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Trade, services and development: the regulatory and institutional challenges

Note by the UNCTAD secretariat

Executive Summary

Encompassing transport, telecommunications, energy, water and financial services, infrastructure services sectors constitute the backbone of the economy in all countries, and contribute directly and indirectly to growth, income generation and higher welfare. Infrastructure services sectors also assume an important social function, as access to basic services (including electricity and safe drinking water), financial inclusion and bridging of the digital divide, are catalytic to the achievement of the Millennium Development Goals. Maximizing the positive contributions of infrastructure services sectors towards pro-development outcomes requires good regulation and institutions. Experiences have revealed that no one-size-fits-all model exists to address various regulatory and institutional challenges. Regulatory parameters thus need to be tailored to specific sectoral and local conditions, as regulatory design and institutional arrangements matter greatly for sectoral performance.

Introduction

1. The Doha Mandate stresses that the development of and access to services, supported by adequate regulatory and institutional frameworks, are important for sound socioeconomic development. The objective of this multi-year expert meeting, approved by the Trade and Development Board at its fifty-sixth executive session on 3–4 December 2012, is to identify best-fit practices at the levels of policymaking, regulation and institutions, and trade negotiations that link services, trade and development in a balanced manner, including strengthening national services regulations without creating barriers to trade. This will be pursued by exchanging experiences and lessons learned, in order to assist developing countries in establishing and strengthening their regulatory and institutional frameworks and cooperative mechanisms with a view to enhancing their services supply and trade capacity, and the efficiency and competitiveness of the services sector.

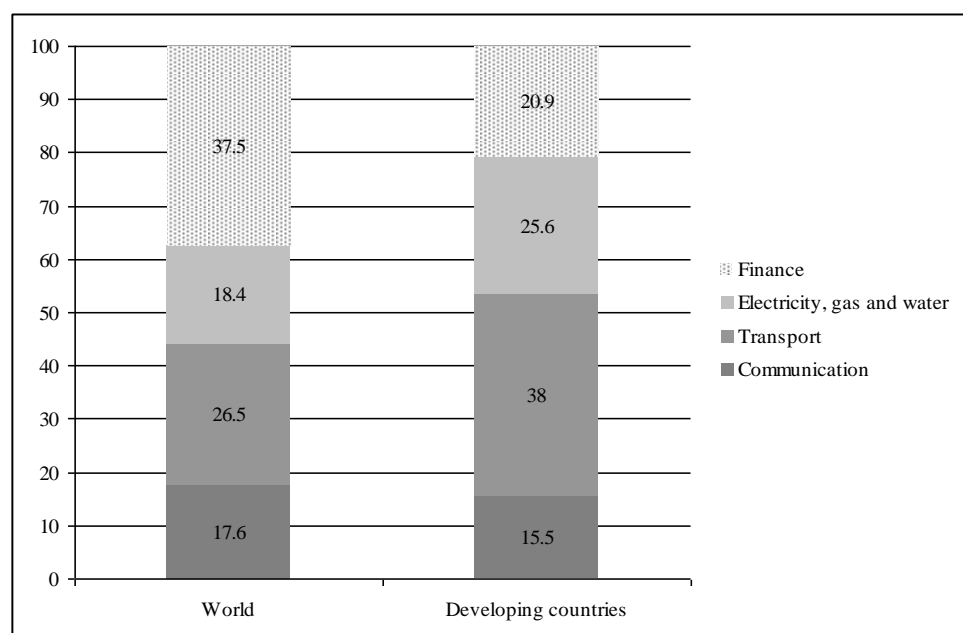
2. This note is prepared for the first session of the multi-year expert meeting, which will examine cases on building regulatory and institutional competence with a focus on factors leading to success and lessons learned so as to address the bottlenecks in supply capacity for building services in developing countries. Building upon the work and recommendations of the past multi-year expert meeting, particular attention will be devoted to some key regulatory and institutional challenges in infrastructure services sectors (ISS) as these play an enabling role in improving productivity and building the supply capacity of services in a country.

I. Infrastructure services sectors: an essential enabler in the modern economy

3. Encompassing transport, telecommunications, energy, water and financial services, ISS constitute the backbone of the economy in all countries, and contribute directly and indirectly to growth, income generation and higher welfare. ISS also assume an important social function, as access to basic services (including safe drinking water and electricity), financial inclusion and bridging of the digital divide, are catalytic to the achievement of the Millennium Development Goals.

4. Employing 10 per cent of the world's work force (291 million workers), ISS in 2010 represented a substantial part of national economies. The global ISS output was estimated at \$8.6 trillion in 2010, or some 14 per cent of global services outputs, of which developing countries as a group represent 31 per cent. While the relative importance of financial services as a share of gross domestic product (GDP) stands out among ISS subsectors globally (38 per cent), transport services, associated with the movement of goods and people, constituted the most important sector for developing countries (figure 1).

Figure 1
Composition of ISS output by subsector, 2010
 (Percentage)



Source: UNCTAD calculations based on UNCTADstat, International Labour Organization/Key Indicators of the Labour Market, Organization for Economic Cooperation and Development/Structural Analysis database and Eurostat.

5. The value of global ISS exports (not counting energy services) was \$1.4 trillion in 2011, having expanded at an annual average pace of 11 per cent since 2000. This represents 32 per cent of world services exports, or 6 per cent of world exports of goods and services. Developing countries expanded their share of global ISS exports from 22 per cent in 2000 to 28 per cent (or \$375 billion) in 2011. Asian countries accounted for most of this expansion (\$302 billion), representing 22 per cent of world ISS exports. Among ISS subcategories, developing countries captured the largest share in transportation services (33 per cent), as compared to 24 per cent in communication and 18 per cent in financial services.

6. With the rise of private investment in ISS, including on a cross-border scale, the value of foreign direct investment (FDI) flows directed at ISS also saw major growth. While global total FDI inflows rose tenfold to \$436 billion in 2008–2010 from 1990–1992, the share of ISS in total FDI inflows increased from 21 per cent to 30 per cent, 24 percentage points of which were however directed at financial services. During the same period, FDI inflows in ISS in developing countries outpaced the world average and increased from \$7 billion to \$97 billion. Developing countries have also become an important source of FDI outflows in ISS. They were responsible for \$185 billion of FDI outflows in 2008–2010, representing 11 per cent of the global total FDI outflows in these sectors.¹

7. Furthermore, along with business services, ISS play a critical role in the expansion and deepening of global value chains, and the expansion of trade associated with them.

¹ UNCTAD (2012), *World Investment Report 2012*.

They also constitute major tasks performed in global value chains, as the line between manufacturing and services is increasingly blurred. Estimates suggest that as intermediate inputs these services represent 73 per cent of the global services trade. This is in contrast to the intermediate goods trade that today stands at 55 per cent of the global non-fuel merchandise trade.

8. The quality of infrastructure and ISS has been found closely associated with economic competitiveness and income levels as ISS foster productivity growth in economic activities that use infrastructure-related services as inputs. UNCTAD studies show that ISS have a significant bearing on the productivity and trade of a country, including in the agriculture sector and other services sectors. For example, in Argentina,² the provision of road transport services has a positive and statistically significant effect on agricultural productivity. In Malawi, Uganda and Zambia financial credit access services, transport services, marketing services and information services provided through mobile phones determined to a large extent the gains of farmers from producing export crops destined to international markets and hence contributed to poverty reduction in rural areas. In Jamaica,³ the information and communication technology (ICT) sector started to develop in the 1990s. Supported by a solid and improving telecommunications infrastructure as a result of reform and liberalization implemented in the telecommunication sector in the late 1990s, Jamaica is increasingly recognized as a regional leader in ICT-enabled services that is tapping into the United States of America market. The success of ICT-enabled services has allowed the country to deliver higher value added services including finance, accounting, legal process outsourcing, research and development, and software development and testing.

9. Weak ISS, on the other hand, often hamper the development of other service sectors, including distribution, tourism and ICT services, especially in least developed countries (LDCs) and small and vulnerable economies. This has been identified in the UNCTAD Services Policy Reviews (SPRs) conducted thus far for developing countries and LDCs. For example, in Uganda,⁴ difficulties in accessing finance on account of high interest rates and unreliable power supply are common bottlenecks faced by distribution service providers. For services auxiliary to transportation the insufficiency of transportation networks and high transportation costs (particularly road) are a major concern. In Lesotho,⁵ improvement of ISS is considered to be vital for enhancing the provision of other services and attracting FDI into key services sectors in the country, such as tourism, financial services and profession medical services.

10. Nepal⁶ has sought to enable poor people to better participate in tourism development, especially village tourism. However, infrastructure limitations in rural regions, especially those linked to road networks, telecommunications, electricity supply and water treatment, have hindered the growth of village tourism. For LDCs and small vulnerable economies ISS play a particularly important role in leveraging their scarce economic resources.⁷ As they often seek to develop the tourism industry, deficiencies in tourism infrastructure, such as roads and rail networks, water, energy (e.g., electricity, gas) and telecommunications, result in higher transport costs and poor quality of tourism services, which preclude forward and backward linkages with other economic sectors. For economies that heavily depend on remittances for external revenues, the development of

² UNCTAD/DITC/TNCD/2010/5.

³ UNCTAD (forthcoming). Developing a trade policy framework for Jamaica.

⁴ UNCTAD (forthcoming). Services policy review of Uganda.

⁵ UNCTAD/DITC/TNCD/2012/1 (forthcoming).

⁶ UNCTAD/DITC/TNCD/2010/3.

⁷ UNCTAD/DITC/TNCD/2011/1.

financial services and financial inclusion plays a pivotal role as the high costs of transfer owing to underdeveloped financial systems has discouraged the formalization of remittance flows and channelling them into productive purposes through the banking system.

11. Improving ISS to enhance their linkages with primary and secondary sectors as well as linkage with other services sectors can be a very effective component of a comprehensive development strategy. To that end, the ISS regulatory environment must be supportive. Strengthening regulatory and institutional capacity in ISS is imperative for developing countries and LDCs. The importance of sound regulatory frameworks was demonstrated in a series of regulatory failures that compromised the provision of basic infrastructure services (e.g., water, electricity, air transport) since the 1990s and of financial services, most recently in 2008.

II. Key regulatory and institutional challenges

12. While the traditional case for regulation remains valid, the context surrounding sectors has evolved. Regulators today find themselves in a more diverse economic, regulatory and ownership environment. As privatization and public–private partnerships (PPPs) have yielded mixed results, the State continues to maintain substantial stakes in the provision of ISS including through State-owned enterprises (SOEs). Such a diverse ownership structure has highlighted the importance of increased diversity in regulatory approaches to ensure the good performance of ISS operators. In particular, improving the governance of PPPs and SOEs has increasingly become the focus of regulatory efforts. At the same time, ensuring universal access as well as attracting and sustaining investment in ISS, particularly in energy, transport and water, continue to pose serious challenges for developing countries and LDCs.

13. The objectives of regulation have also become multifaceted. Adapting regulations to evolving market structures, technological changes and new policy priorities has become a major regulatory agenda. New policy imperatives have been added to the list of regulatory objectives, such as promoting innovation, environmental sustainability and improved services quality. In energy and transport services, Governments are giving increasing attention to reducing carbon dioxide emissions and meeting the Rio+20 goal of sustainable development through an increased use of renewable energy sources. Regulators of telecommunication and ICT services face the challenge of continuously assessing and adapting regulations to exponential technological advances and new services to meet the divergent needs of stakeholders.

14. Experiences have revealed that no one-size-fits-all model exists to address the various regulatory and institutional challenges, and regulatory reform is an incremental process in the search for best practices and best-fit regulatory and institutional frameworks. Various regulatory parameters thus need to be tailored to specific sectoral and local conditions, as regulatory design and institutional arrangements matter greatly for sectoral performance.

A. Attracting and sustaining investment

15. Since many ISS subsectors, especially energy, are capital intensive, they require heavy investment in physical networks and essential facilities. Investment in ISS generally creates positive externalities, generating greater marginal social benefits than marginal private costs. In the absence of proper public policies, markets tend to underinvest in infrastructure. The global investment gap in ISS was estimated at 1.7 per cent of global GDP or \$1 trillion in 2009, as compared to the estimated annual investment requirement of

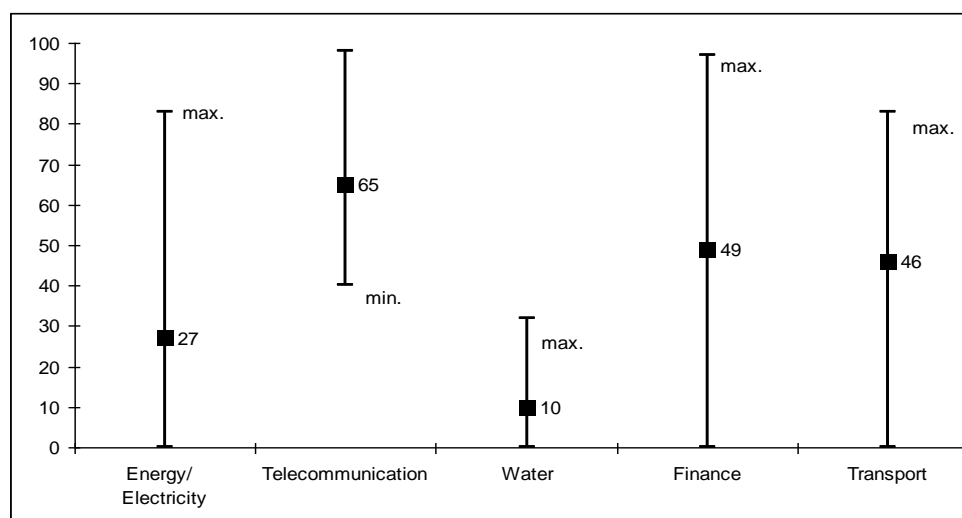
3 per cent over the next decade. For developing countries, the gap is larger. Estimates place their current infrastructure investment between 3 and 4.5 per cent of GDP, insufficient to meet the estimated annual investment needs of 6.6 per cent. Infrastructure investment is provided essentially by the public sector. Some 70 per cent of financing is provided publicly, and 20 per cent comes from private investors. As recent fiscal constraints have further accentuated a widening investment gap, private investment, including cross-border investment, has become an important mode of financing.

16. The introduction of private investment in ISS was made possible only after the privatization and liberalization of vertically integrated network industries, including through unbundling, had been undertaken. Sustaining such investment depends on setting up a full-fledged regulatory system. For instance, the Republic of Korea started regulatory reforms in the 1990s to attract private investment into electricity generation. This necessitated unbundling generation from distribution and the creation of six generation companies which were later separated from the incumbent State monopoly (Korea Electric Power Corporation). New licences were issued for qualified private generators to compete in the wholesale market and applying the marginal system price across the board created an incentive for generation companies to reduce production costs and make profits. Consequently, the share of private generation capacity in national total capacity is expected to increase to 16 per cent in 2014, from 6 per cent in 2005.

17. Foreign investment in ISS has been generally welcomed. Following its first survey in 2009, UNCTAD conducted a second survey of ISS regulators in late 2010 focusing on trade-related aspects of ISS (e.g., market access for foreign services suppliers including through FDI). Of a total of 250 questionnaires sent, 102 responses were received from 38 countries, including 26 developing and 9 developed countries. The results show that ISS are in general open to foreign entries. Telecommunication emerges as the most open of five sectors, followed by transport and finance. Water stands out as the sector least open to foreign competition with 25 per cent of the respondents reporting market entry prohibition against foreign services suppliers.

18. Foreign services suppliers retain a varying degree of market share across sectors (figure 2). Most notably, telecommunication registers the highest average market share of foreign companies (65 per cent), followed by financial and transport services. Furthermore, in the telecommunications sector, which is the most liberalized sector, none of the regulators responding to the question of market share reported less than a 40 per cent market share for foreign companies while in other sectors this share could fall to 0 per cent. Water again stands out, showing the lowest share of foreign suppliers (10 per cent). Despite the overall liberal regulatory picture, over one-fourth of regulators impose some restrictions on the acquisition of domestic operators by foreigners. A few regulators reported the existence of preset quantitative limits on the share of foreign ownership. Other national authorities opted to maintain discretionary approval on significant asset purchases by foreigners as a safeguard against an unforeseen influx of foreign companies. These measures appear aimed at preempting the potential risk of foreign dominance and preserving the flexibility of implementing public policies.

Figure 2
Distribution of market shares of foreign suppliers by sector
 (Percentage)



Source: UNCTAD (forthcoming). Report on the second UNCTAD survey of infrastructure services regulations.

Note: "Min." refers to the minimum observed market share of foreign suppliers in responding countries; "max." refers to the maximum observed market share of foreign suppliers in responding countries. The percentage figure refers to the average observed market share of foreign suppliers in responding countries.

19. PPPs have risen in prominence in the recent past, driven by the desire of governments and the public sector to bring innovative technical and managerial solutions to traditional public procurement methods without changing ownership. They are defined as a long-term contractual relationship between a public authority and a private partner (or a consortium of firms) for the construction and operation of infrastructure and infrastructure services, including in transport (roads, rail networks, air traffic control systems and related services), energy (power generation and supply) and water and sanitation plants. The arrangement allows the use of private sector management techniques and know-how to lower costs and improve services quality. PPPs can be particularly attractive to governments in raising private resources to support growing infrastructure investment needs without immediately increasing government liabilities.

Box 1. Public-private partnerships in Cambodia's water services sector

Cambodia has resorted to PPPs in an attempt to promote efficiency and increasing access to water services, particularly for the poor. Since 2003, the Ministry of Industry, Mines, and Energy, Cambodia has used design-build-operate (DBO) or design-build-and-lease (DBL) contracts to recruit local private operators. Although the DBO model includes an output-based aid fund to subsidize investments, the DBL model was designed to recover investment costs through the tariffs paid by users. DBO and DBL contracts were chosen to enhance technical and financial sustainability. The Government required local private operators to prepare final designs in consultation with users, taking into account their willingness and ability to pay, and to enhance technical sustainability by requiring that the contractor that designs and constructs the water system operate and maintain it over a 15-year period. The Government focused on providing financial inputs to create a publicly financed but privately managed system. The Ministry played a central role in the

recruitment of local private operators, their supervision and financing. By mid-2005, four DBO contracts for a projected 7,875 connections had been awarded to local private operators. The programme managed to increase access to safe water in both urban and rural areas.

Sources: Triche T, Requena S and Kariuki M (2006). Engaging local private operators in water supply and sanitation services: Initial lessons from the emerging experience in Cambodia, Colombia, Paraguay, the Philippines and Uganda. Working note no. 12. World Bank, Washington, D.C.; UNICEF (2009). *Status and Trends: Drinking Water and Sanitation in East Asia and the Pacific*. Bangkok.

20. Such beneficial effects of PPP are however far from guaranteed, and success largely depends on the capacities of private partners and public authorities to effectively manage partnerships, including by adequately designing, negotiating, implementing and monitoring the contractual relationships. Long-term contracts have proved to be unsuitable for sectors where the users' needs and technology change rapidly as changes are costly to renegotiate. Accordingly, the telecommunications sector has been found less fit to PPPs owing to unpredictable technological changes while transport and energy have been found more amenable to PPPs owing to their relatively stable demand. Another challenge is to pre-empt and manage possible opportunistic behaviour of private partners. Contracts can be built to pre-empt such opportunistic behaviour by specifying, inter alia, allowable debt and conditions to reopen negotiations. Regulatory capture may occur as private operators seek to influence regulation in their favour, but PPPs may lead to underinvestment if private partners find a risk of regulatory expropriation of their investments. For developing countries, financial guarantees to ensure credibility and financial sustainability for private partners also remain a serious challenge to successful PPPs in ISS.

Box 2. Addressing financial guarantees in public-private partnerships

Infrastructure projects in developing countries and LDCs often require renegotiation over the life cycle of a project. This is because some sovereign and project risks are enormous and government guarantees cannot be relied upon by the private sector. In response, the Asian Development Bank (ADB) – in order to mobilize private resources for infrastructure development in countries where infrastructure demands are immense and the public sector alone cannot bridge the financing and efficiency gap – has provided the Partial Credit Guarantee (PCG) to cover commercial and project risks and the Political Risk Guarantee (PRG) to cover specifically defined sovereign or political risks. PCG has been applied in the Power Sector Restructuring Programme in the Philippines. With PCG, the Power Sector Assets and Liabilities Management Corporation was able to borrow at significantly more favourable terms to meet cash flow requirements during the initial stage of privatization. PRG was employed in the combined cycle power station at Phu My in Viet Nam. This was the first PRG in which the ADB acted as guarantor of the borrower, Mekong Energy Company Limited, against breach of contracts, confiscation, expropriation and nationalization, currency inconvertibility and non-transferability of political violence. With these guarantees, the host Government and project lenders could be reassured through ADB involvement to ensure and support the technical and financial viability of the project.

Source: UNCTAD/DITC/TNCD/2010/4/Vol.I.

21. Attracting greater private and public funds to finance infrastructure projects including through innovative funding mechanisms, has attracted increased attention. While direct debt finance (loans) traditionally constitutes the major financing method for infrastructure investment (usually 70-90 per cent) in PPP projects, there continues to be a

significant lack of private and public funds to finance rapidly growing infrastructure needs, particularly in developing countries. Some projects such as small-scale infrastructure projects (e.g., local feeder roads), suffering from low credit-worthiness and thus unable to access debt financing, have faced challenges in attracting long-term funding. These infrastructure investments are important and are expected to yield low but stable returns over a long period of time. In this context, pooled project finance mechanisms (e.g., infrastructure fund, project bond) have emerged as a new way of attracting long-term public and private funding from various institutional investors, including pension funds, seeking long-term investment opportunities. Where well-diversified financial markets exist, the subsovereign bond market has been used to attract portfolio capitals.

22. After many liberalization episodes, today ownership structure is diverse across countries and markets, and SOEs remain a valid option, particularly in developing countries where private capacities tend to be underdeveloped. The quality of regulations and institutional capacities, rather than ownership, matter more as determinants of ISS performance. Even in the telecommunications sector where private participation is relatively advanced, the main fixed-line incumbents tend to be State-owned in nearly half of developing countries (except Latin America) and transition economies. Business relationships can be established between SOEs and foreign services providers, for example, through joint ventures. When such relationships are well maintained, this approach tends to be mutually beneficial and also benefits the development of the given infrastructure sector.

Box 3. State-owned enterprises in telecommunications in Viet Nam

Until the mid-1990s, the State-owned Viet Nam Post and Telecommunications Corporation, associated with the Ministry of Post, Telecommunications and Information Technology, operated in a monopolistic market. In 1996, the process to promote limited internal competition started with licences issued to several SOEs. As a result, the telecommunications sector has several SOEs, usually acting in cooperation with foreign transnational corporations (e.g. joint ventures) in a moderately competitive market. The Ministry reviews foreign purchase agreements and network structures and issues operating licences. In 2002, further reforms were made to establish a competitive market by categorizing telecommunications enterprises as network infrastructure providers or service providers and mandating the set-up of an open interconnection regime. Network infrastructure providers, which are permitted to supply all types of telecommunications services, must be State-owned. Consequently, while the market retained a strong oligopolistic structure, more open competition eventually emerged in some subsectors (such as advanced wireless services). In 2011, sectoral regulatory functions were transferred to a separate autonomous agency. The results of reform are impressive. The Vietnamese telecommunications sector is among the world's fastest growing, with 127 million mobile phone owners, 10 million landline subscribers and 31 million Internet users in 2011.

Source: Viet Nam Telecom – Market Updates (2012). Available at <http://www.vietnam-telecomp.com/VNC13/Main/lang-eng/ShowUpdate.aspx#news53> (accessed: 14 January 2013) and International Telecommunications Union – Regulating in a broadband world (2012). Available at <https://itunews.itu.int/En/2604-Regulating-in-a-broadband-world.note.aspx> (accessed: 14 January 2013).

23. Cross-border externalities in infrastructure investments also lead to suboptimal levels of investment in physical infrastructure capacities across national economies. Regional integration has provided a platform for regional cooperation among neighbouring countries in building and developing common infrastructure networks, and for policy and regulatory harmonization. Regional cooperation schemes have allowed parties to realize

economies of scale and share the fixed costs and cross-border optimization of investment. Recent salient examples include European energy reform to complete the single internal energy market by 2014 in the European Union, a regional coordination mechanism among the Gulf Cooperation Council's members to establish common infrastructure projects, such as those in electric grid interconnection, and the Association of Southeast Asian Nations' cross-border road transport cooperation to reduce the cost of moving goods within the region.

B. Benchmarking performance

24. Performance benchmarking was pioneered by regulators in some developed countries, such as in the electricity industry in the United Kingdom of Great Britain and Northern Ireland. With the increasing adoption of incentive regulation aimed at providing incentives for firms to reduce costs, innovate, improve service quality and pass efficiency gains on to consumers, the use of performance benchmarking in ISS has become prominent. Performance benchmarking functions as a tool to overcome information asymmetries for the regulators. This is done by setting performance indicators based on the potential performance that allow regulators to compare a measure of actual performance against a benchmark. It also helps regulators to effectively monitor and compare performance, set targets, detect inefficiencies and identify best practices. By setting performance targets, regulators are more equipped to extract information on the performance of providers and hold them accountable for their performance.

25. A variety of mechanisms has been applied. For instance, the electricity regulator of the State of Orissa in India uses a rate of return-based reward system in a targeted incentive scheme. Utilities are rewarded with a one percentage point rate of return above the benchmark level for each per cent in transmission and distribution losses reduced below a certain level. This approach overcomes the weakness of traditional rate-of-return regulation which has been found to create perverse incentives for companies to maintain high profits and not enhance operational efficiency, as prices were set to cover firms' capital and operating costs and an agreed fair return on their investment. Regulators in Chile and Spain use theoretical or model firms in benchmarking distribution utilities. Model firms are designed to represent efficient utilities that serve as a benchmark. This approach attempts to reduce the need for cost information from utilities by constructing models of efficient firms.

Box 4. Performance benchmarking in the United Kingdom electricity sector

The United Kingdom privatized its electricity sector in 1990. The reform subsequently unbundled generation, transmission, distribution and retail activities in the sector, established private providers and generally established a competitive system that fostered new entries into the market. Initially, performance in the reformed sector decreased, as manifested by increasing prices and higher profits for providers. This was seen as the result of inexperienced regulators setting less stringent price controls. This issue was addressed by subsequent regulatory measures and by 2005 providers achieved significant efficiency improvements, which benefited consumers. Currently, the regulation model consists of a hybrid of incentive schemes. Operating expenditures, capital expenditures and quality of service are incentivized separately. Providers' controllable operating expenditures are incentivized by benchmarking these against an efficient frontier consisting of the best practice in the sector. This requires providers to close a specific proportion of their performance gap relative to the frontier to meet general efficiency improvement targets. However, the separate treatment of operating expenditures, capital expenditures and service quality allowed for distorted incentives that sometimes led providers to adopt an inefficient output mix. For example, a firm could receive greater

benefits from decreasing operating expenditures than from an equal amount of capital expenditures reduction, producing a negative effect on the quality of infrastructure and service provision. To combat the remaining difficulties, initiatives have been taken to increase measurement accuracy and introduce further incentive regulation for quality of service. Although the United Kingdom experience can be considered a success, some challenges have been identified, such as delays and administrative complications owing to the high information requirement for setting benchmarks and appropriate performance evaluation, the strategic behaviour of providers and measurement accuracy of service quality measurements.

Source: Jamasb T and Pollitt M (2007). Incentive Regulation of Electricity Distribution Networks: Lessons of Experience from Britain. Cambridge Working Papers in Economics. University of Cambridge.

26. Different performance-benchmarking methods have been used. The “frontier method” evaluates a providers’ performance relative to best (frontier) performance in the market. Companies are judged for improvements against the best-performing market participant. However, providers operating at the frontier may be operating at the short-term, non-sustainable frontier (which may entail long-term quality deterioration). The method also requires a relatively large sample of market participants. The “competitive market standard” or “average benchmarking” process measures providers’ performance relative to the average performance in the market. This has the advantage of measuring actual performance improvements vis-à-vis average participants. “International benchmarking” compares the performance of the domestic industry with that of foreign industries, particularly when large samples are lacking. The comparability and quality of data is a major concern.

27. The application of performance benchmarking in developing countries and LDCs is becoming increasingly common. Performance benchmarking is a delicate and complex process. Crafting appropriate benchmarks requires sufficient understanding of the market and future prospects, the compatibility of targets with general policy objectives and the reliability of association between short-term measurable standards and long-term desired outcomes. For example, measuring performance solely based on cost may significantly underestimate service quality and other social policy objectives (i.e. universal access). An increase in the quality of services implies an increase in costs. Hence concern arises that excessive regulatory focus on cost efficiency may result in a reduced level of quality of services. Indeed, incentive regulation in terms of quality of service has received less attention than cost efficiency. The potential trade-off between cost savings and quality of service raises an important regulatory challenge.

Box 5. Performance benchmarking in water services in Peru

Peru’s water sector was characterized by serious challenges such as inadequate system maintenance, low metering rates and low water quality. In 1992, the Government established the regulator Superintendencia Nacional de Servicios de Saneamiento (SUNASS) in order to effectively monitor monopoly suppliers and improve firm performance. SUNASS introduced performance-based incentives such as rewards and penalties, along with open competition. It was funded by a 1 per cent surcharge on the price charged to consumers. For this purpose, SUNASS developed a management indicators system to collect data from utilities and to compare service providers. The indicators encompassed quality of service (compliance with the residual chlorine rule and continuity of service); coverage of service attained; management efficiency (operating efficiency); and managerial finance efficiency (i.e. the ratio of costs to revenue). SUNASS’s regulation has been found to be moderately successful. Only modest increases in productivity growth were

observed, which often came with declining services quality. This is seen as a result of the lack of an appropriate reward or penalty system for service quality. Without incentives to improve quality, providers seem to have focused mainly on reducing cost to the detriment of service quality.

Source: Corton LM (2003). Benchmarking in the Latin American water sector: the case of Peru. Utilities Policy. 11 (133–142).

28. Effective implementation of performance benchmarking necessitates solid institutional and regulatory capacities with a high degree of accountability and credibility. A lack of credibility could disincentivize companies from submitting sensitive business information. The establishment of independent regulatory authorities has been found useful in this respect. Major challenges also relate to the availability, quality and treatment of national and international data as a basis to construct appropriate benchmarks, i.e. data collection, establishing adequate benchmarking methodologies and evaluation. Heavy data and analytical requirements could cause administrative delays and complications. If inadequately designed, performance-benchmarking systems can be undermined by the strategic behaviour of suppliers. Such risks could be mitigated, inter alia, by increasing the reliability of information through audits, improving data accuracy and data collection procedures.

C. Stimulating innovation

29. Given the role of innovation in developing ISS and in adapting services to the changing needs of economies and consumers, a key function of regulation is to enable such innovation. Since innovation can significantly alter the way infrastructure services are provided, regulators need to be kept abreast of technological and market developments in order to continue to provide the adequate regulatory framework. Thus, regulation promotes innovation while it is also periodically amended due to innovations which have rendered it obsolete.

30. In the electricity sector, for instance, the need for regulation to assume this role is particularly high to meet the emerging regulatory objective of climate change mitigation and adaptation, and to correct an existing bias against renewable energy sources for electricity (RES-E). Among common regulatory measures used to promote the use of RES-E are feed-in tariffs, tendering systems and quota obligations based on tradable green certificates. A feed-in tariff determines a price-per-unit for electricity from renewable energy. The regulator guarantees the price for a certain duration while anticipating future cost reductions by applying decreasing tariffs. In tendering systems, or auctioning models, the regulator announces a fixed amount of capacity to be installed and awards contracts following a predefined bidding process, and offers winners a set of favourable investment conditions, including investment grants per installed kilowatt-hour. Regarded as the most efficient and most compatible with other policy objectives, quota obligations based on tradable green certificates create a parallel market among producers for renewable energy certificates that either allow for a certain amount of pollution or require the production of a certain amount of renewable energy.

31. Other approaches include research and development subsidies to decrease the cost of RES-E development projects and thus offset in full or in part competitive edge enjoyed by other electricity sources, and investment incentives that grant financial incentives to RES-E projects as a percentage over total costs or as a predefined benefit per installed kilowatt-hour.

Box 6. Renewable energy sources in Brazil's electricity sector

Brazil faced power shortages before 2002 and initiated reforms in the energy sector with an emphasis on RES-E generation. Two main schemes were introduced to increase the supply of RES-E. The Proinfa scheme, based on a feed-in tariff, was launched in 2002. It contracted out a defined amount of wind and biomass energy and small hydro-energy. Its objective was that the defined sources would reach 10 per cent of Brazil's annual electricity power consumption within 20 years. Each type of energy has different tariffs and quotas. The energy produced by participating plants was purchased by Eletrobras (a Government-owned company) through 20-year contracts. Apart from implementation difficulties, the scheme has been criticized for lacking incentives for energy and construction efficiency. The auction model scheme for long-term energy supply contracts was introduced in 2004 to reconcile risk reduction for new investors with efficient energy procurement for regulated users. A particular feature of this model is the use of exclusive auctions for RES-E projects that excluded polluting sources. The auction model is considered more successful than the Proinfa programme in promoting the development of new generation capacity through long-term contracts. Since 2005, the share of RES-E has increased. Wind power particularly has achieved competitiveness in relation to conventional energy sources through auctions.

Source: Battle C and Barroso LA (2011). Review of Support Schemes for Renewable Energy Sources in South America. Massachusetts Institute of Technology Center for Energy and Environmental Policy Research.

32. In Italy, the regulator has been successful in adapting its regulations to radical changes brought about by technological developments in smart electric systems. The regulator opted from the start to cooperate with academia and industry experts, as well as other technical bodies, in order to gain a strong understanding of the technical developments with a view to developing a regulatory approach for the integration of renewable energy sources into the grid. Consequently, Italy's high share of RES-E generation can supply over two-thirds of the total demand, beyond the European average. Two measures considered to have contributed to this outcome are noteworthy. An initiative with the largest distribution company, Enel Distribuzione, to fully deploy smart meters at a low voltage level resulted in the installation of over 33 million smart meters. The mandatory introduction of a time-of-use electricity price for all low voltage customers, with a view to exploiting the value of the smart metering system, allows small users to be exposed to cost-reflective prices. This provides them with information on the economic value of the choices they make about electricity use.⁸

33. It is noteworthy that regulation not only has a role in allowing space for innovation but also in promoting the diffusion of innovations. For example, in broadband services in telecommunications, competition-enhancing regulation is used to ensure that innovation spreads to the highest number of consumers. Many countries have determined that given the importance of broadband infrastructure, it is of public interest to have the broadest diffusion possible. Research finds that one regulatory option (inter-platform competition) actually acted as an impediment to broadband adoption whilst another (intra-platform competition, whether in the form of full or retail unbundling)⁹ contributed to broadband

⁸ Lo Schiavo M et al. (2011). "Changing the regulation for regulating the change, innovation-driven regulatory developments in Italy: smart grids, smart metering and e-mobility", Centre for Research on Energy and Environmental Economics and Policy (IEFE) Working Paper No. 46. Milan.

⁹ Essentially this implies service competition on the same network facility promoted through open

diffusion.¹⁰ While competition generally drives diffusion of innovation in the telecommunications industry, evidence with respect to broadband adoption is mixed, suggesting that the effect from services competition is more powerful than the effect of regulatory provisions aimed at inducing competitors to invest.

34. The regulation of innovation can be particularly challenging because it is difficult for regulators to predict when innovation sufficient to drive significant change will occur. In areas such as financial innovation, innovation can be considered a continuous and dynamic process in which new financial instruments are continually being developed. Regulatory choices must be under repeated review and regulators need to evolve with changes in the sector. Another main challenge for regulators is the need to balance incentives for innovation with consumer protection. As most vividly illustrated recently in the financial services sector, it became apparent that striking a balance between innovation and consumer protection could prove difficult even in the most advanced regulatory systems. It is widely recognized today that regulation should not impede innovation, but no markets or services should go unregulated or allow the circumvention of regulations.

D. Ensuring universal access

35. Universal access means access for all including marginalized poor population segments and those living in remote areas. Universal access to infrastructure services remains an important public policy objective for countries. Some 1.3 billion people were living without electricity in 2008. The electrification rate was only 31 per cent in sub-Saharan Africa. In 2010, 789 million people had no access to safe drinking water, and half the population in developing countries (2.5 billion) lacked access to improved sanitation facilities. While much progress has been made in mobile telephony, a global digital divide is apparent in the quantity and quality of broadband Internet access. Internet penetration levels in developing countries remained at 26 per cent by 2011 and below 15 per cent in sub-Saharan Africa. One billion people have no easy access to all-weather roads. Only half the global population has access to formal bank accounts, and 75 per cent of the world's poor are unbanked.

36. Universality is based on the principles of availability, access, affordability and adaptability. Regulatory measures are required to extend networks to the unconnected and make such services more affordable to those already connected. Such measures involve targeted consumer subsidies for the use of key infrastructure services, production and distribution subsidies and statutory universal services obligations (USOs) on services providers. Consumer subsidies have been provided through pricing and direct subsidies while universal access funds and USOs have been often used to expand networks. The first UNCTAD survey of infrastructure services regulators conducted in 2009 indicated that the majority of respondents did have a specific universal access policy.¹¹ USOs for some or all suppliers were the main approach used (72 per cent), followed by universal service fund and consumer subsidies. Setting clear and realistic obligations, securing adequate financing and effective implementation of universal access funds have been frequent challenges.

access provisions for the network infrastructure.

¹⁰ Gruber H and Koutroumpis P (2011). Procompetitive infrastructure sector regulation and diffusion of innovation: the case of broadband networks. Twenty-second European Regional Conference of the International Telecommunications Society, Budapest.

¹¹ UNCTAD/DITC/TNCD/2010/4/Vol.I.

Box 7. Universal Access in Electricity in the Republic of Korea

The Republic of Korea uses USOs on suppliers and consumer subsidies to improve universal access to electricity. Central and local governments, as well as a State-owned company, the Korea Electric Power Corporation, in charge of nationwide transmission and distribution are obliged to supply electricity to remote areas. Households in need of power supply apply to local governments which then report to the central Government through the State-owned company. Related expenses are included in the following year's national budget and shared among household applicants and central and local governments. At present, household applicants pay about \$200 for registration. The remaining expenses are shared between the central and local governments (75 per cent and 25 per cent respectively). When the Electricity Supply Promotion Law in Rural Areas was first introduced in 1965, the electricity supply ratio in rural areas was 12 per cent. By 1988, this ratio had dramatically increased to 99.9 per cent. At present, almost every area with a population of not less than five households is provided with electricity. The Republic of Korea also runs a subsidy programme designed to support low-income households to avoid suspended power service. Under the scheme, a small current-limiting device has been installed in each household to ensure continued provision of a minimum subsistence supply of up to about \$167 in the case of payment default.

Source: Ministry of Knowledge Economy of the Republic of Korea, Korea Energy Foundation.

37. Consumer cooperatives have been used in both developed and developing countries for the supply of electricity and water.¹² For example, Bolivia's second largest city, Santa Cruz, has a major consumer cooperative (Cooperativa de Servicios Publicos Santa Cruz Limitada, SAGUAPAC) run the water utility. Rated by the World Bank as one of the best managed utilities in Latin America, SAGUAPAC has managed to increase the population's access to water in its services area and improved water service quality. Its successful cooperative model enables it to isolate its decisions from political interference and maintain a strong customer-oriented focus. Three additional, more difficult to replicate factors have been also critical to its success: (a) a governance regime characterized by a particular layered electoral system that ensures a high level of representation of elected members and close scrutiny and monitoring of elections by members; (b) the continuity of its management with a corporate culture of service orientation; and (c) operating in an environment which has a population with a high degree of self-reliance and strong regional identity.

38. In financial services, the need to set equity as an explicit regulatory objective and to enhance financial inclusion has been emphasized since the crisis, including through universal service policies. In India, for instance, the number of branches that a bank may be licensed to open is linked to the number of branches that the bank opened in rural areas. Furthermore, public policies seek to target credits towards directly productive activities such as small and medium-sized enterprises, the agricultural sector, small and cheap housing projects, and infrastructure investments. Microfinance institutions and postal services also play a crucial role in expanding access to financial products for the poor and for small enterprises in developing countries.

¹² Ruiz-Mier F and van Ginneken M (2006). Consumer Cooperatives: an Alternative Institutional Model for Delivery of Urban Water Supply and Sanitation Services? Water supply and sanitation working note no. 5. World Bank. Washington, D.C.

Box 8. Financial inclusion and the role of the post office

Post offices have the world's largest physical network, with a total of 660,000 locations. In developing countries, there are twice as many post offices (500,000) as commercial bank branches (275,000). Some 80 per cent of post offices in sub-Saharan Africa are concentrated in small and medium-sized towns and rural areas where 83 per cent of the population lives. In contrast, banks focus on cities with denser populations perceived to be more interested in financial services. The experience of Brazil's Banco Postal provides an example of how post offices can fill the vacuum left by banks and provide financial services to the poor or disadvantaged population. Banco Postal has had a significant impact on financial inclusion in the country. Half of Banco Postal's total savings were held in 50 per cent of the poorest municipalities, which accounted for some 30 per cent of the population; 25 per cent of Banco Postal's loans and microloans were granted in 20 per cent of the poorest municipalities, where 10 per cent of the population lived. This means that savings in these communities have been redirected through small loans favouring local economic development. As illustrated by the fact that its more traditional postal business benefited with a 100 per cent increase in foot traffic in rural post offices where Banco Postal services were available, focusing on rural areas and small towns where formal banking is unavailable can be an appealing strategy for post offices.

Source: UNCTAD/DITC/TNCD/2011/8.

39. Technological developments, regulatory changes and new business models across traditional services borders have led to new ways of expanding access opportunities for some infrastructure services. Internet access including broadband is expanding, albeit more slowly in developing countries than in developed ones. Over 40 countries now include broadband Internet in their universal access agreements. Mobile telephony is now available to some 90 per cent of the global population and 85 per cent of rural inhabitants. Costs are much lower than extending the fixed line grid. The reform of licensing regimes with a focus on simplified authorization procedures, including for third generation (3G) services, contributed to the growth of mobile broadband penetration.

40. Access to mobile networks opens new avenues for previously relatively isolated populations to access information, markets and new services such as in finance, health, and education. For example, Kenya's mobile money operator has reached 70 per cent of the country's population and employs 37,000 salespersons to distribute its services. This greatly increases financial inclusion in Kenya. The growth possibilities of banking the unbanked will have positive sustainable development benefits, especially if properly managed under a stable policy framework.

E. Creating an enabling and coherent institutional framework

41. The unbundling of vertically integrated network services, including through privatization and liberalization, has necessitated the establishment of independent regulatory agencies (IRAs), i.e. independent of incumbent (public) monopolistic providers. IRAs embody the changing role of the State as the regulator of ISS. Several models for institutional arrangements exist (e.g. ministry, competition authorities, sectoral regulatory agencies). Since the 1990s, an increasing number of countries have established IRAs. By establishing IRAs, Governments have sought to signal their commitment to fair and equitable sectoral regulations free of external influences.

42. Research suggests that many IRAs have had positive results (more efficient and reliable services provision, lower tariffs and improved services coverage), particularly in

telecommunication. This suggests that institutional design depends on the sector's economic specificities and local conditions.

43. For IRAs, ensuring their independence has been found particularly important as a guarantee of credibility. Independence should not remain simply formal but be substantiated with the requisite legal and institutional legitimacy and authority, including a clearly delineated mandate and allocation of competence, and supported by human and financial resources. Specific institutional arrangements vary across sectors and countries. When regulators report to a ministry, they can exercise independence if their duties are specifically stated in law or they enjoy budgetary separation from the government. A question may arise as to whether sectoral industry development should fall within the competence of the regulator as some regulatory functions (e.g., the promotion of investments) directly support industrial development. For instance, as in many countries, the regulatory competence in energy sectors in Kyrgyzstan resides in a relevant ministry with responsibilities ranging from sectoral development to ordinary regulatory functions (e.g., licences, pricing).¹³

44. A longstanding question arising from establishing an enabling institutional arrangement for best-fit national regulatory frameworks relates to the relationship of sectoral regulators with competition authorities. This is because the monopolistic nature of services provision points to the continued tendency towards anti-competitive conduct by incumbent firms, including by denying third party access to networks. In many countries, sectoral regulators and competition authorities exist side by side. Where competition has been introduced through unbundling, privatization and liberalization, competition policy has become applicable to network industries. This has created challenges for the implementation of sectoral regulations and competition policies.

45. Given sectoral and local specificities, no one-size-fits-all solution has been found on the issue of overlapping jurisdictions. Several options for the possible allocation of competences can be identified. For instance, regulated ISS may be exempted altogether from national competition law. This approach would eliminate uncertainty arising from dual competencies. However, sectoral regulators may not be best positioned to tackle anti-competitive practices. Alternatively, when regulated ISS are covered by competition law, the competition agency's decisions in a regulated sector may be subjected to the review of the relevant sectoral regulator. This allows competition policy concerns to be addressed, but there is no guarantee that anti-competitive practices are effectively acted upon. A third approach is to subordinate a sectoral regulator's decisions on anti-competitive practices to that of the competition agency. As this gives primacy to tackling anti-competitive practice, the competition agency's decision may run counter to the broader socioeconomic objectives being pursued by sectoral regulators. Lastly, anti-competitive behaviour in a regulated sector can be made the sole responsibility of the competition agency while other aspects of firms' behaviour may remain under the competence of the sectoral regulator. This option can reduce regulatory uncertainty but the division of tasks may not be easy in practice.

III. Conclusion

46. ISS play a catalytic role in the overall economy, including by building the supply capacity of services in developing countries and LDCs, and significantly contribute to growth, income, employment and poverty reduction. Maximizing the positive contributions of ISS towards pro-development outcomes requires good regulation and institutions able to promote the domestic supply capacity as ISS performance is highly sensitive to regulations.

¹³ UNCTAD/DITC/TNCD/2010/2.

47. Sustaining investment in ISS depends on setting up full-fledged regulatory systems, and innovative funding mechanisms such as pooled project finance mechanism (e.g., infrastructure funds, project bonds) should be explored. Regional integration has provided a useful platform for cooperation among neighbouring countries to develop common infrastructure networks. Performance benchmarking based on a sufficient understanding of the market and future prospects, the compatibility of targets with general policy objectives and the reliability of association between short-term measurable standards and long-term desired outcomes can help regulators to effectively monitor and compare performance among ISS providers and identify best practices. In more diverse economic, regulatory and ownership environments, regulations should be adapted to evolving market structures, technological changes and new policy priorities. In particular, the relationship between innovation and regulation – inasmuch as regulation promotes innovation while regulation is also periodically amended due to innovations which have rendered it obsolete – demands significant attention. Universal access, a continuous challenge for developing countries and LDCs, could be addressed through a variety of means including subsidies, USOs and consumer cooperatives. Post offices can play an important role in promoting financial inclusion.

48. Regulatory reform is an incremental process in the search for best practices and best-fit regulatory and institutional frameworks, indicating the diversity of approaches and paths to attain the desired outcomes. Various regulatory parameters thus need to be tailored to specific sectoral and local conditions. There is also a need for Governments to be equipped with adequate institutional capacity and skills to regulate, monitor and enforce regulations, including through various partnerships and cooperative mechanisms.
