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Working Paper

Beyond 2000: An Assessment of Infrastructure Policies

PIDS Discussion Paper Series, No. 1998-07

Provided in Cooperation with:

Philippine Institute for Development Studies (PIDS), Philippines

Suggested Citation: Serafica, Ramonette B. (1998) : Beyond 2000: An Assessment of Infrastructure Policies, PIDS Discussion Paper Series, No. 1998-07, Philippine Institute for Development Studies (PIDS), Makati City

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Beyond 2000: An Assessment of Infrastructure Policies

Ramonette B. Serafica

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May 1998

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**BEYOND 2000:
AN ASSESSMENT OF INFRASTRUCTURE POLICIES**

by

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This paper has benefited a lot from the comments and suggestions made by Geoffrey Key and Nicola Shaw of Halcrow Fox, the Infrastructure Staff of NEDA, Gilbert Garchitorena of the University of Asia & the Pacific, Dr. Gaudioso Sosmeña, Jr. of the Local Government Development Foundation, and by the participants in the technical workshop held on January 23, 1998 at the PIDS, Makati.

The author gratefully acknowledges Ms. Hope A. Gerochi for providing excellent research assistance. All remaining errors are the responsibility of the author.

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1.0 Introduction

Infrastructure is a critical policy area affecting the key elements of investment, productivity, and equity within the overall strategy for attaining sustainable growth and development.

A stylized fact of economic growth suggested by the World Bank is that for every 1% increase in per capita income, a country needs to increase infrastructure stock by 1% of its GDP. For the case of the Philippines, it estimates that between \$38 to 48 Billion will be needed in order to meet the country's investment requirements in infrastructure for the period 1995-2004. (See Table 1)

Table 1. Indicative Investment Requirements of the Philippines, 1995-2004
(for both the private and public sectors)

Sector	Baseline Scenario (WB's best GDP growth assump.)			Low Case Scenario (GDP growth lower by 2 % pts.)		
	In US \$ B	% share	% GDP	In US \$ B	% share	% GDP
Power	19	40.0	2.7	16	42.0	2.6
Telecom	7	14.5	1.0	5.5	14.5	0.9
Transport	18	37.5	2.5	14	37.0	2.3
Water and Sanitation	4	8.0	0.4	2	5.0	0.3
Total	48	100.00	6.8	38	100.0	6.1

Source: Harinder Kohli, *Infrastructure Development in East Asia and Pacific* (Washington: World Bank, 1994), 25.

These figures represent a great challenge for the whole nation to overcome. The government's role in addressing the country's infrastructure requirements in terms of the adequacy and effectiveness of the policy environment must be evaluated.

In this paper, we provide an assessment of the current infrastructure policies to determine whether or not appropriate reforms have been put in place that will help the Philippine economy tread the path of sustainable growth and development. First we will survey the past infrastructure landscape and examine the policies that were initiated. We will then ascertain their impact and identify critical issues in order to provide recommendations to further improve the policy environment.

1.1 The Economics of Infrastructure

To better understand the sector and appreciate the constraints as well as the possibilities for reform, we adopt the economics of infrastructure as the framework for analysis. The following are the economic properties of infrastructure:¹

- Characterized by a network, usually of production, transmission, and distribution components
 - Exhibits a high degree of vertical integration in one or more parts of the network
 - Some components are natural monopolies (e.g., transmission) while others are naturally competitive (e.g., value-added services over the networks).
 - Network components are complementary to each other
 - Compatibility is what makes complementarity of network components possible.
 - There may be close substitutes for each of the components.
 - Production and consumption externalities exist.

- Huge capital investment requirements; high fixed costs, a good portion of which is sunk (i.e., unrecoverable and has no or little value except for the purpose for which it was originally incurred). Sunk costs impose costly exit and therefore may discourage entry in the first place. Note however that the degree to which costs are sunk may be influenced in part by government policy.

- Payback period is longer than a typical project sometimes spanning several administrations.

- Certain infrastructures are site-specific. Its value (and thus, the willingness to pay for these) differs depending on the market or environment (e.g., a one km road in

¹ Parts of this discussion are based on M. Armstrong, S. Cowan, and J. Vickers. Regulatory Reform: Economic Analysis and British Experience. (Cambridge: The MIT Press, 1994), N. Economides, "The Economics of Networks," International Journal of Industrial Organization vol. 14, no. 2 (March 1996) and R. Bird, Decentralizing Infrastructure: For Good or for Ill? Policy Research Working Paper no. 1258 (Washington, DC: The World Bank, 1994).

an urban area is not the same as a one km road of similar physical attributes in the rural area).

- Nontradability – Currently, all infrastructural services are not traded but this may change in the future (e.g., energy).
- Some have public good characteristics (i.e., non-excludability and non-rivalry) – e.g., roads and highways below congestion point.
- Some are multi-product industries; thus, economies of scope from joint production can be exploited but common cost problems arise.
- Consumers have to make certain personal investments in order to enjoy the various infrastructural services (e.g., cars and telephone sets).
- Some outputs are non-storable and demand fluctuates, thus planning and coordination are vital.

In addition, the geography of the Philippines poses special challenges for infrastructure development while its geographic location offers strategic opportunities (e.g., voice and data traffic in telecoms and maritime traffic in transport).

These features of infrastructure industries do not only provide guidelines for efficient planning but they also have implications for policy-making and regulation. For one, a piecemeal approach to sectoral reform will not produce the desired impact because of the complex nature of the industries involved. Detailed design of regulatory issues (e.g., pricing, unbundling, etc.) will also have to tailor-made depending on the unique technological and economic attributes of each sector.

The economics of infrastructure provides no fundamental argument for assigning infrastructure provision to either the public or private sector. Historical evidence worldwide also indicates that both sectors can be efficient providers. The general trend of increased private financing and provision currently being felt across borders can be attributed to three major factors, namely: disappointment with public provision, precarious government finances, and the advent of new technology.² For the case of the Philippines, increased involvement by the private sector can be attributed to exactly the same reasons. As the next section reveals, the Ramos administration's policy initiatives in infrastructure which have been positively received by mainstream development practitioners and scholars are a logical response to the dire condition of infrastructure in the country.

2.0 Past Infrastructure Environment

2.1 Pre-reform Performance Indicators

Power, telecommunications, transportation, and water – these services are so pervasive in modern economic life that we cannot escape the benefits as well as the costs from inadequate or inefficient service delivery. During the eighties, the growth of infrastructure in the Philippines lagged behind other Asian countries. As Table 2 reveals, it is only in the provision of safe water where relative progress can be cited.

² M. Klein and N. Roger "Back to the Future The Potential in Infrastructure Privatization" in Private Sector: Infrastructure (World Bank, Washington D.C. 1996)

Table 2. Growth in Infrastructure Stock and Services, 1980-1990.
(period growth rates; percent)

Country	Paved Road	Elec. Gen. Capacity	Elec. Prod'n	Tel Main Lines	Railroad Tracks	Access to Safe Water ^a	Access to Sanitation
<i>Philippines</i>	-20^b	48	46	45	-55	36	-2
China	...	105	107	64
Indonesia	106	312	534	184	5	11	22
Korea	120	134	197	299	38	18	...
Malaysia	36	107	143	301	7	15	24
Thailand	69	142	206	262	6	14	...

Source: Harinder Kohli, Infrastructure Development in East Asia and Pacific (Washington: World Bank, 1994), 22.

Note: ^a % change in coverage

^b According to the DPWH's Bureau of Maintenance, the decrease of the length of road network was due to some corrections and/or revisions in the measurement of physical length

Part of the neglect in infrastructure investments can be attributed to the macroeconomic crisis experienced by the country. As Manasan³ reveals, capital investments bore the brunt of the fiscal adjustments carried out during the period. Of course, this situation is not unique to the Philippines. Jimenez⁴ points out that due to the high ratio of capital to recurrent spending of infrastructure, it is usually one of the first candidates for budget cuts whenever a country experiences an economic crunch. Indeed, evidence from developing countries show that with an elasticity of 1.47, infrastructure is the sector most sensitive to changes in total expenditure as compared to others (e.g., defense and social sectors have an elasticity of 0.38 and 0.66, respectively).⁵

Although scrimping on infrastructure spending appears to be a quick solution to immediate fiscal problems, we all know that prolonged disregard of infrastructure

³ R.G. Manasan. "Fiscal Adjustment in the Context of Growth and Equity, 1986-1996," Draft paper for the PIDS Assessment Project (December, 1997).

⁴ E. Jimenez "Human and Physical Infrastructure Public Investment and Pricing Policies in Developing Countries," Policy Research Working Paper no. 1281 (Washington, D.C.: The World Bank).

⁵ N.Hicks, "Expenditure Reduction in Developing Countries Revisited," Journal of International Development, (1991) 3(1), 29-37 as reported in E. Jimenez, "Human and Physical Infrastructure Public

has dire consequences on the economy. By the early nineties, the lack of infrastructure had reached crisis proportions and we suffered immensely from the folly of earlier decisions (or lack thereof) as demonstrated in the power crisis. Even Metro Manila, which accounts for roughly 30% of the country's total output, was not spared from the crippling effects of power outages. For other infrastructural services, there was much to be desired with respect to the quality and consumers generally had no choice in terms of provider. Boxes 1 to 4 further describe the situation prior to the introduction of reforms in each sector.

Box 1. Pre-reform: Power Sector

- As of 1994, only 60% of our population had access to electricity.
- The electricity intensity in GDP of the Philippines was 0.74 kWh/1993 US\$. This indicates that we need 0.74 kWh of electricity to induce a dollar increase in our GDP. A high intensity usually connotes inefficiency and that a considerable growth in the economy is attributable to the use of electricity.
- Our per capita consumption is relatively low due in part to the high cost of electricity.

Table 3. Selected Energy Indicators

Country	Population with Access to Elec. 1994	Per Capita Elec. Consumption 1993	Electricity Intensity in GDP 1993 US \$
Philippines	60 %	327 kWh	0.74 kWh
Indonesia	35	206	0.25
Malaysia	87	1466	0.44
Thailand	82	970	0.86

Note-Electricity Intensity in GDP is defined as total electricity consumed divided by GDP at constant prices.

Source: ADB, *Key Indicators of Developing Asian and Pacific Countries*, (Oxford University Press, 1996), 29.

- Philippine electricity rates are high compared to other countries. For the whole of Asia, we rank second only to Japan.

Table 4. Electricity Rates, \$/kWh
(in constant 1992 prices)

Country	1986	1987	1988	1989	1990	1991	1992
Philippines	0.152	0.139	0.117	0.100	0.095	0.092	0.100
Indonesia	0.114	0.081	0.072	0.080	0.072	0.071	0.068
Malaysia	0.104	0.095	0.089	0.075	0.072	0.069	0.071
Thailand	0.096	0.092	0.087	0.080	0.077	0.073	0.069

Source of basic data: ADB, *Energy Indicators of Developing Member Countries of ADB*, (1994)

- The combination of high electricity intensity and high electricity rates puts the Philippine economy at a clear disadvantage vis-à-vis other countries.

Table 5. Cost of Inducing \$1 Increase in GDP

Country	Electricity Intensity in GDP, 1993 US \$	Electricity Rates (1992 US \$)	Cost of Inducing \$1 increase in GDP
Philippines	0.74 kWh	0.100 US\$/kWh	0.074 US \$
Indonesia	0.25	0.068	0.017
Malaysia	0.44	0.071	0.031
Thailand	0.86	0.069	0.059

Box 2. Pre-reform: Telecommunications Sector

- In 1993, the country had a low density rate of only 1.31, 3.5, and .08 for main lines, residential main lines, and payphones, respectively.
- As for the industry's performance within a ten-year period, the compounded annual growth rate for payphones was only 5.90% while for main lines the CAGR was just 8.2%.

Table 6. Telephone Indicators

Country	Main lines		Residential Main lines	Payphones	
	Density ^a (1993)	CAGR (%) 1984-1994	Density (1993)	Density ^b (1993)	CAGR (%) 1984-1994
Philippines	1.31	8.2	3.5	0.08	5.90
Indonesia	1.02	16.7	2.7	0.27	14.80
Malaysia	12.62	12.9	43.4	2.42	10.20
Singapore	43.45	5.8	>100	10.26	4.30
Thailand	3.76	18.1	11.8	0.62	16.40

Note: ^a Main lines per 100 inhabitants

^b Payphones per 1,000 inhabitants

Source: ITU, Asia-Pacific Telecommunication Indicators, (Geneva Switzerland, 1995)

- A typical consumer had to wait an average of 8.9 years to get a telephone installed – the longest waiting period in the Southeast Asian region.

Table 7. Waiting List, 1993

Country	Waiting Time (Years)
Philippines	8.9
Indonesia	0.4
Malaysia	0.5
Singapore	0.01
Thailand	6.3

Source: ITU, Asia-Pacific Telecommunication Indicators,
(Geneva Switzerland, 1995), 37

- With respect to quality of service, call completion rates of PLDT reportedly declined from 68% in 1987 to 56 % in 1990 for local calls and from 72 % to 54 % during the same period for international calls. In terms of subscriber trouble reports, there were roughly 17 reports per 100 main stations every month, a figure that is relatively high compared to the 2-3 trouble reports experienced in OECD countries.

Source: Peter Smith et al., ed., Telecommunications Sector Reform in Asia: Working Papers, (World Bank, 1994), 51.

Box 3. Pre-reform: Transportation Sector

- Roads – The Philippine Transport Sector Review conducted in 1990 by Nathan Associates, Inc, (USAID) concluded that the number one transportation problem in the country is the poor condition of the public road network, which substantially raises transport cost. Data from the DPWH also reveal that a bigger proportion of the road network is not paved (either of concrete and asphalt standard) or of low quality. Non-paved roads still account for at least 80.0% of the total road network in the country.

Table 8. Existing Roads by Surface Type, 1986-1996

Year	Total Roads (Length in km.)	% Share			
		Concrete	Asphalt	Gravel	Earth
1986	158,498.90	5.91	7.53	80.45	6.11
1987	157,809.78	6.06	7.94	80.10	5.90
1988	157,447.53	6.23	7.95	80.06	5.76
1989	159,059.49	6.38	7.92	80.27	5.43
1990	160,560.12	6.45	7.94	80.31	5.29
1991	160,709.97	6.65	8.16	79.90	5.30
1992	160,843.43	8.32	8.16	78.23	5.29
1993	160,882.58	8.33	8.16	78.22	5.29
1994	160,947.73	8.44	8.15	78.13	5.28
1995	160,970.24	8.52	8.16	78.09	5.23
1996	161,264.27	8.98	8.39	77.29	5.34

Source: DPWH, Bureau of Maintenance (1997)

- Other findings of the 1990 USAID-commissioned study include:
 - Aviation - The domestic air transport subsector was monopolized by the Philippine Airlines. It provided all domestic air passenger and cargo services.
 - Domestic Shipping – Most passenger services, especially in the Third Class, were substandard in terms of comfort and safety. Overloading was common since passenger rates were kept low. The practice of combining cargo and passenger services also contributed to longer travel time to allow for cargo loading and unloading.
 - Ports – Facilities were in poor condition. Cargo-handling equipment, port land and storage areas were inadequate and unsatisfactory. Port facilities were not prepared or suitable for RORO operations, an ideal mode for an archipelago like the Philippines.
- A more recent study, the Philippine Transport Strategy Study, conducted in 1997 by Halcrow Fox for NEDA concludes that the number one problem is the maintenance, rehabilitation and upgrade of current infrastructure, particularly of the road network. Building new infrastructure is not a top priority since they find the road network to be adequate and the railway to be quite extensive although underused. They note that the Philippine National Railways (PNR) has consistently incurred losses and although a privatization study was completed in 1993, little has been done in implementing its recommendations. With respect to other transport facilities, they observe that the number of ports and airports at this point may be more than optimal.

Box 4. Pre-reform: Water Sector

Performance of the MWSS:

- The Metropolitan Waterworks and Sewerage System (MWSS) is mandated to provide an adequate supply of potable safe water and to provide satisfactory and reliable sanitary wastewater disposal facilities in Metro Manila at affordable rates.
- Some areas covered by the MWSS receive no water for up to 22 hours a day. Other areas experience low pressure and about 30 to 50% of the agency's customers are affected by supply constraints.
- Non-revenue water accounts for an average of 55 % of total water output for 1995.

Table 9. Estimated Breakdown of Sources of Non-revenue Water*

Source	% Share
Leakage	77.0 %
Illegal Use	8.0
Metering Error	9.5
Tampering	3.5
Operational Use	2.0

Note: *Used in demand projections in the MWSS Operational Strengthening Study

- Only 12% of the population within the service area of MWSS are connected to its sewerage system.

Source: Binnie Thames Water, et. al, MWSS Operational Strengthening Study, ADB,1996.

Issues on Water

- In Metro Manila, piped water is a public service the MWSS provides, but only 60% of the population are served.
- Water Quality- water levels in artesian aquifers have declined due to excessive pumping of ground water; the possibility of more fresh water areas being intruded by salt water increases with each drilling; the four major river systems in Metro Manila have been rendered unfit for human consumption because of wastes and oil spill from industries
- Sewerage System- the country has no sewerage system to speak of except in Metro Manila but existing sewerage systems in the metropolis serves only 15% of the population.
- Meeting Future Demand for Water- meeting the future water requirements of the metropolis will be an enormous challenge as population increases through the years and as the economy gears towards development.

Source: M.C. Ebarvia, Watering Metro Manila: Today's State, Tomorrow's Challenges, PIDS Executive Memo March 1995, (Makati: PIDS)

2.2 Other Indicators

As for public investment in infrastructure, the sector's proportion of total public capital investments has improved over the last few years. (Table 10.)

Table 10. Share of Infrastructure Investment in Total Public Capital Investments*, 1986-1994
(in percent)

	1986	1987	1988	1989	1990	1991	1992	1993	1994
Total Infrastructure Investment	39.16	60.85	50.08	60.48	63.49	69.75	83.00	73.58	73.23
Power & Energy	15.42	25.27	14.32	29.53	28.56	18.69	34.33	44.36	38.95
Water Resources & Development	4.46	3.61	3.52	3.88	2.93	3.79	3.44	2.02	1.24
Transportation & Communication	19.28	31.98	32.24	27.07	32.01	47.27	45.23	27.20	33.05

Source: Dr. Rosario Manasan

Note: * includes investments by GOCC, NG and LGU's.

Using comparative figures however, the Philippines still devoted less to infrastructure relative to its neighbors (Table 11).

Table 11. Infrastructure Investment as a % of GDP, 1990-1992

Year	Philippines ^a	China	Indonesia	Korea	Malaysia	Thailand	Others ^b	East Asia ^c
1990	2.3	4.1	4.9	4.5	4.4	4.1	4.1	4.2
1991	3.0	4.5	4.3	4.7	6.9	4.4	4.0	4.5
1992	2.5	5.1	3.8	4.7	6.0	4.3	4.0	4.7

Source: Harinder Kohli, *Infrastructure Development in East Asia and Pacific* (Washington: World Bank, 1994), 23

Note: a/ Using Dr. Manasan's estimates, which is composed of the investments made by the national government, GOCCs, and local government units, the percentage share of infra are 3.6%, 3.8%, and 4.0% of GDP for 1990, 1991, and 1992, respectively.

b/ Others include: Cambodia, Fiji, Lao PDR, Maldives, Mongolia

c/ East Asia is defined to include China, Indonesia, Korea, Malaysia, Philippines, Thailand and others as defined above.

By NEDA's own estimates, the gap in infrastructure spending, which is the difference between programmed and actual expenditures, amounted to nearly ₱ 81 Billion for the period covering 1986 to 1992.⁶

⁶ For a thorough assessment of the government's expenditure policy, the reader is referred to Manasan (1997).

3.0 Review of Sectoral Reforms

3.1 Policy Initiatives

The indicators presented in the previous section unveil the gravity of the infrastructure problem in the Philippines. Given the various competing needs that the government is faced with, it was clear that other avenues for increasing investments and improving service delivery had to be explored.

Towards the last part of the Aquino administration the Build-Operate-Transfer Law was enacted signaling a new public-private cooperation in infrastructure development. The Ramos administration sealed this new partnership and adopted bold policies that placed greater reliance on the private sector and on the market. As shown in Table 12, privatization (transfer of ownership, management, etc. to the private sector), deregulation (removal of regulation), and liberalization (opening up to new players) of the various infrastructure sectors were undertaken to spur the growth and development of infrastructure.

The status of the reforms introduced varies from one sector to the other. For example, amendments to the Implementing Rules and Regulations of the BOT program are continually being raised in order to make it more attractive to investors yet at the same time safeguard the interest of the government. In telecoms, there are strong calls from various interest groups including the lead agency to review the Telecommunications Act, which was just passed three years ago. In the power sector, the law that was supposed to correct the structural inefficiencies in the industry will have to wait until the next administration. Sadly, it seems the extent and speed of reforms are more a function of the political economy governing each sector rather than any fundamental (and urgent) economic consideration.

Table 12. Major Infrastructure-related Policy Reforms in the Ramos Administration

Infra-General	Power	Telecommunications	Transport	MWSS
R.A. 7718 (The Expanded BOT Law) An act amending certain sections of R.A. 6957 entitled "An act authorizing the financing, construction, operation and maintenance of infrastructure projects by the private sector and for other purposes (May 5, 1994)	R.A. 8180 Deregulation of downstream oil industry (Mar 28, 1996) R.A. 8479 New Downstream Oil Industry Deregulation Law repealing R.A. 8180 after the Supreme Court nullified the previous law as "unconstitutional" (Feb 11, 1998)	R.A. 7925 An act to promote and govern the development of Philippine Telecommunication and the delivery of public telecom services (Mar 1, 1995) E.O. 109 Policy to improve provision of local exchange carrier service (July 12, 1993)	E.O. 219 Establishing the domestic and international civil aviation liberalization policy (Jan 3, 1995) E.O. 213 Deregulating Domestic Shipping Rates (Nov 28, 1994)	R.A. 8041 An act to address the National Water Crisis and for other purposes (June 7, 1995) E.O. 311 Encouraging private sector participation in the operations and facilities of the Metropolitan Waterworks and Sewerage System (MWSS) (Mar 20, 1996)
E.O. 37 Restating the privatization policy of the gov't (Dec. 2, 1992)	E.O. 215 Private sector participation in power generation	E.O. 59 Mandating Interconnection (Feb. 24, 1993)	E.O. 212 Accelerating the demonopolization and privatization program for government port (Nov 28, 1994)	
E.O. 298 Providing for alternative and/or intermediate modes of privatization pursuant to proclamation no. 50 (Jan. 30, 1996)	(Omnibus bill on Electric Power Industry)	DOTC Circular 93-273 Domestic Satellite Communications Policy (June 1993)	E.O. 185 Opening the domestic water transport industry to new operators and investors (June 28, 1994)	
Memo 45 Liberalization and increased competition in support services sector (April 23, 1993)			RA 7471 The Phil. Overseas Shipping Development Act (Nov 17, 1992)	
A.O. 129 Directing the adoption of standard processing time in the bidding and award process for infrastructure and other construction works and consulting services contracts of the national government (May 16, 1994)			E.O. 410 Repealing E.O.212, in recognition of the PPA under P.D. No. 857 to implement the policy of accelerating the demonopolization and privatization of government ports in the country (May 1, 1997)	
Memo Circular 44 Speeding up of infrastructure projects (April 23, 1993)				

3.2 Post-Reform Performance Indicators

In general, the outcomes of the sectoral reforms have been beneficial to the country. The passage of R.A. 7718, better known as the expanded BOT Law, intensified the private sector's involvement in the infrastructure sector. Institutional arrangements and procedures were enhanced to facilitate private financing of infrastructure projects. The power crisis that severely derailed economic activities in the early part of the decade was dealt with by engaging the private sector in power generation resulting in several fast-track power projects. In telecommunications, de facto monopoly was dismantled yielding impressive growth in telephone density. The introduction of credible competition in civil aviation and domestic shipping expanded the choices of consumers with respect to modes of travel, rates and service quality. For the water sector, improvements in water provision are guaranteed with the privatization of the Metropolitan Waterworks and Sewerage System (MWSS).

With the policy initiatives in infrastructure we witnessed varying degrees of increased supply, lower rates, and better quality of service in one or more cases. Mangahas⁷ reports that the effectiveness of the sectoral reforms is evident in the high public satisfaction ratings in the newly liberalized telecom and transportation industries. With respect to financing, the demands on public funds have eased somewhat with the growth in the private sector's share of investments in infrastructure. Boxes 5 to 9 further describe the immediate impact of the policy reforms.

⁷ M. Mangahas, "Tracking the People's Economic Well-being: The Social Weather Surveys," in *Proceedings of Symposium in Honor of Dr. Gerardo Sicat and Dr. Jose Encarnacion, Jr.* (Makati: Philippine Institute for Development Studies, 1997)

Box 5. Post-reform: Infra-General

- R.A. 7718 reinforced the role of the private sector in infrastructure development. Under a typical BOT arrangement, the private sector takes responsibility for the financing, construction, operation and maintenance of a facility for a specified period while the government retains ownership.
- Energy-related infrastructure accounts for a majority of the BOT projects in terms of both total value and absolute number.

Table 13. Profile of BOT projects
(as of March 31, 1997)

Sector	Value in Million \$ ^a				Number of BOT projects (including variants of BOT)			
	C & O ^b	Pipeline	Total	% Share	C & O ^b	Pipeline	Total	% Share
Energy	9,994.18	n.a.	9,994.18	70	48	5	53	65
Transport	1,117.69	2,043.05	3,160.74	22	3	7	10	12
Water	481.00	204.57	685.57	5	1	2	3	4
Telecom	-	-	-	0	-	-	-	0
Others	410.97	73.55	484.52	3	8	8	16	19
TOTAL	12,003.84	2,321.17	14,325.01	100	60	22	82	100

Note – ^{a/} Total value does not cover all projects due to incomplete data.

^{b/} C&O refers to completed and ongoing projects.

Source of basic data: National Economic Development Authority-Public Investment Staff (1997)

- Funding for the Ramos Administration Flagship Projects also reflect the significant contributions of the private sector. As Table 14 shows, private enterprise projects account for 48% of the total flagship projects while 33 % are BOT-type projects.
- A major component of private enterprise projects is the basic telephone program, which is estimated at around ₱ 177.5 B.

Table 14. Sources of Funding of the Ramos Administration Flagship Projects

Source of Funding	Total Amount	% Share
23 BOT Projects	₱ 156.9 B	33 %
3 Private Enterprise Projects	228.8 B	48 %
70 ODA-assisted/locally-funded (appropriated)	96 B	20 %

Note- Of the 96 flagship projects, 8 are not primarily infrastructure projects.

Source: Presidential Committee on Flagship Programs and Projects,
CY 1996 Year-end Report on Flagship Projects (Manila, 1997)

Box 6. Post-reform: Power Sector

- The major consideration of the sector was the eradication of the power crisis that slowed industrial productivity and overall economic growth during years 1992 and 1993. To end the crisis, the government engaged the participation of the private sector in power generation through E.O. 215. The immediate impact of the reform was several “fast-track” power projects.
- According to the World Bank, the financial price and economic costs of early IPPs were high. However, considering the damage being caused by the power outages on the economy, these IPPs actually made valuable economic contributions. In fact, the avoided costs during the 1993-94 period were 4 to 6 times higher than tariffs.
- The price and cost of post-crisis plants are, on average, 12% lower. This can be attributed to better procurement practices and a more competitive environment, among other things.

Table 15. Average Philippine Prices and Costs of IPPs
For Base Load Generation (in US\$/kWh)

By Commissioning Period	Financial Price ^a	Economic Costs ^b
1991 to early 1994	0.0687	0.0591
1994 onward	0.0604	0.0521

Notes: a/ Financial assessment focuses on levelized energy prices that NPC or MERALCO will pay for each project.

b/ Economic analysis estimates total generation costs and other indicators of economic viability.

Source: World Bank, Philippines Power Sector Study (Washington, D.C.: World Bank, 1994)

- To further ensure the reliability and long-term energy supply of the country, R.A. 7638 was enacted creating the Department of Energy that acts as the central coordinator for implementing energy related policies and programs.
- Another reform in the sector was the deregulation of the downstream industry thorough R.A. 8180 in March 1996. It signified the opening of the industry to new players and the end of government intervention in oil price setting. Full deregulation took effect in February 1997 but was later nullified as unconstitutional by the Supreme Court in November. A new deregulation law was formally signed last February 10, 1998.
- A major restructuring of the power sector is being proposed under the Omnibus Bill on Electric Power Industry. Under the bill, the generation and transmission aspects of the industry will be unbundled, the National Power Corporation will be privatized and all regulatory functions will be consolidated into a single agency. The reform is generally aimed at opening the sector to new players and in time bring about lower tariffs, total electrification of the country and secure electric power supply for the coming years. Explicit provisions against market dominance and anti-competitive behavior are also contained in the proposed bill.

Box 7. Post-reform: Telecommunications Sector

- In 1993 the government opened the market to competition in order to stimulate telecommunications growth. President Ramos signed two Executive Orders (E.O.) that signaled the start of a new policy regime of competition. The first, E.O. 59, mandated interconnection of networks. The second, E.O. 109, embodied the service area scheme requiring licensees of lucrative cellular and international franchises to also provide fixed-link telephone service in underserved parts of the country using a formula devised by the National Telecommunications Commission.
- With these reforms, telecommunications experienced unprecedented market activity.

Table 16. Telecom Density^a

Year	Telephone	Cellular	Radio Paging
1992	1.17	0.09	0.11
1993	1.21	0.16	-
1994	1.67	0.26	0.34
1995	2.01	0.70	0.46
1996	4.66	1.33	0.68
1997	8.31 ^b	-	-
1998	9.78 ^b	-	-

Note: ^a Per 100 persons

^b Projections

Source of basic data: National Telecommunications Commission (1997)

- Waiting time for telephone installation also improved. During the pre-reform period a typical consumer had to wait an average of 8.9 years for a connection. Today, the Philippines' waiting time is 2-30 days for a business line while residential lines can be installed in 14-385 days as reported in the Asian Wallstreet Journal last June 1997.
- By the end of 1998, most municipalities will have access to telephone service.

Table 17. Telephone Service Growth by Municipality

Region	Municipalities Served (%)		
	1992	1996	End of Program
1	38	58	82
2	23	32	43
3	43	55	95
4	24	34	59
5	11	28	100
6	15	23	100
7	8	17	93
8	8	9	98
9	6	10	87
10	11	18	97
11	13	22	100
12	5	17	100
NCR	100	100	100
CAR	0	12	47
ARMM	0	2	68
TOTAL	21	27	83

Source: Simeon L. Kintanar, Cabinet Briefing on the Status of Telecommunications in the Philippines, (1997)

Box 8. Post-reform: Transportation Sector

- Aviation - A major policy reform in the aviation sector was enacted with the issuance of E.O. 219, liberalizing domestic and international civil aviation. The opening up of civil aviation ushered the entry of three new local companies: Grand International Airways, Inc., Cebu Pacific Air, and the Air Philippines Corp. Although Philippine Airlines remains to be the major industry player (e.g. in terms of the number of available flights) the effect of the liberalization is demonstrated in the lower rates offered by the new airlines.
- Shipping - In 1994, E.O. 185 opened the domestic water transport industry to new operators. Liberalization saw the influx of new shipping companies registered with the SEC as well as those who are applying for MARINA accreditation. Correspondingly, there has been sustained increase in the number of vessels approved for acquisition from years 1994-1995. It should be noted that there is an emerging dominance of importation over bareboat charter (a program in which operators are allowed to use the vessel for commercial purposes under a lease arrangement) as a mode of acquisition reflecting greater confidence on long term investments. Also, younger vessels were acquired as reflected by a decrease in the average age of the vessels compared to the previous years.

Table 18. Shipping Indicators

Year	No. of Companies		Marina-Approved Vessel Acquisition Projects				Total Vessels
			Importation		Bareboat Charter		
	SEC Registered	Applying for Marina Accreditation	No. of Vessels	Ave. Age	No. of Vessels	Ave. Age	
1992	35	25	34	15.7	20	19.3	54
1993	49	46	62	17.8	16	15.9	78
1994	50	92	97	17.5	22	16.5	119
1995	53	159	131	16.5	28	15.7	159
1996	66	96	108	14.6	30	14.3	138

Another obvious manifestation of the liberalization of the sector has been the deployment of luxury passenger vessels in major routes. Amenities offered by the newly acquired vessels approximate those of hotels, thus changing the negative impressions previously held against travelling by sea.

Source: Emerson M. Lorenzo, The Domestic Shipping Industry of The Philippines: A Situation Report (Maritime Industry Authority, 1997)

Box 9. Post-reform: Water Sector (MWSS)

- In March 1996, with the issuance of E.O. 31, government signified its policy to transfer responsibility for water supply and sanitation to the private sector in order to induce changes and drastic improvements in water provision.
- The following year, two concessionaires were awarded through public bidding the operation and maintenance of the infrastructure. They are also responsible for infusing investment where needed during the period. However, MWSS still retains ownership on all fixed assets. The service area of MWSS are geographically divided into the east and west zone. The Ayala's Manila Water Corp. won the east zone while the west-zone was awarded to the Lopez's Maynilad Water Services, Inc.
- The fierce competitive bidding brought down rates for both the East and West zones.

Table 19. MWSS Water Rates*

Geographical Zone	Average Rates (₱/cubic meter)	
	<i>Without Privatization</i>	<i>With Privatization</i>
East Zone	8.78	2.37
West Zone	8.78	4.96

*Source: C.C. David, et al., Optimal Water Pricing in Metro Manila, Paper Presented at the Second Workshop on Urban Water Pricing in Metro Manila by the Presidential Task Force on Water Resource Development and Management and PIDS at SEMEO INNTECH, Diliman, Quezon city on March 17, 1998.

- Winning concessionaires are required to attain the following performance targets:

Table 20. Coverage Targets (%)

	East					West				
	2001	2006	2011	2016	2021	2001	2006	2011	2016	2021
Water Supply ¹	77.1	94.1	94.1	94.1	94.6	87.4	97.1	97.4	97.7	98.4
Sewer ²	3	16	51	52	55	16	20	21	31	66
*Sanitation ²	38	32	27	24	19	43	46	43	39	27

¹Expressed as a percentage of the total population in the designated city of municipality at the time of target (excluding users who are connected to a piped source of water other than from the MWSS system)

²Expressed as a percentage of the total population in the designated city or municipality connected to the Concessionaire's water system at the time of the target. For areas designated by the cities or municipalities as depressed areas, these targets may be met by the installation of one public standpipe for each 475 people

*Sanitation coverage decreases over time as sewer connection coverage are being met since waste water would directly go through the sewerage system instead of having the concessionaire provide sanitation services for individual households.

Source: Concession Agreement, cited in C.C. David, et al., (see above citation)

4.0 Common, Crosscutting, and Critical Issues

Privatization, liberalization, and deregulation policies characterize the reforms undertaken to address the infrastructure problem. As the immediate impact of these reforms indicates, the overall infrastructure picture has improved as a consequence of the policy initiatives.

The economics of infrastructure as presented earlier provides no fundamental argument for the superiority of private financing and provision of infrastructure. Indeed, the impetus for the change in policy direction stemmed from neither theory nor ideology but simply from disenchantment over the performance of the various sectors under the old regime of either public or private monopoly provision. It was also a logical solution to the shortage of public budgetary support. With the paradigm shift, the expectation is that the country can finally overcome infrastructure bottlenecks that have impeded growth and productivity.

The benefits from this strategy however are not automatic and neither is the efficiency of the market mechanism guaranteed in the liberalized sectors. As we will now discuss, there are remaining problems that potentially undermine the sustainability of the new policy environment and therefore threaten to overturn the initial successes that have been achieved. Now that the broad policy framework has been defined and established by the Ramos administration, the next step is to work on further improvements to ensure that the expectations from the new strategy are met.

Using the economics of infrastructure as our framework, this section analyzes the 3Cs of infrastructure – these are issues that are:

⇒ **C**ommon – because they affect at least two sectors,

⇒ **C**rosscutting – because they touch on other policy concerns of the government, and

⇒ **Critical** – because we have to deal with them to ensure that the gains from previous reforms are preserved and even surpassed.

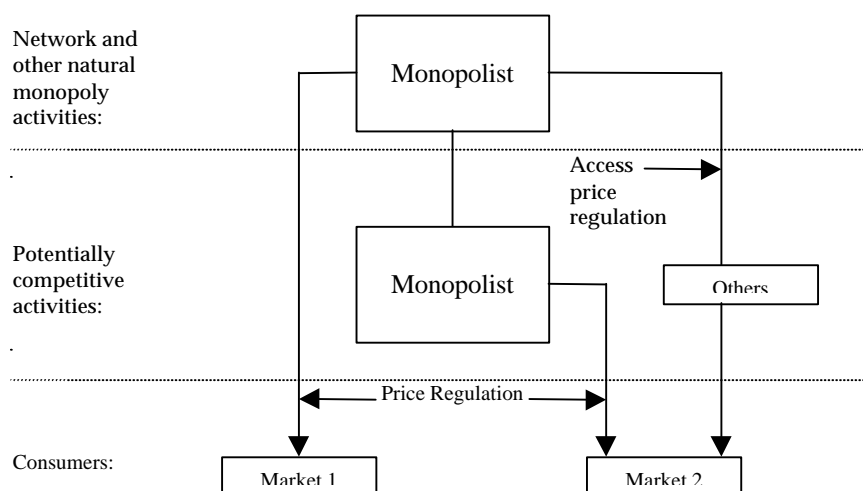
These issues, which are grouped into five major topics, are deemed important elements within the overall goal of attaining sustainable growth and development.

4.1 Competition Policy in Infrastructure

Opening up previously monopolized markets to new players is a step towards creating a competitive environment. However, liberalization alone does not lead to effective competition. There are sources of asymmetry between an established firm and new players that may frustrate competition. For utility industries, incumbency advantages, which serve to weaken the competitive environment, come from two major sources. Armstrong, et al. attribute these to either “asymmetric opportunities” (e.g., control of essential facility) and to “strategic asymmetries” (i.e., first-mover advantages). Since both types of incumbency advantages are present in utilities, assistance to new players should be an important consideration in the liberalization policy of the various infrastructure industries.

Consider the case where a segment of a vertically integrated monopoly is opened to competition as depicted in Figure 1 Armstrong, et al.⁸. If the incumbent retains control of the bottleneck facility, there is an incentive on its part to engage in non-cooperative behavior (e.g., delaying access or charging high access rates) in order to raise competitors’ cost and induce exit.

Figure 1. Vertical Integration with Liberalization



⁸ Ibid., 5.

This situation is most applicable to the telecommunications sector although it also serves to highlight potential issues in the restructuring of power sector. Among the possible forms of assistance to new players which Armstrong, et al.⁹ list, perhaps two are most applicable to the Philippines particularly for the telecom sector. One is to limit further entry and the other is to ensure favorable terms of interconnection. Another form of assistance they cite is to relieve entrants from obligations placed on the incumbent. Unfortunately, this is exactly the opposite of what Service Area Scheme mandates- testimony to our lack of appreciation of the obstacles faced by an entrant in an infrastructural sector such as telecommunications.¹⁰ Indeed, the experience of telecommunications worldwide reveal that in no country where effective competition has taken place did it occur without some form of assistance to new players.

In the other industries, incumbency advantages usually arise from simply being a first mover. For example, a source of power of a dominant firm in the air transport sector is the preferential access to airport facilities that it enjoys.¹¹ The same is true for access to port facilities. In the case of inter-island shipping in the Philippines, an incumbency advantage that inhibited entry of new operators was embedded in the guiding principles of the route franchising system itself. These principles included the prior operator rule which gives preference to existing operators in servicing additional capacity, the protection of investment rule which guarantees an operator monopoly status for a given period and the capacity regulating rules which

⁹ Ibid., 120-125.

¹⁰ The Service Area Scheme imposes service obligations on entrants and not on PLDT. See R. Serafica, "An Economic Analysis of the Service Area Scheme," Philippine Review of Economics and Business vol. 34, 1 (June 1997) for a discussion of some of the problems with this scheme.

¹¹ See A. Kahn, Comment on "Enhancing the Performance of the Deregulated Air Transportation System," by S.A. Morrison and C. Winston in Brookings Papers on Economic Activity Microeconomics, ed. M.N. Bailey and C. Winston, (1989).

confers on the regulator the right to determine the needed capacity.¹² It should be noted that the prior operator rule is still reflected in E.O. 185 particularly in sec. 1.3, which deals with Deregulating Entry of Newly-Acquired Vessels Into Routes Already Served by Franchised Operators.

These examples serve to illustrate that an incumbent generally enjoys first-mover advantages over potential rivals and for the case of infrastructure industries, additional advantages are conferred on an incumbent due to the inherent economic properties of such industries. Thus, competition in infrastructural services calls on regulators to be active proponents of competition in market segments *where competition is desirable and even feasible but not automatically attainable due to possible abuse of incumbency advantages*. A hands-off approach will not serve the market well in the early stages of liberalization. We need to introduce *well-targeted* assistance to new players in order to level the playing field vis-a-vis the incumbent.

What may happen if we ignore the basic asymmetries within newly liberalized utility industries? Clearly, a prolonged transition to an effective competitive environment- if at all it will be attained. The longer the transition takes, the more difficult it is to remove distortions, the easier it is for interest groups to influence regulatory outcomes, and the higher the probability of policy reversal. Under these circumstances the effectiveness as well as the credibility of the Philippines' liberalization policy are undermined.

¹² SGV Consulting, Barriers to Entry Study Vol. II, 7.

4.2 The Regulation of Infrastructure

In embracing market-oriented reforms, we have also expanded and compounded the role of our regulatory institutions. As Ergas¹³ points out, introducing competition into utilities imposes a heavy cost in terms of supplementary regulation. Whereas the main economic issue facing regulators in the pre-reform period was tariff or rate setting, today's regulators are faced with a wider range of industrial organization issues. The economic questions cover industry **structure** (e.g., delineation of boundaries for monopolistic or competitive provision, number of players), **conduct** (e.g., pricing, determination of access rates, setting of interconnection rules), and **performance** (e.g., quality and compliance with obligations).

For example, recall that a major economic property of infrastructure is its network-like characteristic. Some components are natural monopolies while others may be naturally competitive. Additionally, different outputs can be produced from the use of the same facilities. These features give rise to cost and risk allocation problems, which complicate both product price regulation and access price regulation. And, since attaining universal service is still of paramount concern (whether we are talking of electrification, telecommunications or water supply) then additional factors enter the decision calculus of regulation (e.g., use of cross-subsidies).

Table 21 presents an overview of some regulatory issues.¹⁴

¹³ H. Ergas, Comment on "Appropriate Regulatory Technology: The Interplay of Economics and Institutional Conditions," by L. Jones in Proceedings of the World Bank Annual Conference on Development Economics 1993 (Washington, D.C.: World Bank, 1994).

¹⁴ The policy questions in the first column are adopted from Armstrong, et al.

Table 21. Examples of Regulatory and Policy Issues in Philippine Utilities

PUBLIC POLICY QUESTIONS	POWER	TELECOMMUNICATIONS	TRANSPORTATION	WATER
Vertical integration – Is M allowed to also operate in potentially competitive activities?	- Unbundling of services	- Control over bottleneck facilities - Telcos as ISPs		
Liberalization – Does M have exclusive right or is there free entry? Should entry be restricted, assisted, or neither?		- Service Area Scheme - BELLTEL case	- Open Skies Policy - Cabotage Law	
Horizontal structure – If M does operate in potentially competitive activities, should assets be broken up into competing units?	- NAPOCOR to be broken up into seven gencos			
Regional structure – Is M a nationwide monopolist or is there a separate natural monopolist in each geographic region?				- East zone and West zone
Product price regulation – Which products have their prices regulated, and what form does regulation take?	- computation of rates based on RORB formula	- Metering and rate rebalancing - Foreign currency adjustment	- Deregulation of shipping rates	- application of currency exchange rate adjustment
Access price regulation – On what terms can firms in obtain access to natural monopoly services of M?	- Interconnection between power grids	- Interconnection between operators		Contested 300 MLD which is distributed in the West but passes through the East zone
Regulation of nonprice behavior- How does regulation apply to nonprice conduct of firms?		- Universal Service Obligations - Grade of service req'ts	- Safety regulations	- Service obligations of concessionaire

That regulators face a new set of economic questions is recognized in all the industry-specific studies we surveyed.¹⁵ The value of competent, fast, transparent, and consistent regulation for encouraging investments in utilities and for inducing efficient behavior from firms is obvious especially in light of the private sector's increased role. Are our regulatory institutions prepared?

The case of telecommunications regulation should offer lessons and insights into the dynamics of regulation in the country and the need for reorientation. In his study of telecom regulation, Gavino¹⁶ found that the NTC was ill-equipped to regulate PLDT effectively. To illustrate, he cites the case of rate setting where the regulator had to rely on the information and testimony furnished by the company. It appears that the regulator did not have the capability to conduct comprehensive financial audits as well as expertise and resources for monitoring performance standards. Given these constraints, he recommends a shift in the orientation of regulation from one that is excessively concerned with the process of approvals ("control orientation") to one that is more results-oriented ("development orientation"). Note that Gavino's observations were made in the pre-reform days. Today, the NTC faces at least ₱ 177.5 B worth of additional investments to regulate.¹⁷

The point that must be made is that policy reform should be complemented with regulatory reform. For one, there is the need to upgrade the technical capabilities of the regulatory staff particularly with respect to economic issues. The relationship of the regulator vs. the regulated is inherently asymmetric. Firms know more about their real cost and to some extent regulators do have to rely on information furnished by these firms. Regulatory staff should therefore possess the right skills to be able to

¹⁵ See, for example, World Bank, *Philippines Power Sector Study* (Washington, D.C.: World Bank, 1994) and Halcrow Fox, *Philippine Transport Strategy Study* (Manila, 1997).

¹⁶ J. Gavino, Jr. "A Critical Study of the Regulation of the Telephone Utility: Some Options for Policy Development". (Ph.D. diss., University of the Philippines, 1992)

evaluate the evidence and employ other devices for benchmarking a firm's conduct. (See Box 10).

Box 10. Rate of return on what?

A common rule in utility regulation is where tariffs are set in such a way that utilities can earn a rate of return on the fair market value of its assets (e.g., 12%). Thus, suppose that B , is the rate base, then firms are allowed to adjust its prices so that it is guaranteed a revenue (usually net of operating expenses, depreciation expenses, and taxes) that is equal to $.12 * B$. Since 12%, the rate of return, is a given then the only way that a utility can justify increased rates is to manipulate B , the rate base. This can be done using accounting sleight of hand whereby an expense is capitalized thus inflating the value of the firm's asset base. Another practice is to include in the rate base certain investments which are not directly related to the service in question.

With these practices, it is evident why good regulatory capability is important. Of course, the solution is not to simply devote more resources to institution building (e.g., training of staff). We need to evaluate the success of such "investments" in the past to determine their effectiveness. Gavino (Ibid., 246) reports that the NTC has received a lot of assistance through foreign-assisted projects to build up its administrative capability but that the results of these efforts are not clear. The situation may be the same in other institutions.

Another means to improve regulation is to design schemes that have built-in incentives for firms to behave efficiently. Notice that under rate of return (or cost-of-service) regulation there is no incentive for the firm to cut costs since he is assured of earning specified rate of return. Under a high-powered scheme, the firm is the residual claimant of his efforts to be an efficient provider. Thus, an alternative to the cost-of-service regulation is to impose price caps wherein firms are allowed to increase its rates by a formula of $CPI-X$ where X is some measure of productivity expected from the industry. Under this scheme, a firm benefits from having a higher productivity relative to the predetermined level (it's allowed to raise price higher than the real increase in its cost) and is penalized if it falls short of expectation.

Note: Recently, concerns have been raised as to whether the 12% rate of return for public utilities is still reasonable. Given the developments in the regulatory literature, it would be best to elevate the discussion by looking at other regulatory regimes (e.g., price-cap, revenue-cap, etc.) as an alternative to the current practice, which can easily be circumvented anyway. Regulation of private firms has two primary roles: to encourage investment and to promote efficiency. The policy discussions should be guided by these considerations and not be reduced to a simplistic debate over the appropriate rate of return.

¹⁷ With the basic telephone program. See Box 10.

In addition, there is the question of whether we are giving our regulators enough authority to carry out its function. There are two sides to this issue. On the one hand, unbridled discretionary behavior breeds graft and corruption and creates uncertainty for investment planning. On the other hand, too little room for discretion curtails the authority of regulators, which then diminishes their effectiveness. According to Paderanga,¹⁸ “decision making in government has become administratively hazardous and difficult.” He reveals that under the anti-graft law (R.A. 301, as amended), public officers are liable for “causing any undue injury to any party, including the Government, or giving any private party any unwarranted benefits, advantage or preference in the discharge of his official, administrative or judicial functions through manifest partiality, evident bad faith or gross inexcusable negligence (Sec 3.e).” Thus, as pointed out, a public official is liable if it is shown that the government or a third party suffered some loss, even if he himself did not profit from the decision. Paderanga argues that since the grounds for initiating anti-graft action are so broad then it is not surprising why officials at the undersecretary, assistant secretary and director levels are reluctant to make difficult decisions.

This situation may have important implications for the administrative viability of including pro-competitive provisions in the liberalization policy of the government, which we have identified earlier as a critical area for intervention. Note that between an incumbent and a new player, it is easier for an incumbent to *demonstrate actual losses* than it is for an entrant (who is a new player in that particular market) to *justify potential losses* from a regulatory decision that will affect current to future operations. Thus, following the path of minimum resistance would compel regulators to adopt policies that inflict the least harm on incumbents and to avoid decisions that directly

¹⁸ C. Paderanga, Jr. Building the Bureaucratic Capability in the Philippines, UP School of Economics Discussion Paper No. 9601 (March 1996).

or deliberately weaken their market power (e.g., by providing any assistance to new firms).

Finally, a fundamental issue needs to be addressed, namely: “Is the Philippines’ overall institutional environment conducive to *long-term* and *sustained* investments in infrastructure?” Again, recall that part of the fixed investments in infrastructure is sunk and that payback period is quite long. The time element alone exposes investors, whether public or private, to more uncertainty (i.e., higher risks) than a typical business investment. More important, however is the presence of substantial sunk costs that may give rise to potential ex-post commitment problems between contracting parties (e.g., the regulator and firms) which then influence ex-ante investment decision-making. Fear of expropriation,¹⁹ which can be fueled by actual or even perceived arbitrary behavior from regulatory and policy-making institutions, may lead to suboptimal level of investments (see Box 11) as well as affect the nature of the investment itself (e.g., with respect to the choice of technology).

¹⁹ Broadly defined (i.e., may not necessarily involve the confiscation of assets. For example, it can take the form of a reduction in the rate of return from an investment brought about by unanticipated change in the rules for tariff setting).

Box 11. Institutions Matter

In a comparative analysis of the regulation of private telecom utilities in five countries including the Philippines, it was found that the goodness of regulatory “fit” with the country’s political and judicial institutions was an important factor in determining the success of regulation in terms of encouraging investments and inducing efficient behavior from firms. Other findings include:

- A necessary condition for sustained and large-scale private investment in utilities is that administrative arbitrariness be restrainable.
- Complementary mechanisms must be available to restrain arbitrary administrative action. Such mechanisms include substantive restraint on the discretion of the regulator, formal or informal procedural constraints on changing the regulatory system and the institutions that enforce these substantive and procedural constraints.
- A country’s institutional endowment (which includes the legislative, executive, and judicial institutions, its administrative capabilities, customs and norms, and the character of the contending social interest, including the role of ideology) strongly affects its ability to put in place a credible regulatory system.

In their conclusion, Levy and Spiller rate the various countries in terms of the potential for attaining success in regulation given its institutional setting and unfortunately assign to the Philippines (along with another country) the fate of not being able “in the short term to develop a domestic regulatory system capable of sustaining long-term private participation and investment” (249). However, as critics of their paper are quick to point out, the good news is that institutions themselves are endogenous. The capability of a country’s institutions to provide credible commitments can be improved!

Sources: B. Levy and P.T. Spiller. “Regulation, Institutions, and Commitment in Telecommunications, A Comparative Analysis of Five Country Studies,” in Proceedings of the World Bank Annual Conference on Development Economics 1993 (Washington, D.C.: World Bank, 1994) and the comments of David E.M. Sappington on Levy and Spiller (1994) and Ashoka Mody on the same, Levy and Spiller (1994)

(Note: The Philippine background paper for the Levy & Spiller cross-country analysis was prepared by H. Esfahani, in Regulations, Institutions, and Economic Performance: The Political Economy of the Philippines’ Telecommunications Sector, Policy Research Working Paper no. 1294. (Washington D.C.: World Bank, 1994). He examined the historical performance of PLDT from 1928 (American Occupation) to 1992 (Period of Normalization). He detected a strong pattern of political business cycle in PLDT’s investment behavior – high when the political climate is perceived to be “friendly” and low when there is fear of expropriation thus supporting the thesis that contracting problems weaken the incentive to invest. For a brief survey of this and other competing views explaining PLDT’s pre-reform performance, see R. Serafica, “Was PLDT a Natural Monopoly,” in Telecommunications Policy Journal. Vol. 22, No. 2 (1998) forthcoming.

4.3 The Infrastructure Bureaucracy

The success of industry regulatory reforms also rest on the efficient planning, coordination and monitoring of infrastructure programs and projects. In the U.S. for example, one of the major problems they experienced with the deregulation of civil aviation was severe congestion of airport runways. This could have been anticipated by better planning of airport capacity and traffic control (e.g., more accurate forecasting of traffic volumes and patterns).²⁰ Likewise, when their power sector was restructured, a major consideration was that the introduction of competition should not create reliability problems in the production of electricity, which requires minute by minute coordination between generation and distribution facilities.²¹ Unbundling of the power sector requires a high level of cooperation among network components

The planning and coordination of infrastructure programs and projects is the responsibility of the government. Its job is also to monitor investments in the sector, avoid duplication, and identify gaps. It is the government that must set the direction for infrastructure development in the country and thus, pertinent agencies must be organized in such a way that facilitates strategic planning and coordination.

The Department of Transportation and Communications (DOTC) handles two infrastructure industries, which are not related except for certain instances when they can be considered as substitutes (e.g., paying your bill by phone). Sources of efficiencies (or cost savings) from the “joint production” of transportation and communications however are not obvious. In other words, if the DOTC were a firm, one would be hard pressed to explain its existence since there are no major economies of scope from the two operations, which are necessary for the viability of a multi-

²⁰ Although part of the solution lies in setting efficient prices for landing fees too, which is in turn a regulatory concern.

²¹ Analyses of the U.S. experience with the economic deregulation of these two sectors are discussed in *Brookings Papers on Economic Activity Microeconomics*, ed. M.N. Bailey and C. Winston. (1989)

product firm.²² Additionally, infrastructure work for roads and bridges is under the charge of another agency, the Department of Public Works and Highways (DPWH). The overlapping of responsibilities is best illustrated in the case of Metro Manila where DPWH is promoting an elevated expressway masterplan along many of the same corridors that are included in the DOTC's LRT masterplan.²³

Of course, it can be argued that being a non-firm (i.e., an organization that is not motivated by profit maximization), the structure of government agencies cannot be explained by economies of scope. But this begs the question of what the appropriate criteria for organizing the bureaucracy should be. It seems reasonable to expect that the production, so to speak, of infrastructure strategic plans, programs, and projects stands to benefit from the sharing of common inputs such as leadership or authority (for control and accountability), management (for coordination), and data (e.g., demand projections for planning). Additionally, the institutional knowledge built over the years from the concentration of related activities would help frame coherent policies and increases the probability of the continuity of action.

Policy-making and strategic planning for transportation and the road network including bridges must be within a single administrative jurisdiction²⁴ since these are highly related goods both from the demand side (exhibiting a high degree of substitutability) and from the production side (representing complementary components of one vast network that will take us from one point to another). As for communications, in view of the convergence of telecommunications, information technology, and broadcasting then the huge and complex task of planning and policy-

²² Another way to view it is in terms of cost complementarity (i.e., the cost of producing one service must go down as you produce more of the other to justify joint production).

²³ As Geoffrey K. Key of Halcrow Fox explained, Metro Manila is crying out for an integrated urban transport policy, which should also be integrated with land use planning.

²⁴ The reader is referred to Halcrow Fox, *Philippine Transport Strategy Study* (1997) for other recommendations regarding institutional reforms in the sector.

making for a 21st century information infrastructure should be enough responsibility for one agency to handle.²⁵

Another way to rationalize the infrastructure bureaucracy is to separate the policy, regulatory and implementation functions within each sector. Tables 22 to 25 show the existing institutional arrangements for each of the sectors, revealing the breadth of responsibilities of certain agencies.²⁶

Table 22. Power Sector

Sector	Policy	Regulation			Project Planning	Implementation	
		Entry	Operating Standards	Pricing		Construction	Operations/Maintenance
Private Power Utilities	DOE	DOE/ Congress	DOE	ERB	DOE/ Private	Private	Private
Cooperatives	DOE/ NEA	NEA	DOE/ NEA?	ERB	Private/ NEA	Cooperatives/ Private	Cooperatives

Note: ?= not clear

Source: Based on the NPC Restructuring and Privatization Study, F. Viray, Update on Restructuring the Power Industry and privatizing the NPC, paper presented at the Philippines National Infrastructure Forum, May 1997 NEDA, Philippine National Infrastructure Forum Policy Papers

Table 23. Telecommunications Sector

Sector	Policy	Regulation			Project Planning	Implementation	
		Entry	Operating Standards	Pricing		Construction	Operations/Maintenance
Private	DOTC	Congress NTC	NTC	NTC	Private	Private	Private
Public	DOTC	NTC	NTC	NTC	DOTC	TELOF/ Private	TELOF

Table 24. Water Sector

Sector	Policy	Regulation			Project Planning	Implementation	
		Entry	Operating Standards	Pricing		Construction	Operations/Maintenance
Water Districts	NWRB	LWUA	LWUA	LWUA	NWRB/ Private	Private	Private
Private Systems	NWRB	NWRB	NWRB	NWRB	Private	Private	Private
MWSS	NWRB	n/a	MWSS	NWRB/ MWSS Board	MWSS/ DPWH	Private	Private
LGU	LGU Policy	NWRB (?)	NWRB (?)	NWRB/ LGU	LGU	LGU	LGU/Private

Note: ?= not clear

Source: based on reports by NERA, A Philippine Water Regulatory Commission, World Bank, Oct. 1996 Binnie Thames Water, MWSS Operational Strengthening Study, June 1996

²⁵ The creation of a Department of Information Technology and Communications (DITC) has been suggested in various fora of telecoms and IT experts. See also Johnson M. Chua, *A Review of Telecommunication Policy: Keeping the Lines Open*, CRC Economic Policy Papers No. 1 (1997)

²⁶ This issue was pointed out by Halcrow Fox. We adopt their framework in describing the institutional arrangements in the power, telecom, and water sectors.

Table 25. Transportation Sector

Sub-Sector	Policy	Regulation			Project Planning	Implementation	
		Entry	Operating Standards	Pricing		Construction	Operations/Maintenance
Roads							
National Roads	DPWH NEDA	DPWH	DPWH	n/a	DPWH	DPWH/ Private	DPWH/ Private
Toll Roads	DPWH NEDA	DPWH/ TRB	DPWH/ TRB	TRB	DPWH/ Private	Private	Private
Local Roads	RDCs	LGUs	LGUs	n/a	LGUs	LGUs/ (private)	LGUs/ (private)
Inter-Urban Buses	(DOTC)	LTFRB	LTFRB/ LTO	LTFRB	Private	Private	Private
Trucks	(DOTC)	(LTFRB)	LTO	none	Private	Private	Private
Railways							
PNR	DOTC/ NEDA	DOTC/ Congress	PNR	PNR	DOTC/ PNR	PNR/ Private	PNR/ (Private)
Private	DOTC/ NEDA	DOTC/ Congress	(DOTC?)	(DOTC?)	(Private/ BCDA/ PEA?)	(Private/ BCDA)	(Private)
Aviation							
ATO Airports	DOTC/ ATO/ NEDA	DOTC/ ATO	ATO	ATO	ATO	ATO	ATO
Non-ATO Airports	DOTC/ ATO	ATO	ATO	-	Private	Private	Private
Other Airport Authorities (MIAA, MCIAA, etc.)	DOTC/ NEDA	Congress	ATO (airside facility)	Self	Self	Self/Private	Self/Private
Airlines	DOTC?	CAB	ATO	CAB	Private	Private	Private
Maritime							
PPA Ports	PPA/ NEDA	PPA	PPA	PPA	PPA	PPA	PPA
Non-PPA (e.g. Feeder Ports)	DOTC/ PPA	PPA	PPA	PPA/ LGUs	DOTC	DOTC	LGUs
Other Port Authorities (CPA, BCDA, etc.)	DOTC/ NEDA	DOTC/ Congress	Self	Self	Self	Self/ Private	Self/ Private
Private Ports	PPA	PPA	PPA	PPA	Private	Private	Private
Shipping	DOTC/ MARINA	MARINA	MARINA/ PCG	MARINA	Private	Private	Private

Source: Halcrow Fox, Philippine Transport Strategy Study, 1997

4.4 Financing of Infrastructure

The Philippine Infrastructure Privatization Program or the BOT is considered an important and timely innovation in solving the infrastructure bottleneck. Its adoption has produced a significant build up of infrastructure projects, which could not have otherwise been undertaken. Even LGUs have realized the benefits of this scheme as an alternative source of financing for their projects.

To encourage private sector participation in infrastructure projects, the government assumes a number of risks that the other party cannot or will not bear. Thus, although there is less direct pressure on public sector resources due to the private sector's increased share in infrastructure investments, there is nonetheless a concomitant rise in the government's guarantee exposure with every risk that it covers. This provision of guarantees creates a contingent liability, which the government must manage efficiently.

According to Llanto and Soriano²⁷ there is currently no comprehensive and detailed accounting and monitoring system for contingent liabilities that are brought about by the BOT schemes and its variants. Since the growth in contingent liabilities poses potential fiscal problems they recommend an appropriate and explicit accounting and budgeting for contingent liabilities. Other recommendations, which should help the government, include unbundling and the proper assignment of risks, the introduction of an exit strategy for guarantees, and the development of appropriate pricing of government guarantees.

Another concern that has been raised with respect to the BOT program has to do with the financing structure. BOT schemes and their variants are highly leveraged with a substantial foreign component. As shown in Table 26, about 73 % of the

²⁷ G. Llanto and C. Soriano, Government Guarantees in Infrastructure Projects: A Second, Third Look at the Policy, PIDS Policy Notes No.97-11, October 1997.

projects are financed from debt.²⁸ It should be noted that the average debt-equity ratio for International Finance Corporation infrastructure projects is about 58:42.²⁹

Table 26. Breakdown of Funding Sources of BOT/Other Similar Schemes
As of March 31, 1997

Project Type	Debt ^a	Equity ^b	
		Foreign	Local
W/ transfer arrangement (BOT)	75.4 %	21.3 %	3.2 %
W/o transfer arrangement	73.1	26.5	0.4
Independent Power Projects	66.7	33.3	0.0
Joint Venture Agreements	69.1	25.0	6.0
Overall	73.3	24.0	2.7

²⁸ This problem was raised by Gilbert Garchitorea of UA&P. He adds that a large portion of the debt in the financing package came from syndicated foreign loans (63%) and international bond issues (12%).

²⁹ Financing Private Infrastructure (World Bank, Washington D.C., 1996)

4.5 Rural Infrastructure

The provision of adequate infrastructure in rural areas has long been a neglected problem. Urban centers receive the bulk of infrastructure investments by both the public and private sector. In particular, infrastructure provision is concentrated in Metro Manila. (See Box 13)

Box 13. Evidence of Unequal Distribution of Infrastructure

Analysis of data for the 15 regions for the years 1992 to 1994 shows a pronounced disparity in the distribution of public Economic Infrastructure (This includes Transport, Communication, Energy Supply, Water Supply, and Irrigation--facilities that directly influence the productive capacity of resources in the regions). In 1992, an average region would have Economic Infrastructure (EI) only 31.67% that of NCR. Improvement in the next two years was quite nil. In 1994, NCR's mean EI was still 6.5 times greater than the worst equipped region (ARMM). The regions with higher EI (NCR, I, III, VII and IV) were also those with highest income and considerable industrial activities.

Among the components of EI, TRANSPORTATION and COMMUNICATIONS INFRASTRUCTURE INDICATORS showed the most skewed distribution. These two categories have the greatest influence on the development potential of a given space and both remained highly concentrated in NCR. Transport indicators revealed that the 14 other regions have infrastructure facilities below 25% that of NCR. The situation for communication infrastructure is even worse. The rest of the regions have less than 15% of what is available in NCR. However, there has been marked improvement in the dispersion of communication infrastructure. In 1992, the mean value of NCR was 138.31% higher than that of the worst equipped region (XII). In 1994, the dispersion statistic declined to 43.22%. Nonetheless, the inadequacy of communication infrastructure is still reflected in the low mean values. In 1994, an average region would only have communication facilities roughly 13.04% that of NCR.

WATER SUPPLY infrastructure indicators showed high concentration in regions within Luzon. The best equipped regions under this category were regions I, II, and III while the worst equipped regions were VIII, IX, and ARMM. ENERGY and IRRIGATION infrastructure indicators were the categories that showed the smallest disparities in allocation. For both categories, NCR was not included in the evaluation since a private corporation (MERALCO) provides its electrification facilities, while irrigation facilities are not applicable to the economic activities in the region. It can be observed that the absence of values for NCR resulted in higher mean values and less severe disparity for the rest of the regions. This may indicate that NCR is an "outlier" in terms of infrastructure provision. In the other economic infrastructure indicators, particularly transportation and communication, it captures the bulk of public investment while the rest have meager shares. Though irrigation registered the highest mean value among all economic indicators, it has exhibited a decline over the period. This marked decline may partly be explained by land reclassifications that took place within the three years.

Source: L. Q. Basilio and D. M. Gundaya, "The Impact of Collective Public Infrastructure on Regional Income Disparities" (undergraduate thesis, University of the Philippines, April 1997).

(Note: Due to lack of complete time-series data for CARAGA, only Regions I to 12, NCR, CAR, and ARMM were considered in the analysis.)

The disparity has obvious repercussions for the long term growth and development of the country. Ranis and Stewart (as cited in Bautista and Lamberte)³⁰ found that differences in infrastructure provision for electricity and road network between Taiwan and the Philippines help explain differences in rural industrialization experienced by the two countries. With respect to equity objectives, simulations done by Balisacan³¹ indicate that narrowing the infrastructure gap between the regions alleviate both the poverty levels and the poverty gap in the country.

Given the non-viability of private sector provision of infrastructure in the rural areas, it is clear that the responsibility falls squarely on the public sector (at least in the short-run). But who exactly in government should take care of rural infrastructure? As earlier mentioned, an economic characteristic of certain kinds of infrastructure is that it is location- or site-specific. In addition, infrastructure is jurisdiction-specific. Thus, Bird argues that “Which public infrastructure are built, where there are built, and how they are operated, maintained, and utilized invariably depends largely upon the way in which various public sector institutions involved in the process are organized or built.”³²

With the devolution of certain functions to the local governments, the delineation of responsibilities between the national and local governments becomes a little tricky. A guiding principle, which Bird suggests for local infrastructure, is that in general, “the central government does not know what to do, (while) the local

³⁰ G. Ranis and F. Stewart, “Rural Linkages in the Philippines and Taiwan,” in Macro-policies for Appropriate Technology in Developing Countries, ed. F. Stewart (Boulder: Westview Press). See also, G. Ranis and F. Stewart “Rural Non-agricultural Activities in Development. Theory and Applications,” in Journal of Development Economics (1993) 40:75-101. R. M. Bautista and M.M. Lamberte, “The Philippines: Economic Development and Prospects” in Asian-Pacific Economic Literature, vol. 10, no. 2, (Nov.1996)

³¹ A. Balisacan, Aspects of Employment Location, Regional Redistribution, and Poverty and Inequality in the Philippines, Discussion Paper No. 9508 University of the Philippines School of Economics (September 1995)

³² R. Bird, Decentralizing Infrastructure: For Good or for Ill? Policy Research Working Paper no. 1258 (Washington, DC: The World Bank, 1994), 6

government does not know how to do it.”³³ Given this information asymmetry, it is best to approach the provision of local infrastructure utilizing the comparative advantage of each branch of government. Albuero³⁴, for example, advocates devolution of authority to local governments to identify and administer regional infrastructure projects that suite the local needs and conditions. The national government agencies, on the other hand, usually have the advantage in terms of technical expertise, which they should share with local government units.

To be sure, the Code does provide for assistance by national agencies to local government units.³⁵ It is unclear however to what extent these mechanisms have been undertaken and if they have been effective. Unfortunately, there is a lack of documentation even in the popular media of success stories (if there are any) of national-local government partnerships in infrastructure provision compared to those involving private-public partnerships.³⁶ The role of regional development planning is also unclear. Soriano³⁷ asserts that planning at the regional level is still weak and thus, suggests that the enactment of the Code has left a vacuum between the central and local governments.

As suggested by Dr. Gaudioso Sosmeña, Jr. of LOGODEF, defining the role of local government in the infrastructure sector may be approached in a number of ways. One is through a **system of stratification** where the administrative, financial and technical competencies of local authorities can serve as a guide in determining

³³ Ibid, 28.

³⁴ Florian A. Albuero, “Policy Options Relating to Infrastructure, Transport and Energy” in *Poverty, Growth and the Fiscal Crisis*. (Makati: PIDS, 1993)

³⁵ Sec, 25 (b) and (c).

³⁶ See, for example, E. Pardo “Country Report of the Philippines,” in Royston, Brockman and Allen, Williams, ed., *Urban Infrastructure Finance*. (Asian Development Bank, 1996) on the experience of LGUs in tapping private capital.

³⁷ V. Soriano, “Regional Planning and Uneven Spatial Development: Assessing the Philippines Experience (1965-1992)”. M.A. Thesis, University of Hawaii at Manoa Department of Urban and Regional Planning (1996).

what complex infrastructure projects can be devolved to local authorities and what should not be decentralized. The other approach is through **incrementalism**. Through experiential learning, local authorities in the long run will learn how to manage infrastructure projects from the simple ones to the more complex. Another policy option is through **selective decentralization**. Under this alternative, responsibilities are decentralized only to those who are competent.

Needless to say, the need for greater spending on rural infrastructure remains and it should be addressed. Simply infusing more money however is not the solution. In this era of decentralization, the proper delineation of national-local government roles may prove to be a more critical factor in rural infrastructure development.

5.0 Conclusion

In this paper we presented a picture of the pre- and post-reform infrastructure environment. Although further restructuring of the various industries has yet to take place, already we have seen the benefits from the policy initiatives in terms of improvements in the quantity and quality of infrastructural services.

An assessment of the overall policy environment for infrastructure growth and development reveals that certain weak spots remain. We looked at five areas that need further improvements and identified policy steps that should be undertaken if we are to sustain the momentum from the reforms implemented.

In the area of competition policy, a more proactive stance must be taken to ensure a level playing field is in fact created. Simply allowing the entry of new players is not sufficient to ensure a competitive environment given the asymmetries that characterize infrastructure industries. As for the regulation of the various sectors, we recommend that the technical capabilities of our regulatory institutions be strengthened to deal effectively with the complex demands of a market-oriented policy regime. Indeed, the paradox of deregulation is such that rules of the game must first be in place before the market can be expected to function efficiently. The third recommendation borrows from the structure-conduct-performance paradigm of the industrial organization literature. It is aimed at improving the performance of government by restructuring the bureaucracy in a manner that facilitates the conduct of infrastructure strategic plans, programs, and projects.

These first two steps are very much related and their importance cannot be stressed enough. The combination of private monopoly power and a weak regulatory environment is the worst scenario that we can possibly find ourselves in. One has only to recall the situation in telephone service prior to liberalization to appreciate this

point. The third issue, which calls on the reorganization of lead agencies in such a way that facilitates coordination and strategic planning, is also related to our second recommendation. In effect, these two are complementary steps toward making the whole infrastructure bureaucracy as globally competitive as the industries they are charged to oversee.

Our fourth concern deals with fiscal policy as applied to infrastructure financing. We note that even as the private sector takes a bigger role in infrastructure development, the government must not be reckless in assuming and managing contingent liabilities. And lastly, we address the perennial problem of inadequate rural infrastructure and suggest that we work within the context of the current governance mechanism through the proper delineation of national-local government roles in order to achieve some headway.

Involving the private sector in the provision and development of infrastructure has been an emerging trend in the region. The public sector has neither the finances nor sufficient managerial and technical capability to be directly involved in meeting all current and future infrastructure needs. However, despite an expanded role of the private sector in infrastructure, the government's role remains to be important. The government is responsible for creating the policy and regulatory framework that will safeguard the public's interest while at the same time enhance the new alliance with the private sector. The policy direction of privatization, deregulation, and liberalization create a new operating environment for the infrastructure sectors which promises to be exciting as effective control of the agents (i.e., firms) shift from bureaucrats and politicians to stockholders and consumers.

Needless to say, there is still a long way to go before we can claim unqualified success. The more than half a century old Public Utilities Act must be examined to

make it more attuned to current realities. We must revisit the list of industries covered by the Act and see if the rationale for the conditions set therein are still relevant. There is, for example, confusion as to whether or not certain industries are still under return on rate base regulation. The suitability of the rule in itself must be considered in view of the incentive problems associated with it and the fact that various industries will have a different cost of capital depending on the risks inherent in each. In addition, we must go deeper into detail regulatory issues in order to achieve consistency with the overall policy framework. In particular, we must address a common practice of embedding equity-related goals (i.e., so-called missionary or universal service objectives) in the price structure of infrastructure services. This practice is not sustainable in a competitive environment, which requires that prices do not deviate from the cost. Moreover, the distortion in the tariff structure tends to misallocate resources, as end users do not face the real cost of their consumption decisions. What is needed is to craft explicit and transparent programs for supporting equity-related objectives, which are still consistent with the equally important objective of promoting efficiency, both productive and allocative. No doubt, each sector will experience difficulties as the transition from a dormant policy environment to a more open and dynamic one takes place. Such “growing pains” are to be expected and it is important not to lose sight of the goals set for each industry. Every decision made or action taken must be a step forward.

While it is beyond the scope of this paper, we cannot end this assessment without at least mentioning the single most important factor that can set back all our efforts in improving the state of infrastructure in the country. This, of course, is graft and corruption, which is generally known to be prevalent in infrastructure projects. Again, the economics of infrastructure can explain why this problem is more serious

than any monetary figure will bear. The existence of consumption externalities means that every peso that is diverted from infrastructure results in a loss of more than one peso worth of benefits to users in particular and society in general. There is much room for improvement in the systems and procedures involved in infrastructure projects (e.g., bidding, procurement, etc.) that should immediately be addressed. Our interviews also reveal that the budgeting process (both on the executive and legislative end) contribute to suboptimal allocation and utilization of infrastructure funds. Indeed, improving the policy environment will be useless if not accompanied with direct measures to curb practices that divert badly needed resources away from infrastructure programs that look good on paper. Solving one without addressing the other is like taking one step forward and two steps backward—definitely not the right move towards sustained growth and development of the Philippine economy beyond 2000.