telecom reforms, compared to most developing countries. Thus the consequent analysis of the TRE and the pattern of investment during this period is likely to yield useful insights for the 2003-04 World Dialogue on Regulation theme. Furthermore 2003 was also considered a significant year for telecom policy and regulation in Sri Lanka, with the opening of the international market, the promulgation of Interconnection Rules, the first assignment by auction of 1800 GSM frequencies etc. which warranted a more focused yearly assessment and therefore provided an appropriate cut off point. It is expected however, that future studies conducted in this context would not have to face this unique problem of involving a lengthy time period for assessment and would be based on a one or two year period.

In order to counter the difficulties of incorporating a long period of assessment, the questionnaire included a brief objective history of the key events in the telecom regulatory environments under assessment in order to refresh the minds of the respondents. This was because it was necessary to focus or 'capture' the respondents' minds and transport them to the period under assessment, in order to obtain a response. Thus the design of the forms included a brief history of each of the three periods under scrutiny. The questionnaire is presented in Annex 5.

An important consideration in designing the questionnaire was the need to reduce the number of questions/pages and ensure that the act of responding would take as little time as possible. Consequently, there was a need to make sure that the structure of the form was easy to understand and that it facilitated a quick grasp of its contents with minimal effort and time being utilized by the participating respondent. Thus the form not only included a brief history of the period under assessment, it also included an explanatory note, addressing the key issues pertaining to each of the five dimensions covered by the study. It is expected that future studies conducted in this context, would be likely to address shorter time periods, and therefore able to elicit better results, given the advantages of a much shorter time lapse from the period covered by the questionnaire and the consideration of a shorter time horizon.

Panel Study Process

Initially, it was proposed to conduct the study by inviting all the respondents to meet together on a particular day at a particular time and then once they were all in the room together, to conduct proceedings based on a structured interview framework similar to focus groups. However on further deliberation this approach was rejected, on the basis of its potential for respondents to be influenced by the interviewers or each other (given peer-group dynamics). Furthermore, considerations relating to the lengthy period of assessment, the need to refresh and in some cases educate about industry activities during this time, particularly since some of the respondents may not have a corporate memory of issues during this time, undermined the feasibility of conducting a focus group. It was therefore decided that there was more value in approaching the respondents individually, in this particular instance, so as to obtain an independent view from each of them. However, when conducting studies in the future in this context, it is expected that various other means adopting structured frameworks, including focus groups may be utilized for eliciting responses.

Study results

The results of the pilot assessment are presented below. Since this was a pilot study, the number of respondents was small, 16 (but had over 50% response rate). However, its significance lies in the fact that it tests the methodology as suggested by the authors of the Sri Lanka case study and presents in some cases alternative conclusions to those of the expert opinion of the authors. The summary of the results are presented below with the appropriate caveats.

The results of the pilot study assessment are presented below for both the fixed sector and the mobile sector. We have used a five point Lickert scale based on poor (equals 1), unsatisfactory (equals 2), neutral (equals 3), satisfactory (equals 4) and excellent (equals 5). The respondent's scores were aggregated and the results were averaged and rounded to arrive at the Lickert score for the assessment. The tables below compare the summary assessment with the expert opinion for both fixed and mobile sector.

Table 5.1 Fixed Sector Assessment Results

Dimension	Period	Lickert Score	Assessment	Expert Opinion
Market Entry	1997-1999	2.8	Neutral	Unsatisfactory
	2000-2002	2.4	Unsatisfactory	Unsatisfactory
Access to Scarce Resources	1997-1999	2.7	Neutral	satisfactory
	2000-2002	2.1	Unsatisfactory	Unsatisfactory
Interconnection	1997-1999	2.1	Unsatisfactory	Unsatisfactory
	2000-2002	2.1	Unsatisfactory	poor
Tariff Regulation	1997-1999	3.0	Neutral	excellent
	2000-2002	2.8	Neutral	poor
Regulation of Anti-competitive practices	1997-1999	2.8	Neutral	neutral
	2000-2002	1.6	Unsatisfactory	Unsatisfactory

Table 5.2 Mobile Sector Assessment Results

Dimension	Period	Lickert Score	Assessment	Expert Opinion
Market Entry	1993-1996	2.3	Unsatisfactory	Unsatisfactory
	1997-1999	3.0	Neutral	Satisfactory
	2000-2002	3.1	Neutral	Neutral
Access to Scarce Resources	1993-1996	2.1	Unsatisfactory	Neutral
	1997-1999	2.9	Neutral	Satisfactory
	2000-2002	2.2	Unsatisfactory	Satisfactory
Interconnection	1993-1996	1.9	Unsatisfactory	Poor
	1997-1999	2.4	Unsatisfactory	Satisfactory
	2000-2002	2.2	Unsatisfactory	Neutral
Tariff Regulation	1993-1996	2.4	Unsatisfactory	Neutral
	1997-1999	3.0	Neutral	Satisfactory
	2000-2002	2.8	Neutral	Satisfactory
Regulation of Anti-competitive practices	1993-1996	2.1	Unsatisfactory	Neutral
	1997-1999	3.0	Neutral	Neutral
	2000-2002	2.0	Unsatisfactory	Neutral

Overall, the collective assessment of the panel indicated in most cases a broad compatibility with that of the expert opinion with the expert opinion. However the expert opinion was more generous than the panel in the overall assessment of the TRE for both the fixed and mobile sectors. The expert opinion also indicated more variation in his evaluation of the TRE as indicated by his use of the range of available ratings. This included an excellent rating for tariff regulation in the 1997- 1999 fixed sector TRE and several satisfactory, poor and unsatisfactory assessments. The panel ratings however tended to be more conservative, and alternated between unsatisfactory and neutral ratings for all the dimensions being assessed for both the mobile and fixed sectors. Overall the panel assessment did not venture over the neutral assessment for any aspect of the TRE.

In assessing the fixed sector TRE during the 1997-1999 period, the expert opinion was more generous than the panel with the exception of the market entry dimension which was rated as neutral by the panel and obtained an unsatisfactory score from the expert.

The 2000-2002 period assessment for the fixed sector TRE, the expert opinion gave a more varied assessment, and rated the dimensions of interconnection and tariff regulation as poor, whilst the panel rated it as unsatisfactory and neutral respectively.

In conclusion, comparing assessments for the fixed sector TRE for the 1997-1999 period with the 2000-2002 period, both the panel and the expert gave the former period(1997-1999) a more favorable rating. However, the panel rated the interconnection and tariff dimensions for both periods equally (i.e. as unsatisfactory and neutral, respectively), whilst the expert opinion's assessment was more varied. Thus the expert opinion whilst assessing the market entry dimension equally for both time periods (ie as unsatisfactory), did not assess the interconnection and tariff regulation dimensions equally. Thus, interconnection was rated as unsatisfactory for the 1997-99 period and poor for the 2000-2002 period. Tariff regulation was given an excellent rating for the

1997-99 period whilst the 2000-02 period was rated as poor.

The mobile sector TRE is assessed over three time periods, and overall, the panel's assessment rated the 1997-1999 period better than the other periods. However the TRE for the interconnection dimension for all three periods obtained the same rating (i.e. unsatisfactory) whilst the expert opinion's assessment was more varied for the three time periods having rated the 1993-1996 period in relation to interconnection as poor, the 1997-1999 period as satisfactory and the 2000-2002 period as neutral.

Overall, the expert opinion of the mobile sector TRE during the 1993-1996 period was more favorable than the panel who gave an unsatisfactory rating to all the dimensions. The exception was the interconnection dimension which the expert opinion rated as poor for this period.

The TRE for the mobile sector during the 1997-1999 period was again assessed more favorably by the expert opinion which gave a satisfactory rating to four of the dimensions. The fifth dimension relating to the regulation of anti-competitive practices was rated as neutral. The panel assessed four of the dimensions as neutral and rated the dimension on interconnection as unsatisfactory.

Expert opinion of the TRE during the 2000-2002 period indicated a more favorable rating than the panel who alternated between neutral and unsatisfactory ratings for all the dimensions. Expert opinion however indicated a neutral rating for the dimensions relating to market entry, interconnection and the regulation of anti-competitive practices, whilst access to scarce resources and tariff regulation was rated as satisfactory.

Conclusion: Lessons Learned

The finding of this study indicates a multiplicity of views and diverse opinions which clearly could not have been fully captured by a single expert opinion. This demonstrates the value of panel study assessments and the need to regularly conduct such assessments in order to capture a broad based perception of the TRE from interested stakeholders. This will also complement an expert assessment of the TRE which cannot be considered a substitute but is in fact a key element to the overall assessment of the telecom regulatory environment.

Overall the pilot panel study was successful in that a reasonably high response rate (over 50% of the respondents completed the assessment) was obtained. In addition several lessons were learned that would be useful for conducting future panels. One important finding which confirms prior assumptions is that the assessment response rate dramatically improves with a known network of contacts. Respondents with whom there was a prior established relationship and contact base was much more likely to complete the questionnaire which underscores the need to build and maintain networks within the broader telecom regulatory community. It follows that it is much more difficult to elicit a response from those with whom there was no prior relationship therefore outside the network of contacts. In addition, the success rate of obtaining responses increased with follow up calls and reminders which again emphasized the importance of building a network of contacts.

Design of the questionnaire is crucial and needs to be as short as possible and easy to fill out. In this regard a modular design that requires quantitative scoring dramatically reduces the time taken to complete a questionnaire and is more likely to be completed by the respondents. Questions that require qualitative answers such as comments are much less likely to be completed by the respondents. In addition, qualitative responses

are difficult to aggregate and summarize and therefore lead to inconclusive results.

ANNEX 5: EXAMPLE FORM

Telecom Regulatory Environment Assessment

- The respondents are kindly requested to make their assessments of the telecom regulatory environment (TRE) for each of the specified dimensions within each period for the fixed and mobile telecommunications sector on the scale provided. This should take less than 10 minutes of your time.
- The TRE assessment of the fixed sector is for two time periods (1997-99; 2000-02) only. The period 1993-96 is not included as there was no competition in the fixed sector during this time
- The TRE for the mobile sector is for three time periods; 1993-96; 1997-99; 2000-02. The dimensions used in this questionnaire are broadly based on the WTO Regulatory Reference Paper and are briefly described below.

Dimension	Aspects Covered
Market Entry	Transparency of licensing, Applicants should know the terms, conditions, criteria and length of time needed to reach a decision on their application, License conditions, exclusivity issues
Scarce Resources	Timely, transparent and non-discriminatory access to spectrum allocation, numbering and rights of way; Frequency allocation, Telephone no allocation, Site rights
Interconnection	Interconnection with a major operator should be ensured at any technically feasible point in the network, quality of interconnection comparable to own like services offered, reasonable charges for interconnection rates, interconnection be unbundled, interconnection offered without delay, Sharing of incoming and outgoing IDD revenue, Payment for cost of interconnection links and switch interface, Payment for cost of technical disruption of interconnection
Tariff Regulation	Regulation of tariffs charged from consumers
Regulation of Anti Competitive Practices-	Anti-competitive cross subsidization, using information obtained from competitors with anti-competitive results, not making available to competitors on a timely basis technical information about essential facilities and commercially relevant information, excessive prices, price discrimination and predatory low pricing, refusal to deal, vertical restraints, cross subsidies, technical disruption of interconnection , sharing of towers and facilities by parent company and subsidiaries in different segments of the market

Please tick the appropriate box or write the number for each dimension and each period.

Fixed Sector						
Dimension	Period	Poor 1	Un- satisfactory 2	Neutral 3	Satisfactory 4	Excellent 5
Market Entry	1997-1999					
	2000-2002					
Access to Scarce Resources	1997-1999					
	2000-2002					
Interconnection	1997-1999					
	2000-2002					
Tariff Regulation	1997-1999					
	2000-2002					
Regulation of Anti-competitive practices	1997-1999					
	2000-2002					
Comments						

Please tick the appropriate box or write the number for each dimension and each period.

Mobile Sector						
Dimension	Period	Poor 1	Un- satisfactory 2	Neutral 3	Satisfactory 4	Excellent 5
Market Entry	1993-1996					
	1997-1999					
	2000-2002					
Access to Scarce Resources	1993-1996					
	1997-1999					
	2000-2002					
Interconnection	1993-1996					
	1997-1999					
	2000-2002					
Tariff Regulation	1993-1996					
	1997-1999					
	2000-2002					
Regulation of Anti-competitive practices	1993-1996					
	1997-1999					
	2000-2002					
Comments						

Key Events in the Telecom Regulatory Environment during periods covered.



Period 1993-1996

1994	<i>The Government issued National Telecommunications Policy. Objectives included provision of telecommunication facilities to all at cost-based tariffs, achievement of universal service provision of an acceptable quality of service, elimination of waiting lists, protection of defence, security and environmental interests of the country.</i>
1989-96	<i>Licensing of mobile operators and two WLL fixed operators</i>
1993-96	<i>Other than for statement by the Secretary, Posts and Telecommunications that only 3 licenses would be issued in the mobile sector, there was no explicit policy on market entry for Mobile Sector (prior to 1996).</i>
1994	<i>Dialog began operation as the fourth mobile license.</i>
1996	<i>Licensing of two WLL Operators (Suntel and Lanka Bell). Given duopoly status on WLL for five years (until 2000), subject to further extension on good performance.</i>
1996	<i>New entrants commenced operations on an interim 2 year interconnection determination by the TRC based on: sender-keeps-all arrangement for domestic calls; a 35% rebate on the collection rate for outgoing international traffic from the WLL networks; no payment for incoming international traffic to the WLL network and all costs of physical links being fully borne by the WLLs.. Interconnection charges between the WLL's were on a sender-keeps-all basis with the two operators splitting interconnection costs on a 50:50 basis.</i>
1993-1996	<i>Incumbent(SLT)/ mobile operators interconnection arrangements required mobile operators to pay the higher national rate calling charges for calls terminating on SLT's network (double that of local retail), required to interconnect at only one point, bear the full cost of physical interconnection, i.e. cost of the links and switch interface, and no payments to be made for mobile termination of domestic or international calls and, no discounts were offered for international calls originated on the mobile networks.</i>
1993-96	<i>WLL/mobile interconnection and mobile/mobile interconnection followed a sender- keeps- all arrangement, with these operators sharing physical interconnection costs on a 50:50 basis</i>
1993-96	<i>Despite legal requirements that all tariffs were to be approved by the TRC with Minister's concurrence, mobile operators able to implement tariffs without regulatory involvement.</i>
1996	<i>Regulation changed so only consultations with Minister in charge of telecommunications required to change mobile tariffs.</i>
1996-99	<i>Fixed new entrants exempt from tariff regulation</i>
1993-96	<i>Requested frequencies were issued with licenses, subject to variations in quantity e.g.: Dialog initially received 5 MHz compared to 10 MHz given to others</i>
1993-96	<i>SLT refused frequencies outside the band specified in its license. However SLTL was not displaced from frequencies it already occupied and allowed to use the permitted 800 MHz band</i>
1996	<i>Amendment to the 1991 Telecom Act – creation of Telecommunications Regulatory Commission</i>
1996	<i>40% stake in Mobitel taken by SLT on termination of the Build Operate Transfer (BOT) agreement in 1996</i>
1996	<i>National Telecom Policy issued</i>

Period 1997-1999

1997	<i>Partial privatization of Sri Lanka Telecom (SLT); 35% of SLT sold to NTT with 5 year management contract. Consequences included changes to incumbents license, Government committed to not issuing further licenses for wireline and international telephonic services till August 2002; tariff rebalancing program that would yield a minimum 148% increase in domestic revenue, not adjusted for inflation over five years.</i>
1997	<i>Regularization of the issuances of frequencies to SLT for fixed wireless access in the 1997</i>

	<i>modification of its license – SLTL permitted to operate WLL services within a specified range of frequencies.</i>
1997	<i>Hutchison allowed bringing second hand equipment into the country when buying over Singapore Telecom’s stake in Lanka Cellular contradicting previous stated policy prohibiting second hand equipment.</i>
1998	<i>Fast track promotional tariff approval procedure for mobile operators introduced.</i>
1998	<i>First stage of SLTL Tariff Rebalancing increases domestic revenue by 25%.</i>
1998	<i>Determination issued by TRC for WLL operators and SLT (fixed to fixed). Provided for: measured compensation to replace the sender-keeps- all arrangement for local call termination, a 20% discount for all international calls originated from WLL networks, SLTL to pay Rs 9.50 termination changes to WLL operators for international calls terminating in the WLL networks, WLLs to bear full cost of physical interconnection links up to the interface connection unit, and SLTL to be responsible for providing the interface unit.</i>
1998	<i>SLTL appeals determination in Court. Stay order not issued.</i>
1998	<i>MTN (Dialog) issued additional 2.5MHz frequencies</i>
1998	<i>Completion by TRC of the AFMM (Automated Frequency monitoring and Management System) with World Bank assistance.</i>
1999-2000	<i>Whilst 1996 Telecom Policy stated that entry into mobile sector would be reviewed in 1999-expected review did not take place and no new policy announced. No further entry was permitted into mobile sector.</i>
1999	<i>Second stage of tariff rebalancing to increase SLTL domestic revenue by 25% per year implemented in April 1999.</i>
1999	<i>TRCSL issued and implemented a fixed-mobile and mobile-mobile interconnection determination and related tariff decisions. The onerous fees for interconnection links were removed; fixed termination were set at considerably lower levels than fixed-fixed interconnection; a 20% discount on outgoing international calls was made available .Mobile termination fees including that for international calls was left to a public hearing which was to address the larger question of a Calling Party Pays scheme. At this time, the Mobile Party Pays (MPP) system was in effect. This required mobile operators to pay fixed networks for calls terminated on its network and were not compensated for calls terminated by fixed networks on their networks.</i>
1999	<i>SLTL found to have violated license condition with anti competitive implications and paid out approximately USD 1m to subscribers.</i>
1999	<i>Commencement of consultations for new telecom policy but no significant policy decisions were made until 2002</i>
1999	<i>Appointment of former Managing Director of SLTL as Director General of Telecommunications</i>
1999	<i>Completion by TRCSL of the Automated Frequency monitoring and Management System with World Bank Assistance</i>
1999	<i>Mobitel introduction of DAMPS</i>

Period 2000-2002

2000	<i>Celltel conversion to GSM</i>
2000-2002	<i>Lanka Bell issued frequencies in the 1900 CDMA band.</i>
2000-2002	<i>Suntel denied request for frequencies</i>
2000-02	<i>Bypass activities of SLT’s international gateway by other operators commence.</i>

Interconnection regime subject to law suits. Accusations levelled at SLTL of blocking calls originating on the WLL networks

- 2001 MOU signed between the three fixed line operators to provide financial incentive for shutting out incoming international calls from by-passers*
- 2001 Fourth stage of SLTL tariff rebalancing not implemented in 2001, but only in 2002.*
- 2001 Investments by other telecom operators in 2002 exceeded SLTL for the first time.*
- 2000-02 Most mobile tariff changes approved through promotional window but considerable delay in approval of basic tariff.*
- 2002 Former Minister of Commerce and Consumer Affairs rolls back tariff increase of fixed entrants - accepted by Lanka Bell but not SunTel*
- 2002 Final SLTL Tariff Rebalancing approval did not go through till 2003*
- 2002 SLTL acquires remaining 60% of Mobitel from Telstra prior to IPO.*
- 2002 SLT IPO in December; two previous attempts in 2000 and 2001 failed.*