



# ENERGY SERVICES **TOOLKIT**







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## NOTES

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For further information on the Trade Negotiations and Commercial Diplomacy Branch and its activities, please contact:

Ms. Mina Mashayekhi  
Head  
Trade Negotiations and Commercial Diplomacy Branch  
Division of International Trade in Goods and Services, and Commodities  
Tel: +41 22 917 56 40  
Fax: +41 22 917 00 44  
[www.unctad.org/tradenegotiations](http://www.unctad.org/tradenegotiations)

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## ACRONYMS AND ABBREVIATIONS

BIT	Bilateral Investment Treaties
CFCIUS	Committee on Foreign Investment in the United States of America
FINSA	Foreign Investment and National Security Act of 2007
FTA	free trade agreements
GATT	General Agreement on Tariffs and Trade
GATS	General Agreement on Trade in Services
ICSID	International Centre for the Settlement of Investment Disputes
PPA	Power Purchase Agreement
SEB	State Electricity Board
SEA	Sustainable Energy Authority
SPP	small power producer
SOE	State-owned enterprises
T&D	Transmission and Distribution
TISA	Trade in Service Agreement
T-TIP	Transatlantic Trade and Investment Partnership
TPP	Trans-Pacific Partnership
UNCITRAL	United Nations Commission for International Trade Law
WTO	World Trade Organization

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INTRODUCTION



To the extent that any industry is central to the prosperity of economies and to social welfare, it is the energy industry, and particularly the electricity industry. The availability of electric supply is essential for both economic development and quality of life. It is also a critical requirement for human development. By its very nature, the energy services industry in general and the electricity industry is capital intensive, technologically sophisticated, and, in developing countries as well as in many developed ones, highly dependent on foreign trade, services, and investment. That dependence derives from, among other things, lack of sufficient domestic capital, lack of trained personnel, and the fact that manufacturing of needed technology and fuel is often located outside the national boundaries of most developing countries. Thus, the development of the electricity industry, whose purpose is focused on domestic needs,<sup>1</sup> is inextricably linked to the global flow of capital, equipment, fuels, and services. The result is that the regulatory regime designed to meet the requirements of the domestic market is inevitably compelled to interface with international trade and the rules surrounding it.

The energy services industry, like all network-dependent businesses (e.g., natural gas, water, and railroads), has elements that are monopolistic in nature and other aspects that are suitable for competition. Monopolistic aspects of the industry, which may vary from one jurisdiction to another, cannot simply be left to the market. Doing so would permit abuses of monopoly power, including extracting very high rents, tolerating unacceptably low levels of service quality and productivity, and precluding the evolution of viably competitive markets.

Thus, the centrality of electricity to the economy, combined with the unavoidable monopoly aspects of the industry<sup>2</sup>, invites some measure of State regulation. The question governments face is not whether to regulate, but how and how much to regulate.

In determining the scope of regulation, many policy concerns may come into play for developing countries. Expanding energy access is a central goal for many nations, in keeping with the United Nations' "Sustainable Energy for All" initiative, launched in 2011, which has as one of its goals to achieve energy access by 2030 to over than 1.2 billion people who endure energy poverty. ("Universal Energy Access" 2015) In addition, ensuring energy affordability, nurturing the domestic economy through development of local services, pricing or regulating externalities like

pollution, encouraging renewable energy, developing domestic natural resources, and insulating the domestic energy system from external shocks may be among many policy concerns developing countries wish to address with respect to energy services.

Complicating the regulatory decisions developing countries must make are the international dimensions of the energy services markets. To the extent that the provision of energy services requires both significant capital investment and access to global technological and human expertise, countries must grapple with the intersection of necessary regulation and international financial, service, capital, and goods transactions, as well as with the specific challenges of the international flow of electricity, when applicable. While energy regulation and trade rules are not inherently in conflict, the relationship between them is a delicate balance between maintaining the integrity and coherence of both without doing damage to either.

Current trade rules and agreements, this paper argues, leave countries considerable flexibility in the energy services sector with respect to regulatory options. And some non-multilateral trade agreements are moving towards more liberal approaches, as discussed below. However, there is possible movement towards more restrictive trade regulations coming from a number of different directions. Some new non-multilateral trade agreements arrangements have as one of their goals to establish regulatory coherence behind the border, a deeper integration and harmonization of regulatory regimes that could pose a challenge for developing economies that are still establishing their regulatory framework by reducing the policy space available to them.

Accordingly, this is an important moment for increased clarity in thinking about how trade rules can help or hinder necessary regulation in the energy services sector. This report is designed to help readers develop an analytical "toolkit" that they can apply to questions of regulation and trade with respect to energy services, in order to analyze that interface, cast light on potential pitfalls, and articulate a vision of how conflicts might best be dealt with.

In thinking about the interface between trade policy and regulatory theory and practice, it is important to understand that some aspects of regulation are more critical than others. For the purposes of this paper, the authors have devised a spectrum of regulatory measures based on their criticality to regulation. The

spectrum can be used to guide for analysis of the relationship between trade agreements and regulation, and will enable users to distinguish between areas of state regulatory authority which are essential and must be protected and areas in which states may have more flexibility to make trade-offs, and may sometimes choose to surrender policy space in the interest of international trade. Accordingly, this paper will examine the following three levels of regulatory activity with respect to electricity services and will assess how each might interface with applicable trade rules and agreements (Figure 1):

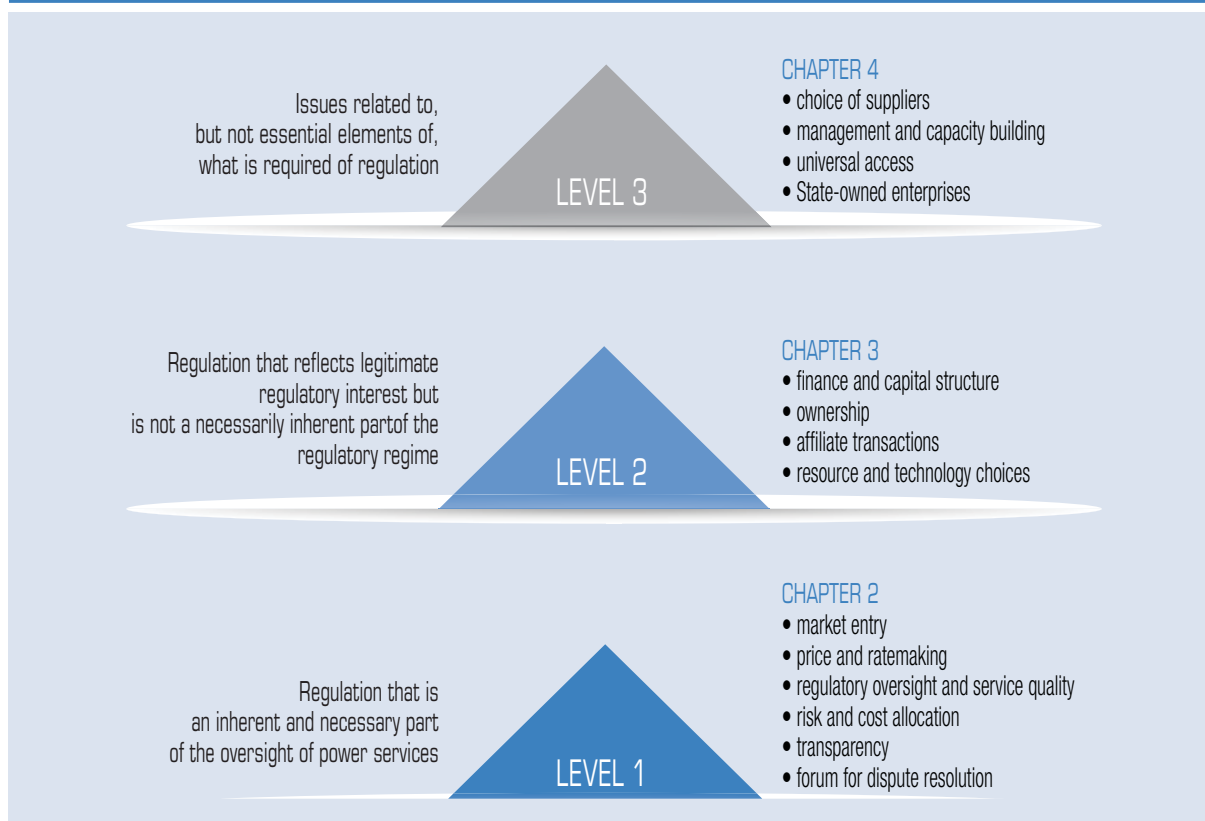
- Level 1: Regulation that is an inherent and necessary part of the oversight of power services;
- Level 2: Regulation that reflects legitimate regulatory interest, but is not a necessarily inherent part of the regulatory regime; and
- Level 3: Issues related to, but not essential elements of, what is required of regulation.

The emphasis in this paper will be on the first category, as the one which is most essential to regulation of the energy services area and the area where the potential

conflicts between trade and regulatory considerations can be most consequential. That does not mean that all critical regulatory subjects are problematic from a trade point of view, but only that to the extent that they are, the consequences of error are most severe.

The paper will begin by discussing the current international legal framework as it applies to the intersection of energy services regulation and international trade, examining the most relevant current provisions and some of the emerging trends in international trade regulation. The objective of the discussion is to draw policy implications for developing countries on how to harvest development gains from the regulatory frameworks in the context of a changing trade environment. To do that, there is a three-part discussion of the intersection of potential regulatory and trade issues, focusing first (and primarily) on those most essential to the regulatory enterprise, and then turning to discussions of issues less central to regulation (though potentially important to public policy). The “Final Remarks” section highlights some of the key issues identified in the paper.

**Figure 1. Levels of regulatory activity with respect to electricity services**





## THE INTERNATIONAL LEGAL FRAMEWORK



The concept that energy services should be increasingly subject to trade rules<sup>3</sup> is relatively recent. There is little in the current legal framework around international trade that clearly and explicitly addresses energy services. It is not even clearly defined where all the different components of the energy sector fall within the regulatory framework—for example, is imported electricity a good, regulated under the General Agreement on Tariffs and Trade (GATT), or a service, regulated under the General Agreement on Trade in Services (GATS)? Categorizing electricity as a good or service is complex. Energy is a tangible product, like oil and gas. It is also a service in the sense that it is produced on demand, not stored somewhere for later use. Although there is no consensus as to its classification, some Contracting Parties to the GATT 47 and, later, World Trade Organization (WTO) members, chose to recognize electricity as a good. However, the classification of electrical energy in the Harmonized System under heading 27.16 remains optional; it is up to states alone to decide on the classification of the electrical energy sector as a good for tariff purposes.

To the extent that energy services fall in the service category, they would be subject to GATS, which is the most relevant agreement for the purposes of this paper. There are a number of provisions in GATS that could potentially impact the energy services sector, in particular, provisions limiting how members can restrict market access; provisions requiring uniform treatment of services and service providers, regardless of domestic or foreign origin; provisions intended to prevent domestic regulations such as technical standards and licensing requirements from acting as barriers to trade; transparency requirements; and provisions intended to ensure that monopolies, if permitted, are at least prevented from abusing their market power. These are listed in greater detail in the table 1.

Despite their potentially great significance for energy services regulation, the current constraints imposed by GATS are in fact minimal with respect to the energy services sector. In the United Nations Central Product Classification and during the Uruguay Round negotiations<sup>4</sup> that established the WTO and the GATS, countries never agreed on a comprehensive list of

**Table 1. Relationship between GATS provisions and the energy sector**

Article	Provision	Importance to the Energy Sector
Most Favored Nation Status (Article II)	With respect to any measure covered by this Agreement, each Member shall accord immediately and unconditionally to services and service suppliers of any other Member treatment no less favorable than that it accords to like services and service suppliers of any other country.	Establishes that all domestic regulation should be applied in the same manner to all services and services suppliers, regardless its country of origin.
Market Access (Article XVI.2)	Prohibits members from limiting, for example, the following: <ul style="list-style-type: none"> <li>(a) number of service suppliers,</li> <li>(b) total value of transactions carried out,</li> <li>(c) total number of natural persons that may be employed in a particular service sector,</li> <li>(d) participation of foreign capital.</li> </ul>	Establishes whether foreign investors are allowed in the energy sector of a country.
National Treatment (Article XVII)	No restriction should apply to services and service providers originating from other Members in respect to all measures related to trade in services.	Establishes the rules that entitle foreigners to the same treatment as national energy companies, suppliers and professionals. This is crucial to establish a level playing field



**Table 1. Relationship between GATS provisions and the energy sector (Cont'd)**

Article	Provision	Importance to the Energy Sector
Domestic Regulation (Preamble and Article VI)	<p>Establishes general rules on domestic regulation, such as:</p> <p>(a) whenever authorization is required for the supply of a service, Member countries' competent authorities should revise the application in accordance with domestic laws and regulations within a reasonable period of time,</p> <p>(b) ensures that qualification requirements and procedures, technical standards and licensing requirements do not constitute unnecessary barriers to trade, and</p> <p>(c) Each Member shall maintain or institute as soon as practicable judicial, arbitral or administrative tribunals or procedures which provide, at the request of an affected service supplier, for the prompt review. Where such procedures are not independent of the agency entrusted with the administrative decision concerned, the Member shall ensure that the procedures in fact provide for an objective and impartial review.</p>	<p>Domestic regulation can constitute a dangerous form of barriers to trade in energy services, more than to other service sectors. This is due to the fact that the energy sector is usually more regulated than other because is a paramount sector that provide essential services to the community.</p> <p>It is also important to take into consideration the GATS preamble, which recognizes the importance of regulatory space to pursue development objectives.</p>
Transparency (Article III)	<p>Establishes transparency rules, such as:</p> <p>(a) requirement that all domestic regulation related to the agreement be published promptly; and</p> <p>(b) requirement that members shall respond promptly to all requests by any other Member for specific information on any of its measures of general application or international agreements.</p>	<p>Transparency is also fundamental for the energy sector, because as mentioned before it is a sector that relies on domestic regulation, and if they are not transparent, it can create barriers to provide energy services.</p>
Monopoly (Article VIII)	<p>Establishes rules regarding monopolies, such as:</p> <p>(a) each Member shall ensure that any monopoly supplier of a service in its territory does not, in the supply of the monopoly service in the relevant market, act in a manner inconsistent with that Member's obligations regarding the most-favored-nation treatment and specific commitments, and</p> <p>(b) where a Member's monopoly supplier competes, either directly or through an affiliated company, in the supply of a service outside the scope of its monopoly rights and which is subject to that Member's specific commitments, the Member shall ensure that such a supplier does not abuse its monopoly position to act in its territory in a manner inconsistent with such commitments.</p> <p>The provisions of Article VIII are also applicable to cases of exclusive service suppliers, where a Member, formally or in effect, (a) authorizes or establishes a small number of service suppliers and (b) substantially prevents competition among those suppliers in its territory.</p>	<p>Some energy sectors still constitute natural monopolies. In these cases the regulatory oversight should be strict in order to avoid abuse of market power.</p>

Source: National Institute of Census and Statistics (INEC) and Comptroller General.

energy sectors<sup>5</sup> specifically laid out in the Agreement. This does not mean that the general obligations of the GATS (e.g. most-favored nation treatment and transparency) do not apply to energy services, but there are no substantive obligations specified for the energy sector in the lists of member countries' individual commitments (e.g., no obligations relating to market access or national treatment). The result is that members for the most part do not have binding GATS commitments related to market access for energy services or even requiring that policies be applied impartially within each country.

In this environment, countries currently have considerable leeway to determine what kind of regulations and trade commitments they wish to make with respect to energy services. However, a number of prospective and developing regulations are tending towards greater definitiveness with respect to energy services. Accordingly, this is an important moment to develop clarity about the issues at stake and scope of regulatory discretion that needs to be protected.

The current situation thus gives countries considerable latitude in regulating the energy services sector. However, many contend that specific rules regarding energy are necessary. The intention to negotiate such rules has been mentioned in many WTO documents, including those compiled by the Secretariat and suggestions by Member Countries during the Doha Round. In some cases, this intention has been realized through increasingly strict provisions included in some Accession Protocols. This intention has also been seen in regional, bilateral and multilateral trade agreements.

This movement towards greater codification of rules around energy services potentially has some positive aspects. A set of energy service regulations might enhance the quality of services to consumers and create a safer environment for private domestic and foreign investment. In some sectors, as in the case of electricity, clearer rules on energy trade have the potential to be beneficial, to the extent that they enable electricity flows between countries that could potentially help to lower overall costs and shore up security and adequacy of supply.

At the same time, countries may be wary of giving up regulatory prerogatives, and may wish to avoid regulation that rushes them into market liberalization or precludes them from, for example, creating special incentives for companies willing to make investments

in expanding the grid or otherwise forwarding the cause of universal electricity access.

As an attempt to move the agenda forward, some free trade agreements (FTAs) have specific commitments related to energy services, and a series of negotiations on other agreements have been launched. Energy is one of the main topics in the Trade in Service Agreement (TISA), in the Transatlantic Trade and Investment Partnership (T-TIP) and in the Trans-Pacific Partnership (TPP), all of which are currently under negotiation.

The EU-South Korea FTA is an early example of this trend. Article 13.6. 2 of this agreement, which entered into force in 2011, stated the clear intention to promote trade and investment in energy services, specifically calling out renewable energy and energy efficiency:

The Parties shall strive to facilitate and promote trade and foreign direct investment in environmental goods and services, including environmental technologies, sustainable renewable energy, energy efficient products and services and eco-labeled goods, including through addressing related non-tariff barriers. The Parties shall strive to facilitate and promote trade in goods that contribute to sustainable development, including goods that are the subject of schemes such as fair and ethical trade and those involving corporate social responsibility and accountability (European Union 2011).

Additionally, the EU-South Korea FTA establishes, on their commitments lists, specific rules related to energy services that already show an extension of scope as compared to the GATS. Most importantly, with some exceptions, it extends market access and national treatment provisions to the sector.<sup>6</sup>

Other agreements still under negotiation could similarly expand the reach of trade agreements with respect to the energy services sector. TISA, currently under negotiation, is one example. TISA is a potential plurilateral agreement that could be multilateralized at a later stage. The agreement has the following as some of its main goals:

to be comprehensive in scope with no exclusion of services sectors or modes of supply at the outset;

to establish new rules, covering domestic regulation (e.g. authorization and licensing procedures); and

to establish that commitments on national treatment would in principle be applied on a horizontal basis to all services sectors and modes of supply. Exemptions

to this horizontal application would have to be listed in the countries' national schedule of commitments. (Sauvé 2013, 9).

From the energy sector perspective, the TISA means that the default option switches for energy services—rather than being not part of the Agreement unless specifically mentioned on the Member Countries' list, the energy services sector would be subject by the national treatment principle unless specifically called out as an exception on a Member Country's list.

The proposed T-TIP agreement, similarly, would also tend to impose greater limits on national energy services regulations. This agreement is intended to be an ambitious and comprehensive trade and investment agreement between the United States of America and the European Union ("Transatlantic Trade and Investment Partnership (T-TIP) | United States Trade Representative" 2015). One subject that the agreement is intended to address is energy trade. As already stated by the European Union, although it is not going to determine whether or not to allow exploitation of a natural resource, T-TIP aims to foster competition and open access in the energy services area. (European Union 2015).

The aim of both TISA and T-TIP to create an environment more supportive of trade in the energy services area may, broadly speaking, be appropriate. However, both agreements are potential sources of concern to the extent that they are not currently

multilateral negotiations. T-TIP itself could significantly weaken the multilateral trade agreement arena, as the United States of America and the European Union would set aside and create their own set of rules. Those rules would create another set of exceptions to the multilateral system to the detriment of developing countries and could be a stumbling block to future negotiations with the United States of America and the European Union at the WTO and to the negotiation of FTAs with developing countries. TISA, though broader than TTIP, raises similar concerns. Currently, only 24 countries are negotiating the TISA and, although they represent 70 per cent of the trade in services, only a few of them are developing countries. This could mean that almost all developing countries would be left out of these talks. Furthermore, by envisaging stronger behind-the-border regulatory harmonization, this agreement may leave more limited space available for public policy and might have implications for the sequencing and pace of liberalization in the energy services area (and particularly in the electricity area) with results that are not optimal for development, in case the agreement is multilateralized in the future.

In the light of these steps towards development of a more robust trade policy with respect to energy services, it is particularly important to reach a clear understanding of how countries may need to and wish to regulate energy services, and how such regulation could potentially be enabled or prevented by the trade policies that are adopted.



REGULATION THAT IS AN INHERENT AND NECESSARY PART OF THE OVERSIGHT OF THE POWER SECTOR: WHERE IS REGULATION A NECESSITY?



More than many industries, some degree of regulation is indispensable to energy services. With respect to the electricity sector, particularly, no matter how much market liberalization is embraced, there will almost certainly remain monopoly and other considerations requiring regulatory oversight<sup>7</sup> There is also likely to be a continuing need for some level of consumer protection and for some level of regulation regarding market entry and exit. What follows from this is the inevitable necessity of regulation in the following areas: market entry, price and ratemaking, service quality, risk and cost allocation, transparency, and dispute resolution. This chapter examines the regulatory imperative in more detail and considers how regulation in each of these areas may interact with trade policy.

## A. MARKET ENTRY

### 1. Regulation

Defining rules around market entry, or the ability of non-incumbents to enter an existing market where one or many players already provide services, is a crucial and unavoidable task for electricity regulators.

From a regulatory point of view, the barriers to entry into a market should be defined in relation to the public interest and to the contestability of the market. For instance, the regulatory requirements for a public utility to enter a monopoly market should be higher than for a company that provides services to the utility or than the requirements for a company to enter a market where there are many players. Thus, the need for regulatory oversight is greater when the function of the service provider is more vital and when the market is more monopolistic.<sup>8</sup>

In order to reduce the need for this regulatory oversight in energy, many countries have adopted policies requiring open access to bottleneck facilities. The definition of a bottleneck facility is that it is an asset without which access to the market is impossible and bypass of which is either impossible or highly impractical. Examples might include the electric grid or the natural gas pipeline network. Because of the central function of the asset, its owner(s) and operator(s) must be subject to regulatory oversight that may include high standards for entry and exit. Nevertheless, actors whose role in the market is contestable by other players can be subject to lesser barriers to entry and exit.

An extreme case in which market access may be restricted is when there is a natural monopoly. Natural

monopolies occur when a single firm can supply the market at a lower cost per unit than two or more firms can provide (i.e. where economies of scale exist). Gas pipeline infrastructure and electric transmission and distribution systems are classic examples of natural monopolies. In these cases, regulation is mandatory. The degree to which a monopoly is natural or not, of course, is something that is determined on an activity specific basis. (Pérez-Arriaga 2013) In the electricity industry for instance, some segments, like generation and retail, can migrate from a monopoly structure to a competitive market structure. The transmission and distribution grids must continue being regulated as natural monopolies.<sup>9</sup>

In the power sector, competitive markets may consist of contestable energy markets, where energy is bought and sold on a real time basis, and/or of a capacity market, where the capacity to provide energy is purchased separately from the energy itself.<sup>10</sup> In both scenarios (they can coexist), there can be multiple or single (monopsony) buyers who enter into Power Purchase Agreements (PPAs), legal contracts for the purchase of power between a power generator (supplier) and a power purchaser (distributor).

With respect to electricity, many developing (and many developed) countries face a choice between adopting (or continuing) a vertically-integrated monopoly model (often a state-owned monopoly) and market “liberalization,” in which the electricity market is restructured to permit open access for generators to compete to provide electricity to the system. The appeal of liberalization is significant. Many countries hope that by liberalizing their electricity sector, they can attract domestic and foreign investment that will assist them in providing more comprehensive, more efficient, and more reliable electricity service.

However, an examination of the actual experiences of countries with electricity sector liberalization yields a complex and nuanced picture. In some cases (see the example of Brazil, discussed in Box 1), liberalization efforts seem to have had some success. In other cases, such as that of India (discussed in Box 2), efforts towards liberalization yielded disappointing results, and the government felt the need to slow down its liberalization efforts.

The positive aspect of the Brazilian reform was that it enabled more players to participate directly in the electricity market, since all generators had access to the grid to sell their output, and all eligible buyers had access to buy their requirements. In effect, it enabled a more

### Box 1. Brazil and Transmission Open Access

Brazil introduced open access legislation in 1995 with the objective of paving the way for a free electricity market. This market would consist of new generation utilities (classified as independent producers) and major electricity consumers ( $\geq 3$  mw), categorized as “free consumers” that could choose their own suppliers. In 1998, other generation utilities also gained the right to participate in this market. Furthermore, incentives were issued for generation utilities working with alternative and renewable energy sources to serve consumers with loads of  $\geq 0.5$  mw, categorized as “special consumers,” under the same open access conditions as major consumers.

Brazil’s Law No. 9648 of 1998 was instrumental in establishing separate contracting and pricing procedures for energy supply and grid services. Furthermore, the suppliers of electric power had to choose between selling energy or transporting it, rather than doing both. The law called for the purchase and sale of electricity between concessionaires or licensees to be contracted for separately from the access and use of Transmission and Distribution (T&D) systems. The regulator National Agency of Electric Energia was charged with regulating tariffs and establishing general conditions for contracting access and use of the transmission and distribution systems by concessionaires, permit holders and licensees, and free consumers. The combination of open access and separation of energy contracts from network contracts allowed generators to sell energy directly to free consumers, regardless of where they were connected to the T&D systems.

Brazil also allows for private, both foreign and domestic, investment in the essential transmission grid, but does so only under the discipline of a highly structured and well defined auction process, and fully subject to all the operating and technical protocols of the system operator.

Source: Brown and Loksha 2013, 21.<sup>11</sup>

### Box 2. Gradual Approach to Power Sector Reform in India

India has generally followed a gradual approach to reforming its power market. Focused on broad reform goals, the detailed steps required to unravel the old system were worked out along the way through trial and error. Much of the gradual structural reform focused on the State Electricity Boards (SEBs)—the vertically integrated dominant power suppliers at the state level—because they were, for the most part, particularly inefficient, and costly rate subsidies were widespread. Typical inefficiencies were employing more people than were needed, low productivity, poor reliability, and inadequate interconnections between systems. The situation caused huge losses to be incurred for which the state governments were ultimately liable. Since many of the state governments were financially dependent on the central government, the inefficiency of the SEBs was a burden for the nation as a whole.

The central government adopted a new approach in 1991 because of India’s financial crisis, for which it sought immediate remedies. Since many years would be needed to rectify the SEBs inefficiencies, the new approach focused on the immediate problem of meeting the shortfall in generating capacity that had been perpetuated by the SEB’s poor finances. The government hoped that private investors would provide large amounts of efficient and inexpensive power capacity, an approach that was consistent with the then widespread economic theories about the power sector being advanced by multi-lateral lenders and international donors. A focus on private investors was also consistent with the reformist agenda of attracting foreign direct investment. There was a broad consensus supporting this approach to reform because of the lack of viable alternatives.

The central government created the legal conditions needed to attract private investors in electricity generation, and it set tariff rules that would be particularly attractive to investors, with a guaranteed 16 per cent return on equity (after tax) and full repatriation of profits in dollars. To jump start the process, the government awarded “fast track” status to eight projects (many with foreign participation), promising rapid clearances and central government repayment guarantees to assuage investors’ concerns about selling their output to insolvent SEBs. Most of these projects included a cost-plus PPA between the operator and an SEB. Only three of the fast track projects, however, have produced power more than a decade after the fast track initiative. The reasons for falling short of the expected performance are not clear on the surface, but may relate to lack of meaningful incentives to improve productivity and PPA contract terms that were less than adequate in terms of providing remedies to buyers for subpar performance.

In addition to the obvious failure to attract much new capacity, this first wave of reforms yielded electricity from private plants that was much more expensive than power from the SEB’s existing plants and even from new plants built by state-owned enterprises. Take-or-pay clauses in the PPAs, high rates of return, a contracting structure that gave upside earnings potential to investors and saddled the SEBs with fuel and currency risks, and a lack of either regulatory or market discipline to contract negotiations, were all the product of a “power at any cost” mentality. The failure of the Enron Corporation’s Dabhol plant contracted by the SEB in Maharashtra state, is the best-known example of the shortcomings of the approach taken.

After this experience, India reverted to a more gradual approach to power sector reform.

Source: Besant-Jones 2006, 118.

competitive market that, in theory, at least, provided an incentive for increased productivity and diversity in the marketplace. The limited nature of the opening of access, however, precluded the capture of the full value of a fully competitive, market driven system.

Even in the United States of America, where liberalized markets are flourishing in some parts of the country, the path towards market liberalization has been full of missteps and course corrections and there are still parts of the country that remain under a vertically-integrated model.<sup>12</sup> A map of the current situation in the United States of America, shows market areas in color and vertically-integrated areas in white (Figure 2).

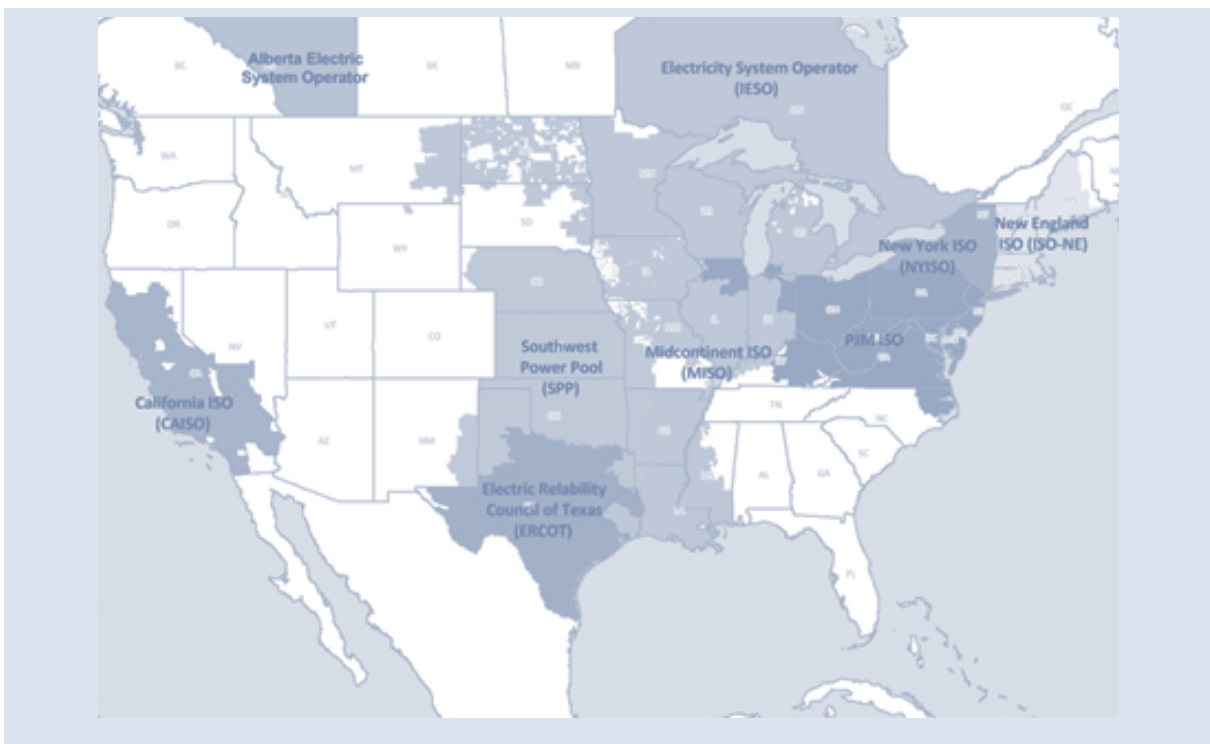
Why is electricity market liberalization so tricky? A key issue has to do with the essential role played by the interconnected electricity transmission grid. Regulators cannot allow simple open access to the grid, the way one might to a highway system. The grid needs to be carefully managed, to ensure that no part of it is asked to carry more electricity than it can handle and to assure the instantaneous matching of supply and demand. Unregulated grid access for all electricity generators would rapidly result in major blackouts. As a result, countries that wish to allow open access to

the grid must solve the conundrum of allowing free access to the grid while simultaneously exercising perfect central control of how much electricity can be put on the grid from every possible source at any given time.

Countries that wish to embrace electricity market liberalization must therefore do so with an appropriate, carefully-tailored set of regulations, including separation of control over the transmission system from financial interests in generation (Box 3) and a system which determines the dispatch of generation based on impartial economic criteria.

Basic, minimal open access implies that all generators shall have access to the grid to sell capacity and energy, and all wholesale buyers have the same access to transact business with them. This system requires transparent rules, procedures and protocols for grid and market operations, as well as a neutral system operator. Optimal open access has additional characteristics, such as market based congestion management, meaningful and clear price signals, demand-side response, and transparency of information concerning real-time grid conditions. (Brown and Loksha 2013, 10)

**Figure 2. Market and vertically-integrated areas**



Source: Federal Energy Regulatory Commission 2012.



**Box 3. The key role of transmission unbundling**

The presence of multiple sellers and buyers of electricity interacting in the market is an indispensable feature of an open access regime. This requires, first of all, ownership separation (legal unbundling) or, at a minimum, a clear accounts separation (functional unbundling) of transmission and distribution facilities from generation and supply. In particular, transmission must be unbundled from generation and supply to ensure a level playing field for generators and the development of a competitive market.

Source: Brown and Loksha 2013, 22 competitive market.

**2. Intersection between regulation and trade**

Given the complexity of electricity market liberalization, a requirement to liberalize electricity markets is not a policy one would wish to see imposed on countries indiscriminately. In negotiating trade agreements, developing countries need to take care that they do not agree to terms that inadvertently alter the market structure which they determine appropriate for their country. An agreement, for example, to allow easy market entrance to a foreign investor to build an essential bottleneck facility without having to conform to the technical and operating protocols in place (such as that noted above in the example of Brazil) will almost certainly have highly disruptive effects on the sector. Similarly, market entry to even non-essential, non-bottleneck segments of the sector, such as generation, need to be subject to either market discipline (e.g. formal competitive procurement procedures, such as an auction) or appropriate regulatory oversight (e.g. requirements related to prudence, impartiality, lack of self-dealing, price and performance benchmarks, etc). The simple fact is that some industries, notably those, such as electricity, with central bottleneck facilities, are always in need of some level of regulatory oversight if they are to operate efficiently and equitably. Trade arrangements must take this reality into account, so that constraints imposed by behind-the-border regulation, are not simply dismantled and preempted by trade agreements. That, of course, is not a blanket endorsement of all regulatory constraints. As long as the imposed constraints on market entry are reasonable,<sup>13</sup> not applied in a discriminatory manner, and are transparent, they should be given deference.

**B. PRICE AND RATEMAKING**

To the extent that some or all the energy services sector is subject to either monopoly power or other significant limitations on market access, regulation of prices

charged is indispensable. In the case of electricity, even in an open access market situation, monopoly control over the distribution grid necessitates some degree of regulation of retail prices in order to ensure that distribution utilities do not take advantage of their monopoly position.<sup>14</sup>

In establishing regulated prices, regulators need to think in terms of developing an appropriate pricing methodology that incentivizes productivity, provides meaningful price signals to consumers, and affords investors, assuming reasonable performance, a fair and reasonable opportunity to recover their investment plus a return symmetrical to the risk undertaken.

Two commonly accepted ways for establishing a just and reasonable basis for cost recovery in a monopoly setting include the following:

- Rate-of-return pricing: regulatory agencies approve a capital rate base, allow recovery of prudently incurred costs subject to a defined depreciation schedule, and fix an allowable rate of return that a utility can earn on its assets. They also allow for the recovery of all prudently incurred non-capital expenses. The regulated price can be adjusted upward if the utility, for reasons not based on its performance, starts making a lower rate of return, and it will be adjusted downward if the utility makes a higher rate.
- Price caps: the regulated price is set for a fixed period of time (e.g. five years) based on either a cost-based or reasonable benchmark formulation. Automatic adjustments may be made during that fixed period, based on a clearly defined index (such as the Retail Price Index, commonly known as RPI) measuring the rate of inflation. In most cases, the RPI is reduced by an expected level of productivity gain, known as an x-factor, and the adjustment is known as RPI-X. These adjustments are not influenced by changes in the firm's profitability. (Ian and Irwin 1996)

The two methodologies, rate-of-return and price cap, are mechanisms to provide some level of insurance that there will be sufficient revenue to provide adequacy in service.<sup>15</sup> Of course, both of those methods are premised on the assumption that the company will be reasonably well managed. The service quality itself, however -- what the rules and expectations are -- should be specifically articulated, preferably in the regulatory rules. The enforcement of such measures is largely external to the pricing process. Although it could have an effect in the pricing, quality of service should be taken into consideration independently of the pricing issue. This topic will be further discussed in Chapter II, section C.<sup>16</sup>

The rates for non-monopoly players in the market are generally determined by the market or by market mechanisms (e.g. auctions and transparent real time energy markets). In a vertically integrated monopoly circumstance, of course, regulators will set all prices.<sup>17</sup>

The aforementioned mechanisms of pricing regulation come with their own benefits and drawbacks. Rate of return pricing provides predictability and stability for future acceptable levels of profit. This is beneficial for both the investors, who will subject their money to such a regime, and for regulators, who have established the pricing regime at least in large part to attract investors. A challenge posed by this method is that it may underestimate capital depreciation. This is problematic for industries that need to adapt to global technological progress—for example, new energy generation technologies that make older technologies uncompetitive. It is also often criticized for incentivizing too much capital investment, which can result in customers having to pay more than they should. Rate of return regulation also requires rigorous regulatory oversight that sometimes blurs the line between regulation and management, a circumstance that is likely to raise concerns among private investors, both foreign and domestic. Price cap regulation, on the other hand, was designed to lighten the hand of regulation, reduce regulatory risk for investors, and provide incentives for productivity. While the theory is clear, in practice, price cap regulation, for a variety of reasons, including information asymmetry, perverse government incentives to tinker with the X factor, and political circumstances, has not always lived up to its theoretical value. Thus, both ratemaking approaches have their strengths and weaknesses, but once they are in place, changing them is a difficult process that can prove to be quite disruptive and may give rise to

serious concerns for private investors, both foreign and domestic, who made decisions to deploy their capital based on the ratemaking regime in place at the time. The main challenge is designing the right incentive structure, one that motivates productivity gains and optimal levels of effort during the concession period, thus generating maximum consumer benefits.

## 1. Intersection between regulation and trade

The general principle governing pricing from the point of view of international trade is that whatever approach is adopted, pricing and ratemaking should be done based on a clearly articulated methodology or on a transparent market basis. Domestic or foreign ownership of assets should play no role in pricing or price formation. Similarly, pricing issues are of such paramount regulatory concern that developing countries would be well advised to keep discussion of pricing outside the scope of trade negotiations. This is especially true in the case of bilateral trade negotiations, where it makes no economic sense to give preferential pricing to investors from counter party countries over those from other countries (or perhaps even domestic investors).

It is, however, important to note that the better a country can conform to predictable and well-understood pricing practices, the more success it may have in attracting foreign investment. If a country were to try to apply a sui generis formulation to calculating pricing of service, separate from the main stream of international standards regarding ratemaking, this could be detrimental to attracting capital. A more mainstream approach would probably attract more foreign investment. What is critical, however, is that the decision as to the methodology selected be based on circumstances related to the domestic power sector and not subject to the vicissitudes of trade negotiations.

There are some cases, however, particularly in developing countries, in which pricing may also take into consideration the achievement of social goals. In those cases, pricing methods may be tailored to leave policy space for the design of specific rules and to provide regulatory agencies enough authority to change concession rules and territories. If done in a transparent manner, preferably upfront, so investors can internalize such considerations into their

investment calculations, those policies can be helpful to achieving the United Nations “Sustainable Energy for All” objective by 2030. (This aspect of pricing is discussed further in Chapter 4, in the discussion of universal access. A good example of the kind of arrangement that might be desired is Argentina’s solar initiative, discussed in Box 10).

Other forms of pricing that deviate from generally accepted practice may be tempting for countries which have policy (or political) reasons for wishing to keep domestic prices low both to assure affordability and to reduce inflationary pressure, as well as, perhaps, to avoid adverse political reactions. That has certainly been the case in many countries with respect to food, fuel, and other necessities, so the pressures to extend that type of policy to electricity are hardly surprising.

The same pressure can exist in favor of price discrimination. Low-income subsidies are a classic, and commonly accepted, example of that. Discrimination based on the cost of providing services is another form of price discrimination that is generally viewed as consistent with good regulatory practice. Extending such discrimination beyond commonly accepted forms, however, can be quite problematic. It may be theoretically possible, for example, to charge differential prices for energy, charging lower prices for supplied to customers who use energy to produce goods domestically and higher prices for energy sold internationally. (“dual pricing”). The imposition of dual pricing in the energy sector is sometimes rationalized as: (i) supplying energy at accessible prices as a means to subsidize industrial production or domestic energy generation; (ii) guaranteeing food security by maintaining low energy prices, fulfilling the needs of crops that depend on the use of pesticides whose manufacture is energy intensive; (iii) maintaining competitive prices for energy-intensive products; and (iv) stimulating economic development.

Some jurisdictions (e.g. Bhutan, Nepal, Laos, Paraguay, Guyana, and some Canadian provinces) export, or are contemplating exporting, substantial amounts of the electricity they generate to neighboring countries. The price charged on the international market often bears little resemblance to the prices paid by domestic consumers for the same product. That is usually the result of market circumstances, but it is also, in some cases, partially policy driven, using international trade to either reduce domestic prices or to enable the capture of economies of scale in developing resources

without imposing the entire cost burden on domestic customers immediately. There is a logic to such practices, but there is also a tradeoff. The tradeoff is that there may be a gain for domestic consumers in the short run, but such price discrimination will impede the development of, indeed is not sustainable in, a fully functional, efficient regional energy market in the long run. Countries contemplating entering such bilateral trading arrangements need to be fully cognizant of those tradeoffs between short term and long term considerations.<sup>18</sup>

Coherence and predictability in pricing is a fundamental pillar of sound market design and regulation in electricity. On its face, that practice seems entirely consistent with good trade policy, and so, unless regulatory policy deviates, it seems inappropriate for trade policy to interfere with electricity pricing. Any deviation from that principle should only be made with full recognition of the consequences and tradeoffs involved. Generally speaking, however, trade policy/agreements should not be allowed to interfere with the rational pricing of electricity, an area where regulation should hold sway.

In regard to the pricing of the fuel used to generate electricity, as opposed to the end price of electricity itself, as noted above, there has been some debate within the WTO concerning the nature of dual pricing. Members have included provisions in the protocols of accession of new Members prohibiting dual pricing, especially when it comes to energy producing countries.

Saudi Arabia, for example, was pressed to take on an explicit commitment to eliminate its dual pricing program for the natural gas sector. However, the country chose not to do it, limiting itself to the commitment of acting in accordance with normal trade considerations that take into account the full recovery of costs and reasonable profits. The discussions of Russia’s protocol of accession followed the same reasoning. Nevertheless, Russia adopted some exceptions to the criteria already established in Saudi Arabia’s protocol. In its accession process to the WTO, Russia defended its dual pricing, arguing that it could not be considered a specific subsidy (Article 2, SCM), since lower prices for natural gas in the internal market would be granted unconditionally within the whole economic sector and would be available to all individuals and entities established within the Russian territory, making its application widespread (that is, not specific) and eliminating, in this way, the possibility of

qualifying in the category of prohibited or actionable subsidies. (Cavalcanti, Lembo, and Thorstensen 2013, 163)

Once again, “national treatment” requirements would be essential in order to guarantee the same treatment between foreign investors and national companies in the sector. What is still not clear is how dual pricing should be regulated. The arguments from both sides are coherent. Those countries that are net exporters of energy would like to benefit from this natural advantage and sell energy more cheaply locally. From an energy net importer perspective, this would be creating a distortion in the international market, as it could be seen as a subsidy to local industry as a whole. Thus, dual pricing has been seen as a potential trade negotiation topic between countries since the Uruguay Round. With respect to the price of electricity, however, as long as the pricing is non-discriminatory and follows best practice, there should be no trade-related reasons to interfere with the critical regulatory function of pricing.<sup>19</sup>

## C. REGULATORY OVERSIGHT AND SERVICE QUALITY

### 1. Regulation

Experience suggests that the greater the degree to which market power is concentrated and the market made less competitive, the greater the degree of regulatory oversight that will be necessary to make sure that (i) prices remain reasonable, (ii) service quality is acceptable and commensurate with the price paid for the service, (iii) no customers or market participants are victimized by undue discrimination, (iv) assets are used efficiently, and (v) any costs to be passed on to captive customers are reasonable and prudently incurred. Conversely, to the extent that customers have choices and all market participants are subject to the rigors of a competitive market, the need for regulatory oversight is reduced, although the retention of regulatory authority to be deployed if necessary is always prudent.

In addition to these principles, it is clear based on experience that the quality of service, which includes technical conditions, safety considerations, satisfactory interface between regulated companies and their customers, and handling consumer complaints, must be regulated quite separately from other considerations. It is impossible, for example, to

internalize quality of service considerations into prices. While service quality can have an impact on prices, price alone cannot drive quality of service standards.

A workable quality-of-service regulatory system should have the following characteristics:

- Standards should be established and clearly and transparently articulated for technical, safety, and commercial dimensions of service.
- Where appropriate, penalties and other remedies should be established for violations of standards, but should only be assessed after any company alleged to be in violation is given a full and fair opportunity to defend itself against any allegation brought against it. Where warranted, penalties should include compensation to those victimized by the violations.
- Required levels of service and associated penalties and rewards might change over time. (Reiche, Tenenbaum, and Torres 2006)
- A fair and transparent process should be in place to resolve and/or adjudicate consumer complaints

### 2. Intersection between regulation and trade

The formulations of rules and processes for dealing with service quality standards are of central concern to the regulatory process. Those standards should be universally applicable to all actors in the regulated sector.<sup>20</sup> They are also highly likely to vary from one locality to another for understandable reasons. They are also, as noted above, likely to change over time to reflect changing expectations, technological advances, heightened consumer demands, and other circumstances. These are classic regulatory activities, and those charged with carrying out the responsibility of articulating and enforcing the standards need to have the appropriate degree of discretion and authority to carry out their duties in a diligent and reasonable fashion. For those reasons, countries negotiating trade agreements would be well advised to leave regulatory discretion intact and keep quality of service issues out of any trade agreements.

The recognition of country-specific realities and development objectives is especially important for the debate on behind-the-border regulatory convergence of new generation trade agreements. This can be seen, for instance, in the negotiations between the United States of America and the European Union, in which

an entire chapter of the agreement is designated to deal with regulatory convergence.

## D. RISK AND COST ALLOCATION

### 1. Regulation

Energy services providers are the ones that usually take the financial risks involved in making the necessary capital investments to provide service. In a regulated environment, the degree of risk they take is reflected in the rate of return a company is authorized to earn. In a competitive market, the degree of risk undertaken is internalized into the prices charged by the service providers themselves. Some risks can be managed through hedge mechanisms. The question for regulators is simply whether the risks being allocated to investors in the regulated market are symmetrical with the potential those same players have for gain and the costs associated with prudent hedging arrangements. While domestic competitors in the market may well have some competitive advantage over foreign investors in terms of judging risk because of their familiarity with local conditions, it is nonetheless reasonable to assume that sophisticated international investors, through due diligence and through local employees/consultants, can come up to speed quickly on that score, so any advantage should quickly be erased. The allocation of risk is, of course, a factor that is internalized into prices, so it follows logically that those who decide pricing questions should also be charged with determining the allocation of risks.

Regarding cost allocation, regulators usually treat customers on a class basis. The classes are defined based on similar load factors and other attributes that cause a utility to incur costs to serve them. The basic principle commonly used in utility regulation is that the cost causer has to pay the costs he/she imposes on the system. For example, if a new transmission line is built, and the sole purpose is to provide electricity to a specific customer, the cost of that facility would not be socialized across the system. From the perspective of maximizing economic efficiency, costs should be allocated based on a “beneficiary pays” principle (W. Hogan 2011, 6), or the conceptually similar “cost causer” basis.

What, then, can developing countries (or any countries) do if there is a public policy-based imperative to provide electricity access even to those remote towns

or impoverished customers who cannot support the whole cost of connection to the grid (and potentially of service provision itself, even once the grid infrastructure is in place)? In many cases, cost socialization may be desired, as it may be the only solution to low-income households getting access to modern energy. Making these decisions intelligently and equitably, and as consistently as possible with applicable principles of economics, requires a high degree of judgment regarding relatively arcane matters, which is typically only found in electric regulatory circles.

It is important to be clear, therefore, that policymakers are free to instruct regulators to draw on a broad understanding of what it means to “benefit” from a particular facility. For countries for which there is a strong policy drive to provide electricity access to all, the “beneficiary” of programs which extend access to the unserved could be understood to be the society as a whole—only a small number of people may benefit directly from any particular extension of the grid, and these may not be able to afford to pay for this extension, but the country as a whole may benefit indirectly by extending electricity service to all, expanding social welfare in the present and setting the stage for future economic growth. A successful example of this model of cost allocation for electricity service expansion can be seen in the “Light for All” program in Brazil, discussed in detail in Box 4. Similarly, the beneficiary of a renewable energy installation may be a whole country, not just the customers served by that particular installation, if it provides pollution reductions (including carbon emissions reductions) that are desired by society as a whole.

### 2. Intersection between regulation and trade

As pointed out before, under the GATS, market access and national treatment requirements are limited to what countries included in their commitment lists. A lack of a specific commitment would mean, for example, that countries could adopt discretionary risk and cost allocation rules.

Risk and cost allocation regulation is an inherent and vital part of legitimate regulation. With respect to risk allocation, there is no free lunch. Differentiating among energy consumers and investors by asking investors to carry risk without compensation would only be negative from a regulatory perspective. It lacks any basis in cost, symmetry, or other economic factors.

#### Box 4. “Light for All” Program in Brazil

The principal milestone in the challenge of achieving universal access to energy in Brazil is the “Light for All” Program. Many other programs had been implemented previously in Brazil, such as the 1999 “Light in the Countryside” Program (Brasil 1999), with the objective of providing rural households with energy access within four years.

The program was created because, according to data from the 2000 Census (data prepared by the Brazilian government on Brazil’s population), it was found that over 2 million people in rural Brazil lived without electricity. As a result of not having access to electricity, those citizens had the lowest human development indices in Brazil, according to the United Nations Human Development Index.

However, the “Light in the Countryside” program was much different from the “Light for All” Program, as it required the interested farmer to bear the costs of construction of the electrical grid up to the installation in his household. Even though the program provided for the financing of said projects to the farmers, it was found that the connection costs were not compatible with the income of eligible families.

Therefore, in 2003 the Brazilian federal government, by means of Law 10762 and Decree 4873, created the National Program for Universal Access to and Use of Electricity, known as “Light for All”. Unlike the “Light in the Countryside” program, the new program mandated that cabling, including power input equipment, would be free to consumers.

The “Light for All” Program was made feasible through the establishment of a social fee. Thus, those with per capita household income of no more than half a minimum salary would have discount rates ranging from 10 per cent to 65 per cent, according to their consumption. The program has been successful in achieving close to one hundred percent of electricity access in the country and is today one of the examples used by the United Nations “Sustainable Energy for All” initiative.

Source: Lembo 2013.

In the long run, asking service providers to bear risks without adequate compensation will discourage investment, making it difficult for countries to reach their energy service goals. The right to allocate risk on an uneconomic basis is not worth preserving in trade negotiations.

On the subject of cost allocation, however, as discussed above, the ruling regulatory concept of “beneficiary pays” is an important one to be applied generally, but must sometimes be modified in practice to reflect such compelling social needs as universal service. Particularly in developing countries, this policy space for differentiating energy consumers (currently unthreatened by any existing trade agreements) is essential in order to achieve universal access goals. This is an area best left to local regulation and kept out of any trade agreements.

## E. TRANSPARENCY

### 1. Regulation

Transparency is required to promote fair trade and competition. In competitive electricity markets, transparent and easily accessible information regarding the protocols for use of and access to essential bottleneck facilities such as the transmission

grid is critical. This information both enables all market participants to make efficient purchase or sale decisions and improves the regulatory agency’s ability to monitor actual market conditions for evidence of market power, underutilization of bottleneck facilities, undue discrimination, or other forms of market failure. Examples of information that should be required are: (i) rates charged by the grid owners/operators under each contract; (ii) receipt and delivery points and zones or segments covered by each contract; (iii) the quantity of energy moving across the grid; (iv) the duration of contracts; and (v) whether there is an affiliate relationship between the grid owner/operator and the market participant contracting for service (“contract” means either a purchase and sale relationship established by tariff or individually negotiated).<sup>21</sup>

The challenge of transparency regulation is not any difficulty with the concept of transparency, but rather in the details. For any given segment of the energy services sector, different information may be essential, and different infrastructure may be needed to make it available. (One example of positive steps to promote transparency can be found in the discussion of Sri Lanka and the United Republic of Tanzania in Box 5—but there are many other aspects of the energy services sector that may require similar transparency efforts.) Obviously, some level of transparency needs

### Box 5. Transparency in Sri Lanka and the United Republic of Tanzania

In Sri Lanka, the Sustainable Energy Authority (SEA) has published a guide, available on its website, that describes the review and approval process for small power producers (SPPs) in considerable detail. It describes the sequence of required steps and includes copies of applications, checklists, and sample approval documents.

The review and approval process is similarly well documented in the United Republic of Tanzania. Guidelines, rules, and sample documents for SPPs are all available on the website of the national electricity regulator.

Both Sri Lanka's guide and the United Republic of Tanzania's guidelines go beyond simply describing the recommended sequence of steps. Both documents provide information on the actual criteria that will be used to make a decision at each step of the process. The goal is to shine a bright light on what is often a "black box" of government decision-making. In addition, efforts have been made to minimize uncertainty about next steps in the overall process. For example, the SEA letter that grants provisional approval also provides the applicant with a list of specific documents and approvals that the SEA will require to move to the next step, the issuance of an energy permit.

to be sacrificed in the face of commercial requirements for confidentiality, such as highly sensitive price information, which has no universal impact, and considerations regarding intellectual property. Considerable analytical effort may be needed to identify the different kinds of information that should be available and to find cost-effective ways to make this information accessible.

Even in the case of non-competitive, monopoly markets, transparency is essential. Such markets must be properly regulated to assure acceptable levels of productivity, service quality, and efficient pricing. To be credible, such regulation must be effective and enforced. It is virtually impossible to ensure such regulations in the absence of a regime of transparency, where all interested parties have access to the same information to help them to provide regulators with meaningful input into decisions, and where appropriate judgments can be made as to outcomes.

## 2. Intersection between regulation and trade

The degree of market/regulatory transparency is a critical element of the regulatory process. While trade provisions have the potential for enhancing transparency, they also have the potential for harming it.<sup>22</sup> Given its centrality to the regulatory process, it would seem prudent for trade negotiators to stay away from the subject.

## F. FORUM FOR DISPUTE RESOLUTION

### 1. Regulation

All regulatory regimes must have prescribed processes for making decisions. It is possible and indeed common to have different stages in the process: administrative, subject to the pertinent provisions and powers of the energy regulatory agency; appellate review; and, often, judicial involvement. In many cases, regulatory decisions are not solely the province of independent agencies or courts, and political authorities play a formal role (perhaps unfortunately, political considerations also intrude into what are supposed to be independent proceedings).<sup>23</sup> If possible, all appeals from regulatory agency decisions should be directed to a single, expert forum, the decision of which would, in the absence of any constitutional issues, be subject to judicial review. While that may be optimal, it is often not the case that processes are optimal, and sometimes, perhaps, disputes are not even handled through the prescribed mechanisms. Nonetheless, regulatory decision making processes are prescribed for a purpose, namely, to serve as a systematic, transparent, participatory approach maintaining coherent, predictable, and relatively stable policy in the market being regulated.

### 2. Intersection between Regulation and Trade

Article VI of the GATS establishes general rules on domestic regulation and clearly establishes the

principles of objectivity and impartiality by which a Member country's national dispute resolution should be guided.

But how can objectivity and impartiality be assured? Existing trade agreements provide a host of dispute resolution options. In addition to the national dispute resolution resources, the WTO Dispute Settlement Body can settle international energy services disputes between WTO Member countries. Alternatively, if the countries are part of an FTA, they can take their case to specific dispute settlement under the terms of their particular agreement. An interesting example is NAFTA, which in its Chapter 11 establishes that an investor who alleges that a host government has breached its investment obligations may, at its option, have recourse to one of the following arbitration mechanisms: (i) the World Bank's International Centre for the Settlement of Investment Disputes (ICSID); (ii) ICSID's Additional Facility Rules; and (iii) the rules of the United Nations Commission for International Trade Law (UNCITRAL Rules). Alternatively, the investor may choose the remedies available in the host country's domestic courts. An important feature of the Chapter 11 arbitration provisions is the enforceability in domestic courts of final awards by arbitration tribunals ("Overview" 2015).

The ICSID is an autonomous international institution, belonging to the World Bank Group, established following the Convention on the Settlement of Investment Disputes between States and Nationals of Other States in 1966. The ICSID offers both a structure and a procedural, regulatory framework for arbitration among the Contracting States to the Convention. Its rules also permit the Secretary of the ICSID to oversee arbitrations involving at least one of the Parties that has ratified the Convention, provided there is agreement among the Parties. All the Contracting States must thereby recognize and enforce the arbitration awards issued.

UNCITRAL, created in 1966, has the objective of promoting the harmonization and progressive unification of international business law. For its part, it provides a regulatory framework for the resolution of trade and investment disputes. The Commission does not function as a tribunal, nor does it handle the proceedings of the arbitration; the Parties to a dispute are required to either select an arbitrator or form a tribunal that will analyze the dispute, with the proceedings being carried out in compliance with the rules laid down by UNCITRAL. The rules of UNCITRAL

can be applied to any trade or investment arbitration, so long as there is consent from the Parties.

Besides setting general principles that should be observed at the national level by regulatory agencies (the administrative level) and courts (the judicial level), trade rules also establish additional dispute resolution mechanisms that provide foreign investors with another layer of protection and can be seen as an important safeguard when investing abroad. It is important to note that this additional layer is subject to the consent of the Member Country Parties in the cases of UNCITRAL and ICSID. From a developing country perspective, however, it is important to notice that investor-state dispute mechanisms may generate constraints on regulatory autonomy and, ultimately, result in impediments to legitimate development objectives pursued through regulation in the energy sector. The tension between these two desiderata—credibility with foreign investors and economic or development objectives that may come into conflict with agreements with foreign investors—can be seen played out in the progress and eventual resolution of the more than forty cases against Argentina in the ICSID, one of them discussed in Box 6. In the end, these several cases served to discourage many countries from committing to be subject to ICSID dispute resolution.

Under the WTO, the Dispute Settlement Understanding constitutes part of the system, and every country that believes that any member is disregarding WTO rules could ask for a consultation that could lead to a complaint. This additional dispute resolution layer would not apply to a regulatory decision consistent with an articulated policy, if consistent with internationally agreed provisions. From a regulatory perspective, this is fundamental, since an international decision could be disruptive to the regulated market, perhaps even contrary to an important element of a country's public policy. It is also important to note that such disputes in regulated energy markets are very often not merely commercial disputes, but involve matters of public policy as well. All of these factors should weigh against trade complaints trumping regulatory decisions, as long as there is no discrimination in the application of a decision, the decision is reasonable on its face, and as long as the process for making the decision was fair and transparent and free of political interference. In short, there should be considerable deference to regulatory decisions that meet these criteria and international rules should be strictly interpreted.



This issue of decision-making is extraordinarily complex because it is central to both regulation and to the parties which are affected by trade negotiations. The ability of regulators to make final decisions in matters within their scope of jurisdiction (subject, of course, to prescribed appellate processes) is a highly critical element of maintaining and sustaining a coherent and stable market environment for the power sector. External disruption of those processes can do considerable harm, not only to the integrity and credibility of regulation, but also to its effectiveness and stability. Historically, such disruptions have often occurred for political reasons. The intrusion of provisions of trade agreements can have the same effect. It is, however, understandable that negotiators

for countries where potential investors are domiciled, would want to insert provisions into trade agreements that afford relief from “arbitrary,” “unreasonable,” or “discriminatory” decisions taken by local regulators, but doing so, from the perspective of the country in which the investment is made, may be quite different. This, therefore, is an area where considerable deference needs to be given to the ability of regulators to make reasonable and prudent decisions. It would be highly prudent for trade negotiators to avoid formulating any trade provisions that unduly intrude on regulatory processes. To the extent that such provisions are agreed to, they should be narrowly and precisely defined so as to minimize any harm to the effectiveness of regulation.

#### Box 6. Argentina and the ICSID

During the 1990s, Argentina was party to a great number of Bilateral Investment Treaties (BITs). In that period of time more than fifty of these agreements were signed with the purpose of encouraging investments in the country.

After the economic and political crisis of 2001, the Argentinean government published the “Ley de Emergencia Pública y Reforma del Régimen Cambiario N° 25.561 y sus reglamentaciones”, which has been seen from many foreign investors as a violation of their rights secured by the BITs.

One of the cases against Argentina related to the 2001 law was CMS Gas Transmission Company v the Argentine Republic. The US claimant invested in an Argentine company that was granted a license to operate gas transport services following the privatization of the gas industry in Argentina. In an award issued in May 2005, ICSID held that measures taken by the Argentine Government affecting the tariffs charged by the operating company amounted to a breach of the right to fair and equitable treatment set out in the US/Argentina BIT. CMS was awarded damages of US\$133.2m.

As a signatory to the ICSID Convention, Argentina is obliged to recognize and enforce the obligations imposed by ICSID awards as if they were final judgments of its national courts. Argentina’s enforcement obligations were stayed for some time pending annulment proceedings relating to each of the ICSID awards. However, even after the annulment proceedings concluded and the stays on enforcement were lifted, Argentina refused to voluntarily pay the amounts awarded, insisting that the successful claimants would have to commence court proceedings in Argentina’s federal courts in order to enforce their awards. The award creditors resisted commencing local court proceedings on the basis that enforcement should be automatic.

The settlement of the CMS case was announced in 2013, and likely did not please anybody. It is reported to involve: (i) the transfer of previously issued sovereign bonds, due to mature in 2015, with a value equal to 85 per cent of the value of the original award (presumably, the claimant was hoping for payment in cash, not bonds); (ii) the transfer of sovereign bonds, due to mature in 2017, with a value equal to 55 per cent of the interest due on the award; (iii) reinvestment by the beneficiaries of the settlement of 10 per cent of the amount originally claimed (which was superior to the amount awarded) in other sovereign bonds; and (iv) the discontinuance of all ongoing judicial proceedings relating to the award with no order as to costs.

Source: “Argentina Settles Five Investment Treaty Awards - Publications - Allen & Overy” 2015.



REGULATION THAT REFLECTS  
LEGITIMATE REGULATORY INTEREST,  
BUT IS NOT A NECESSARILY  
INHERENT PART OF THE REGULATORY  
REGIME: WHEN IS REGULATION  
OPTIONAL?



While all of the issues noted in Chapter 2 are critical regulatory issues, there are others that might be important, but are, nonetheless, not absolutely central to the integrity of the regulatory system. These are the issues that will be analyzed in this chapter.

## A. FINANCE AND CAPITAL STRUCTURE

### 1. Regulation

When it comes to market entry, it is important to verify the technical and financial ability of a company to perform the tasks it undertakes. It is also appropriate for regulators to assure themselves that prospective investors are fully committed to performing at a high level. It is common, therefore, that regulated companies be required to provide such assurances. One example of that is mandating a debt equity ratio range that a company must commit to maintaining to gain entry to the market, in order to assure the long-term commitment inherent in a company having its own capital at stake (i.e. skin in the game).<sup>24</sup>

If, however, the energy service in question is a short-term agreement, one for specific energy services, for example, the “skin in the game” question is less urgent, and the regulatory agency may not need to ask the company for such a detailed financial disclosure or to impose any specific capital requirements.

### 2. Intersection between regulation and trade

From a regulatory perspective, what matters is to assure that the regulatory agency has access to information concerning companies’ assets and finances, and that the investor has demonstrated, through deployment of its own capital or some other measure, its full commitment to the endeavor being undertaken. From a trade perspective, unreasonable financial requirements will discourage investment. Thus, financial entry requirements for foreign entities will need to have some balance drawn between the legitimate regulatory interest in the financial wherewithal and commitment of companies and the needs of investors to have a reasonable level of flexibility in making their investments.<sup>25</sup> If the regulatory interest is legitimate and the demands are reasonably calculated to achieve the results desired and there is no discrimination against foreign investors, then the

mere fact that an investor is unable to attract the type of financing that best serves its interest may not give rise to a legitimate trade dispute. Indeed, it may serve the purpose of weeding out an investor whose commitment to the project or capability to deliver the promised product is less than certain.<sup>26</sup>

## B. OWNERSHIP

### 1. Regulation

In theory, the regulatory agency should not be concerned about whether the company is owned by a foreign or a national company. Relevant concerns would relate to the company itself, its capital structure, etc. However, ownership of companies that provide services to consumers in the energy sector has always been subject to some degree of extra scrutiny, on the basis that energy services are essential services vital to national security and well-being. This is true in many countries, including the United States of America, as discussed in Box 7.

Nevertheless, in order to promote a competitive environment, it would be beneficial to the market if foreign companies were subject to the same treatment as national ones. National security concerns with respect to foreign investments within a country seem a bit exaggerated, given that hard assets are located within national boundaries, where police and other resources are available to protect those assets in the unlikely event that a foreign owner would seek to do harm to its own investments. However, this rationale has been used by many developed countries to require divestment of international foreign investment in the energy sector (Organization for Economic Co-operation and Development 2008).

### 2. Intersection between regulation and trade

The provisions that should be taken into consideration in regulations regarding ownership are those related to market access and national treatment. As already mentioned in this toolkit, under the GATS these principles are subject to specific countries’ commitments. Given country commitments as they currently stand, there is nothing in GATS that would legally prohibit countries from imposing limitations on foreign ownership in the energy services sector.

### Box 7. The Committee on Foreign Investment in the United States of America

The Committee on Foreign Investment in the United States of America (CFIUS) was established in 1975 to review acquisitions of United States of America (U.S.) firms by foreign entities that could erode national security. CFIUS was amended most recently by the Foreign Investment and National Security Act of 2007 (FISIA). FISIA provided Congress greater oversight of CFIUS and expanded the legal meaning of “national security” to include critical infrastructure. The act requires CFIUS to investigate all foreign investment deals where the overseas entity is owned or controlled by a foreign power, irrespective of the nature of the enterprise. According to some experts, this shifted the burden of proof to foreign firms to show that they do not represent a security risk.

CFIUS operates under the direction of the President and is chaired by the Secretary of the Treasury. It includes the heads of departments, including the Department of Justice, Homeland Security, the State Department, and the Department of Energy. Prior to a formal, voluntary filing with the Committee, parties to a foreign deal that may have security implications are highly encouraged to consult with CFIUS staff confidentially to identify and address any potential concerns. Once a formal notification is submitted, CFIUS reviews the proposed deal for a period of up to thirty days, during which time it can request additional information and provide feedback to the parties. After the investigation period, the Committee may make an adverse recommendation to the President, who then has fifteen days to make a decision.

Only the President has the authority to block a transaction, but two conditions must be met beforehand: the President must have “credible evidence” that the deal will impair national security, and he/she must determine that other U.S. laws are insufficient to safeguard national security.

President Obama, as an example, acting on CFIUS recommendations, ordered the Chinese-owned Ralls Corporation to divest its interest in Oregon wind farms in September 2012, citing national security concerns. Earlier in the year, Ralls had purchased the sites, one of which was near restricted U.S. Navy airspace where drones are tested, without reporting the deal to CFIUS. It was the first time in more than two decades that the White House formally prohibited such a deal.

Source: “Foreign Investment and U.S. National Security” 2015.

Current TISA negotiations could potentially strengthen GATS rules against discrimination against foreign ownership. The opposite could also happen. There are some groups in the U.S., for example, that argue that, rather than employing TISA as a means to expand on the GATS, it should be used to reverse what they consider to be infringements of GATS provisions on the authority of national, state, and local governments to regulate services. They would prefer that TISA negotiation would use the positive list approach to scheduling commitments to ensure that sensitive services, such as those traditionally provided by government-supported entities (water and energy), are not subject to foreign competition. (Cooper and Nelson 2014)

## C. AFFILIATE TRANSACTIONS

### 1. Regulation

Affiliate transactions between companies within the same corporate family within the energy market can, and have, on occasion, led to abuses that harmed consumers. Some of those concerns relate to vertically integrated companies using bottleneck facilities

(e.g. electric transmission or natural gas pipelines) they control to deny competing market participants fair and equal access to the market and information about it. Another issue would be a utility company choosing to buy goods and/or services needed to fulfill its obligations from affiliated companies (perhaps abroad) at higher than market prices. In both cases, regulators would have a legitimate and compelling interest in preventing such abuse and in assuring that the financial interests of the companies are aligned with the public policy objectives of adequate and reliable supply at reasonable prices. Vertically integrated companies have financial interests that are not always well aligned with the public interest. They have no inherent financial interest, for example, in allowing competitors to gain access to the marketplace. While the bottleneck example is not unique to foreign owned companies, nor is the above market affiliate purchase example, in the context of an international investor, both could give rise to a trade related complaint. Indeed, concerns about foreign owned utilities buying goods and services on a non-arm’s length basis from affiliates in the home country has already been a contentious issue in Brazil, and perhaps other countries as well.

## 2. Intersection between regulation and trade

Article VII.2 of the GATS, as mentioned above, states that if a Member's monopoly supplier competes through an affiliated company in the supply of a service outside the scope of its monopoly rights, the Member must ensure that such a supplier does not abuse its monopoly position. The same applies to the also above-mentioned Article 16.2.4. of the KORUS FTA, which prohibits a monopoly company from using its monopoly position to engage indirectly, including through its dealings with its parent, subsidiaries, or other enterprises with common ownership, in anticompetitive practices that adversely affect covered investments in a non-monopolized market in its territory.

The introduction of a code of regulated behavior or compelled complete corporate separation – unbundling – would be welcome to avoid abuse of monopoly power through affiliate transactions. Full transparency in the course of procurement of goods and services would also alleviate regulatory concerns about affiliate transactions.

## D. RESOURCE AND TECHNOLOGY CHOICES

### 1. Regulation

A country may well have as one of its goals to diversify its energy mix, both from a sustainability and an energy security perspective. Nevertheless, when diversifying resources and technologies, it should avoid discriminating against similar sources. As an example, a country might set a renewable energy goal, but need not specify that the renewable energy be generated domestically. Thus, the generic goal of

diversifying supply has a legitimate regulatory purpose, but specifying the location of manufacturing of the resource may be more of a trade than a regulatory issue. The one possible exception to this is where the energy source abroad raises security of supply issues (e.g. an energy source coming from a war torn or politically volatile region). Thus, regulatory agencies should give guidelines and policy choices and refrain from imposing specific quotas for a technology or source.

### 2. Intersection between Regulation and Trade

The regulatory issues regarding energy mix are rather discreet and should be reconcilable with trade issues. Certainly, the import of energy is a legitimate and important trade issue, but so is deciding on optimal energy mixes and security of supply. Clearly enunciated regulatory rules should allow for a fair analysis that balances trade and regulatory concerns.

In the particular case of developing countries, consideration of the balance between trade and regulatory concerns should include contemplation of universal access and sustainable development goals. The choice of an energy mix should also take into consideration realities such as off-grid access. In this regard, some developing countries, for example, have chosen an exclusive right model of a specific chosen technology that guarantees quality of service for isolated communities. This model reduces first mover cost and allows providers to enter into areas where they would otherwise not be able to provide services. Additionally, this modality could benefit from cross-subsidization, based on location or system size, achieving a more competitive price on small rural electrification.

# IV

REGULATION THAT REFLECTS  
LEGITIMATE ISSUES RELATED TO,  
BUT LARGELY OUTSIDE OF, WHAT  
IS INHERENT IN REGULATION



The importance of an issue for energy regulation can vary. While all the issues noted in Chapter 2 are critical, and the issues noted in Chapter 3 were important but not absolutely central to the integrity of the regulatory system, there are others that might related to regulation, but largely outside of what is intrinsically important to regulation. They may nevertheless be very important policy issues. These last issues are analyzed in this chapter.

## A. CHOICE OF SUPPLIERS

### 1. Regulation

Assuming arm's length dealings and that parties are capable of adequate performance; the regulator should not worry about which supplier's actors in the energy sector are choosing. If problems materialize with respect to service quality or other types of issues, regulators should possess adequate means for addressing the difficulties that may arise. All regulatory concerns about suppliers should be of a generic nature and not applied to any specific entity. The only exception to that would be where some entity, based on prior experience, has demonstrated disregard for meeting its obligations, or an inability to fulfill them.

### 2. Intersection between regulation and trade

All services should be given the same treatment, in accordance with the commitment lists under the GATS and other trade agreements that could involve the countries from which the service suppliers originate.

A country should of course have policy space to allow it to decide which level of quality of supplier they are looking for. At the same time, once the standards have been decided, ideally rules applied to national companies should not discriminate against foreign ones. However, sometimes local requirements and suppliers would be desired in order to achieve development goals, such as enabling domestic industry to maintain the system in operation and enhancing domestic employment.

## B. MANAGEMENT AND CAPACITY BUILDING

### 1. Regulation

A regulatory agency could request that a supplier of foreign technologies or management services should transfer their expertise to the country where they are providing the services, which is usually called technology transfer or capacity building. While this

#### Box 8. South-South Cooperation between China and Ghana

The project is a collaboration between the Energy Commission in Ghana and the Ministry of Science and Technology in China, together with the United Nations Development Program Country Offices in Accra and Beijing. The project facilitates, since 2015, exchange of expertise and technology between China and Ghana, building on China's unique development experience.

While Ghana has made strong efforts to electrify the country, with a 70 per cent nationwide electrification rate, rural areas lag behind, with only 40 per cent of the rural population enjoying access to electricity, and the lack of access to electricity affects rural development in Ghana.

This project aims to address Ghana's need to increase the universal energy access by effectuating off-grid community-based electrification, increasing the share of renewable energy, and promoting productive uses of energy - hereby also supporting broader socio-economic and environmental objectives, most notably poverty reduction through employment generation and supporting action on climate change mitigation. The project will do so by creating an enabling environment - in Ghana for absorbing new technology, and in China for providing it appropriately. The project also promotes the production of renewable energy technologies in Ghana, with a strong focus on private sector development and inclusion. In China, the project will support the review and updating of South-South Cooperation policies and guidelines and build solid capacity for China to engage more systematically in South-South Cooperation in order to support Ghana's national development goals and priorities for poverty reduction and provision of energy.

Source: "China-Ghana South-South Cooperation on Renewable Energy Technology Transfer" 2015.



may not be of central concern to regulators, it is certainly a matter of public policy importance to any developing country hosting foreign investment in its power sector.

## 2. Intersection between Regulation and Trade

From a trade perspective, capacity building is an empowerment tool, in particular for developing countries, that could enable them to actively participate in the supply chain of a specific product/ service.

Capacity building could be considered one of the most important trade goals that a regulatory agency in a developing country could achieve. Regulations, in this case, would be helping to better qualify the country's workforce and to engage it in the global process of manufacturing a product or providing a specific service. Sometimes this transfer of technology can be a result of South-South cooperation, where developing countries could engage in bringing their expertise to others with the same energy mix characteristics and opportunities. A good example of this kind of cooperation is the collaboration between China and Ghana on electrification, discussed in detail in Box 8.

## C. UNIVERSAL ACCESS

A goal that for many developing countries is crucial from a policy perspective, but not a necessary part

of regulation, is the pursuit of expanded (ideally universal) and affordable access to electricity services. For developing countries, which may be short on resources, may face significant challenges in connecting remote undeveloped areas to the grid, and may have large parts of the population who can afford to pay very little for electricity service, this can be a major challenge. At the same time, in a world economy in which education and access to the global internet is ever more important, providing electricity service to unserved people may be seen as a fundamental government obligation and as crucial for future economic development.

The pursuit of the goal of universal, affordable access may impact many regulatory decisions, from the choice of a liberalized or vertically integrated model to pricing regulations for end use consumers. Special incentives or subsidies may be offered to entice companies to invest in service provision to remote areas, as was done in the two example of Mali and Argentina (see Boxes 9 and 10).

## 1. Intersection of Regulation and Trade

Universal service is, of course, an important concern of regulators, and trade agreements should be carefully framed so as to do no harm to the attainment of that objective<sup>27</sup>. The trade implications of the pursuit of universal access can vary widely, depending on how

### Box 9. Pricing in Rural Areas of Mali

Within Africa, Mali has had probably more success than any other country in promoting isolated mini-grids, with more than 150 in operation. Of the 60 or so private operators in Mali, most currently use small, diesel-fired generating units with high production costs. Most of these small power producers (SPPs) have received initial capital cost subsidies from AMADER (Agence Malienne pour le Développement de l'Énergie Domestique et de l'Électrification Rurale, Mali's rural energy agency [REA]) to connect new customers. These capital cost subsidies have averaged about \$750 per new connection. Once the connection is made, the government does not provide operating subsidies for the mini-grid operator or consumption subsidies for the operator's customers. To achieve commercial sustainability in the absence of further subsidies, the operators of these isolated mini-grids (known as PCASERS, for Projets de Candidatures Spontanées d'Électrification Rurale) currently charge their household customers a price of about 50 U.S. cents, which is about two to three times higher than the price charged to poor customers on the main grid under the national utility's "social tariff." This inevitably creates "tariff envy," especially in cases where an isolated mini-grid is serving a village located near another village served by the national utility. Therefore, it was not surprising that in 2011 the Malian government ordered the national utility to connect seven isolated mini-grids located close to the national grid in order to eliminate the large tariff disparity between customers served by the mini-grid and customers of the national utility. These seven mini-grids were within or very close to the designated concession area of the national utility.

Source: Tenenbaum et al. 2014, 38.

### Box 10. Solar Home System in Argentina

Under the “Renewable Energy in the Rural Market” policy, Argentina established that concessionaires must buy and maintain a Solar Home System for households and public facilities and collect monthly fees-for-service. Additionally, they must provide under their contract: (i) electricity services to rural off-grid customers anywhere in the province for a period of at least 15 years, upon request; (ii) all necessary maintenance, repairs or replacement of components as needed to ensure the continuity of the electricity service to each customer; (iii) periodic reports to the provincial utility regulatory agency (ENRESP) on the status of the concession, including, but not limited to, performance indicators such as the number of connections by type of consumer and method and technology supply, outage statistics, and financial results. Concessions are eligible to re-bid for their business every 15 years, up to a total of 45 years, competitively against other eligible firms.

The project subsidy is about 50-60 per cent and paid partly at the time of procurement of a new lot of systems and partly against met installation targets, to balance the advantage of a direct control of outputs with manageable working capital costs to the concessionaire. Installations, service quality and customer satisfaction are verified ex post by the regulator.

Source: Reiche and Durand 2015.

such access is pursued. In pursuit of universal access, countries may find reasons to liberalize their markets, in the hope of attracting foreign investment to rapidly expand electricity service capacity. Alternatively, as in the case of Argentina’s expansion of solar power, countries may wish to be able to offer monopoly rights as incentives for investment in hard to serve areas.

## D. STATE-OWNED ENTERPRISE

For purposes of trade agreements, there is little reason, if any, to treat State-owned enterprises (SOEs) differently than privately owned ones.<sup>28</sup> For regulators, providing appropriate levels of oversight can be more difficult than it is for investor owned entities, simply because they are not profit driven. As a result, they are generally less responsive to the economic signals sent by the regulators. And because, oftentimes, SOEs have channels into the government and that sometimes enable them to bypass regulatory controls.<sup>29</sup> Some have expressed concerns that SOE’s which have had monopoly power in the market place, may come to see foreign entry, as a challenge to their market power and could, therefore, lead to protectionist measures to shield the SOE from market pressures. That could well happen, but it is likely to happen in scenarios where the monopolist is privately owned, so the fact that an incumbent is an SOE should not alter that dynamic a great deal.

So, the big challenge from the regulator perspective is if they will have the power, or, even if they possess the power, whether they have the means to regulate SOEs. This problem, however, is specific to regulation and seems unlikely to have much of an effect on trade related issues. For the latter, the issue is that more linked to fiscal, and, perhaps labor related concerns. Also of possible concern, is that governments might use SOE’s as a means of filling in market gaps, such as providing electric service where private investors have chosen not to do so. That, is also a matter that seem rather unlikely to have trade implications.

### 1. Intersection of Regulation and Trade

When it comes to trade rules, SOEs should receive the same treatment as regular companies, because both types of companies can have monopolistic behavior. So if a country has an interest to seek foreign investors and companies in a sector, it should find a way to treat SOEs in the same manner as regular companies, at least what comes to competition rules.

The entire rationale about the problem of SOEs having monopoly powers having been largely explore in Chapter II, section C.

## FINAL REMARKS



Trade provisions under the GATS and in other trade agreements should be carefully elaborated in order not to unduly constrain public officials in ways that prevent effective regulation of energy services. This is especially important for developing countries that are still in the process of filling energy gaps and pursuing energy access goals.

With respect to energy services, some regulatory activities are of paramount importance, such as establishing quality of service standards, pricing and ratemaking, as described in Chapter 2. Regulatory issues under that category should be given considerable deference under trade rules. It is worth highlighting the fact that countries should consider carefully before they commit to rapid electricity market liberalization. There are many potential advantages to market liberalization; however, it is not a panacea, and successful liberalization requires a set of institutional reforms (separation of ownership of transmission and generation, for example, and establishment of an independent grid operator) that must be undertaken together in order for market liberalization to work.

There are other issues that have some importance but are not necessarily central to regulation, such as regulation of ownership and choice of suppliers, as described in Chapter 3. In regard to those issues, regulation merits less deference than should be given to the Chapter 2 issues. In regard to Chapter

4, the regulatory issues have less importance and do not necessarily require deference from trade rules—however, the underlying policy issues, such as provision of universal access, may be very important indeed, though not necessarily in conflict with free trade.

As it has been shown in this report, there is no one-size-fits-all regulatory option when it comes to addressing all regulatory issues. In this sense, the importance of securing policy space to developing countries in order to pursue the best pathway that fits their energy mix reality and priorities, is paramount. As pointed out by the UNCTAD Secretariat, reconciling deep liberalization under regional trade agreements with national regulatory processes is a challenge. In that sense, where regulatory coherence will be established in a regional process, special and differential treatment is essential to developing countries in order to enable them to build competitive services and strengthen regulatory and institutional capacities (UNCTAD 2014).

Overall, transparency and clarity in the regulatory and international regime are highly desirable, because both domestic and foreign companies know exactly what to expect when investing in the energy service sector and regulation and trade policy can be more harmonious. Regarding this last point, regional integration approaches, as mentioned in this paper, can be a good pathway into strengthening development goals.

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## REFERENCES

- “Argentina Settles Five Investment Treaty Awards - Publications - Allen & Overy.” 2015. Accessed April 26.
- Besant-Jones, John E. 2006. *Reforming Power Markets in Developing Countries: What Have We Learned?* World Bank Washington, DC.
- Brasil. 1999. *Institui O Programa Nacional de Eletrificação Rural “Luz No Campo”, E Dá Outras Providências.*
- Brown, Ashley, and Victor Loksha. 2013. “International Experience with Open Access to Power Grids.” Knowledge Series 016. Washington DC: World Bank.
- Cavalcanti, Carlos, Carolina Lembo, and Vera Thorstensen, eds. 2013. *The Regulation of The International Energy Trade: Fuels and Electricity.*
- “China-Ghana South-South Cooperation on Renewable Energy Technology Transfer.” 2015. *UNDP in Ghana.* Accessed April 26.
- Cooper, William H., and Rebecca M. Nelson. 2014. “US Foreign Trade in Services: Trends and US Policy Challenges.”
- European Union. 2011. *Free Trade Agreement between the European Union and Its Member States, of the One Part, and the Republic of Korea, of the Other Part.* Vol. 54.
- — —. 2015. “EU-US Transatlantic Trade and Investment Partnership: Raw Materials and Energy.” Accessed February 11..
- Federal Energy Regulatory Commission. 2010. “FERC Seeks More Price Transparency for Intrastate Pipeline Transactions.”
- — —. 2012. “Energy Primer: A Handbook of Energy Market Basics.”
- “Foreign Investment and U.S. National Security.” 2015. *Council on Foreign Relations.* Accessed April 26.
- Hogan, W. 2011. *Transmission Benefits and Cost Allocation.* May. Hogan, William W. 2002. “Electricity Market Restructuring: Reforms of Reforms.” *Journal of Regulatory Economics* 21 (1): 103–32.
- Ian, Alexander, and Timothy Irwin. 1996. “Price Caps, Rate-of-Return Regulation and the Cost of Capital.” World Bank.
- Lembo, Carolina. 2013. “La Relación de Los Pilares Del Desarrollo Sostenible Con La Universalización Del Acceso a La Energía Eléctrica: La Experiencia Brasileña.” Lima. Organization for Economic Co-operation and Development. 2008. “Protection of ‘Critical Infrastructure’ and the Role of Investment Policies Relating to National Security.”
- “Overview.” 2015. Accessed April 26.
- Pérez-Arriaga, Ignacio J. 2013. *Regulation of the Power Sector.* London ; New York: Springer.
- Reiche, Kilian, and P. Durand. 2015. “Argentina PERMER: The Argentine Off-Grid Electrification Concessionaire EJSSESA.” Accessed February 3.
- Reiche, Kilian, Bernard Tenenbaum, and Clemencia Torres. 2006. “Electrification and Regulation: Principles and a Model Law.pdf.”
- Sauvé, Pierre. 2013. “A Plurilateral Agenda for Services? Assessing the Case for a Trade in Services Agreement (TISA).”
- Tenenbaum, Bernard, Chris Greacen, Tilak Siyambalapatiya, and James Knuckles. 2014. *From the Bottom Up: How Small Power Producers and Mini-Grids Can Deliver Electrification and Renewable Energy in Africa.* The World Bank.
-

“Transatlantic Trade and Investment Partnership (T-TIP) | United States Trade Representative.” 2015. Accessed February 19. <https://ustr.gov/ttip>.

UNCTAD. 2014. “Services, Development and Trade: The Regulatory and Institutional Dimension.”

“Universal Energy Access.” 2015. *Sustainable Energy for All*. Accessed April 25.

World Trade Organization. 2010. “Energy Services.” S/C/W/311.

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## ENDNOTES

- <sup>1</sup> Domestic markets are referenced simply because that is how the industry has evolved historically. Obviously, that scope would change if markets extended beyond national boundaries, as is the case in Central America.
  - <sup>2</sup> The term, “monopoly,” is being used here because that was the historic industry model that predominated throughout the world. Obviously, competition has arisen in a number of electricity markets. While some have described this as “deregulation,” that is inaccurate. Competition in electricity markets may well alter the nature of regulatory oversight, but it does not eliminate the need for it.
  - <sup>3</sup> The book (Cavalcanti, Lembo, and Thorstensen 2013) was predominantly used as a source on Trade Rules on Energy Services.
  - <sup>4</sup> The Uruguay Round used a “Services Sectorial Classification List” (W/120), an aggregated version of the United Nations Central Product Classification.
  - <sup>5</sup> Both in the W/120 and CPC there are only three energy sectors that are contemplated: (i) services incidental to energy distribution; (ii) transportation of fuels; and (iii) services incidental to mining.
  - <sup>6</sup> All the energy services specific commitments can be found in the Appendix A to this document.
  - <sup>7</sup> Other elements include social objectives such as universal access, as well as enforcement of competition, market rules, quality of service, and other such matters.
  - <sup>8</sup> The same may be true in regard to the potential of consumer harm in such cases as information asymmetry or potential for fraud or deceit. While those examples are useful to point out, this paper will focus primarily on regulation as it deals with the essential bottleneck issues and the impact on the more contestable segments of the industry.
  - <sup>9</sup> There are measures that can be taken to reduce the monopoly power inherent in a bottleneck facility, such as the creation of secondary pipeline capacity markets in gas, and establishing financial transmission rights in electricity, but detailed discussion of such measures beyond the scope of this paper.
  - <sup>10</sup> It is important to distinguish between deregulation and competition. The former denotes the absence of regulatory oversight. The latter means that regulators can relax their supervision when the market performs, but retain the ability to intervene in the case of market failure or inappropriate conduct but one or more market participants (e.g. conspiring to fix prices).
  - <sup>11</sup> As noted in the Brown Loksha paper, the open access regime is less than fully open, and for small and mid-sized customers, the free market is largely non-existent.
  - <sup>12</sup> In his still-influential 2002 article, William Hogan traced the steps and missteps that led to the currently-prevalent form taken by liberalized markets in the United States (W. W. Hogan 2002).
  - <sup>13</sup> The term, “reasonable,” of course, is necessarily vague. For purposes of this paper, the term refers to constraints that are not inconsistent with general regulatory practices across jurisdictions, are not applied with undue discrimination against any specific market participant, or subset of participants, and are consistent with the public interest and good market design.
  - <sup>14</sup> For many countries, and especially for developing countries in which large segments of the population are low income, price regulation may also be related to policy commitments relative to making electricity affordable and accessible even for households which might not be able to pay market rates. This issue, while very important and often, by default, left to regulators to sort out, is more a policy issue than a regulatory issue inherent in energy markets themselves, so it is discussed in Chapter 4, under “Universal Access.”
  - <sup>15</sup> There is a third method, used in a few jurisdictions, known as revenue caps. Under this methodology, the regulators set a revenue requirement that the regulated company needs to receive to do business on a reasonable basis, and failure to meet that requirement will result in an upward adjustment to rates. This methodology is designed to break the link between energy sales and profitability for utilities, and, therefore,
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to promote conservation and demand side management. This approach to ratemaking is worth considering; however, given that it is used only in a few jurisdictions, primarily jurisdictions that are highly developed economically, it is beyond the scope of this paper.

- <sup>16</sup> It is generally optimal for regulators to internalize all costs and objectives into the pricing of the service rendered. That is, however, not always possible, especially in regard to externalities and uncontrollable costs (e.g. inflation, currency fluctuation, etc.), and may have inadvertent distribution effects, such as socializing costs that ought not be socialized.
  - <sup>17</sup> Who actually carries out the regulation, of course, varies from country to country. While the preferred model is an independent regulatory body, in some countries, such an entity does not exist, and regulation is carried out by administrative bodies, such as Ministries, or, in some places, it is a matter of contract. It is important that, in negotiating trade agreements, that countries do not inadvertently agree to measures that undercut whatever regulatory regime is in place.
  - <sup>18</sup> It is also fair to note that in regard to countries exporting electricity to their neighbors, charging higher prices for the exported energy than are charged for domestic consumers may be, at least in part, justified by the fact that the exporting country is incurring the environmental consequences for the economic gain of its neighbor. A case can certainly be made for that environmental externality to be internalized into the price.
  - <sup>19</sup> The very recent action taken by the European Union against Russian gas giant Gazprom on anti-trust grounds adds another fascinating dimension to price discrimination in fuel. Is an exporting country exploiting its market power in the countries in which it sells in order to give inordinate advantage to its domestic customers? It raises the question of how a regulator or trade negotiator should deal with a non-domestic supplier trying to exploit its monopoly power by extracting high rents from captive buyers. In a very real sense it is the intersection between competition, regulatory, and trade policy.
  - <sup>20</sup> Regarding performance standards in the electricity industry, they tend to be jurisdiction specific and based on local considerations. It is difficult to conceive of circumstances where one country might be willing to lower its expectations in order to accommodate foreign suppliers. Conversely, lower standards may be accepted in lower income jurisdictions in order to keep prices lower, where that is the case, it seems improbable that customers would be willing to pay higher prices in order to allow one of their suppliers to better access other markets. Thus, while theoretically possible, as a practical matter, it is difficult to see how a mutually acceptable set of standards can be derived in regard to the provision of electricity service.
  - <sup>21</sup> Principles drawn from guidelines for natural gas pipelines articulated by the U.S. Federal Energy Regulatory Commission. (Federal Energy Regulatory Commission 2010)
  - <sup>22</sup> An example of where trade provisions can detract from transparency is where the trade provisions allow for a more inclusive definition of what constitutes proprietary or commercially sensitive information than do energy regulators, who generally skew toward more limited definitions of what is entitled to confidential treatment.
  - <sup>23</sup> As noted above, it is critical that the process by which regulatory decisions are to be made should be open and transparent. In practical terms, that generally means that all information used to make decisions be publically available to all interested parties (this might have certain limited exceptions relating to statutorily defined highly sensitive commercial or intellectual property, security, or perhaps personnel matters), that decision making processes be prescribed in advance, that all relevant proceedings be subject to advance public notice, that all interested parties will be afforded a meaningful opportunity to input their views, and that all decisions be taken in public.
  - <sup>24</sup> There is no specific standard regarding debt equity ratio, although a 60/40 range (in either direction) is probably a useful benchmark. Clearly there is a tradeoff between requiring “skin in the game” and keeping prices reasonable. Generally speaking, the higher the equity component the higher the prices charged will be.
  - <sup>25</sup> It is important to note that debt equity ratios or other financial requirements that regulators choose to impose, should be equally applicable to all investors, domestic or foreign.
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- <sup>26</sup> The issue of commitments and capability may not be all that important in many sectors of the economy, but in the electricity industry, with its long planning horizons, the need for instantaneous matching of supply and demand, and the essential nature of the service, these issues take on a high level of concern.
- <sup>27</sup> It is however, quite important in regard to universal access, however, is that if it is an objective of regulation, then it should be explicitly articulated, so that all players in the market, including foreign ones, are made fully aware that it is part of what is expected of them.
- <sup>28</sup> The one possible exception to this is where a new entrant in the market poses a risk of stranding some of SOE's assets, which could cause a fiscal problem for the state. There are a variety of ways this can be dealt with ranging from write-offs to "stranded asset charges" being imposed on customers. While the entry of foreign entrants into the market does not necessarily change this problem, it is important for trade negotiators to be wary of doing so, as it may cause the government and/or regulators to act in protectionist manner. To be fair, this could also be the case for a privately-owned company, but in the case of the latter, the assets being stranded are private and not state owned.
- <sup>29</sup> To be fair, SOE's are not the only ones who might seek to bypass regulation. Politically powerful private ones have been known to try that as well.
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## APPENDIX



## List of commitments in conformity with article 7.7 (cross-border supply of services) EU-Korea FTA on energy services

The list of commitments indicates the service sectors liberalized pursuant to Article 7.7 and, by means of reservations, the market access and national treatment limitations that apply to services and service suppliers of Korea in those sectors. The list below is composed of the following elements: (a) the first column indicating the sector or sub-sector in which the commitment is undertaken by the EU Party, and the scope of liberalization to which the reservations apply; and (b) the second column describing the applicable reservations. Cross-border supply of services in sectors or sub-sectors covered by this Agreement and not mentioned in the list below is not committed.

14. ENERGY SERVICES	
A. Services incidental to Mining (CPC 883) <sup>(41)</sup>	For Modes 1 and 2 None.
B. Pipeline Transportation of fuels (CPC 7131)	For Mode 1: EU: Unbound. For Mode 2: AT, BE, BG, CY, CZ, DE, DK, ES, EE, FI, FR, EL, IE, IT, LV, LU, MT, NL, PL, PT, RO, SK, SI, SE, UK: Unbound.
C. Storage and warehouse services of fuels transported through pipelines (part of CPC 742)	For Mode 1: AT, BE, BG, CY, CZ, DE, DK, ES, FI, FR, EL, IE, IT, LT, LU, MT, NL, PL, PT, RO, SK, SI, SE, UK: Unbound. For Mode 2 None.
D. Wholesale trade services of solid, liquid and gaseous fuels and related products (CPC 62271) and wholesale trade services of electricity, steam and hot water	For Mode 1: EU: Unbound for wholesale trade services of electricity, steam and hot water. For Mode 2 None.
E. Retailing Services of motor fuel (CPC 613)	For Mode 1: EU: Unbound. For Mode 2 None.
Sector or sub-sector	Description of reservations
F. Retail sales of fuel oil, bottled gas, coal and wood (CPC 63297) and retailing services of electricity, (non-bottled) gas, steam and hot water	For Mode 1: EU: Unbound for retailing services of electricity, (non-bottled) gas, steam and hot water. BE, BG, CY, CZ, DE, DK, ES, FR, EL, IE, IT, LU, MT, NL, PL, PT, SK, UK: For Retail sales of fuel oil, bottled gas, coal and wood, unbound except for mail order (none for mail order). For Mode 2 None.
G. Services incidental to energy distribution (CPC 887)	For Mode 1: EU: Unbound except for consultancy services (none for consultancy services). For Mode 2 None.

19. ENERGY SERVICES	
A. Services Incidental to Mining <sup>(82)</sup> (CPC 883) <sup>(83)</sup>	None.
B. Pipeline Transportation of fuels <sup>(84)</sup> (CPC 7131)	AT, BE, BG, CY, CZ, DE, DK, ES, EE, FI, FR, EL, IE, IT, LV, LU, MT, NL, PL, PT, RO, SK, SI, SE, UK: Unbound.
C. Storage and warehouse services of fuels transported through pipelines <sup>(85)</sup> (part of CPC 742)	PL: Investors from countries which are energy suppliers may be prohibited to obtain the control of the activity. Unbound for direct branching (incorporation is required).
D. Wholesale trade services of solid, liquid and gaseous fuels and related products (CPC 62271) and wholesale trade services of electricity, steam and hot water <sup>(86)</sup>	EU: Unbound for wholesale trade services of electricity, steam and hot water.
E. Retailing Services of motor fuel (CPC 613)	EU: Unbound for retailing services of motor fuel, electricity, (non bottled) gas, steam and hot water. BE, BG, DK, FR, IT, MT, PT: For retail sales of fuel oil, bottled gas, coal and wood, authorisation for department stores (in the case of FR only for large stores) is subject to an economic needs test. Main criteria: number of and impact on existing stores, population density, geographic spread, impact on traffic conditions and creation of new employment.
F. Retail sales of fuel oil, bottled gas, coal and wood (CPC 63297) and retailing services of electricity, (non-bottled) gas, steam and hot water <sup>(87)</sup>	

Sector or sub-sector	Description of reservations
G. Services incidental to energy distribution <sup>(88)</sup> (CPC 887)	AT, BE, BG, CY, CZ, DE, DK, ES, EE, FI, FR, EL, IE, HU, IT, LU, LT, MT, NL, PL, PT, RO, SK, SE, UK: Unbound except for consultancy services, and none for consultancy services. SI: Unbound except for services incidental to the distribution of gas, and none for the distribution of gas.

Sector or Sub-sector	Limitations on market access	Limitations on national treatment
D. ELECTRICITY, GAS AND WATER SUPPLY		
(a) Electricity, gas, steam and hot water supply	The aggregate foreign share of KEPCO's issued stocks may not exceed 40 percent. A foreign person may not become the largest shareholder of KEPCO.	
a) Energy industry - electric power generation other than nuclear power generation; electric power transmission, distribution and sales (ISIC rev 3.1: 401)	The aggregate foreign share of power generation facilities, including cogeneration facilities of heat and power (GHP) for the district heating system (DHS), may not exceed 30 percent of the total facilities in the territory of Korea. The aggregate foreign share of electric power transmission, distribution and sales businesses should be less than 50 percent. A foreign person may not be the largest shareholder. A single shareholder's share of KEPCO's equity interests may not exceed 3 percent.	
b) Manufacture of gas; distribution of gaseous fuels through mains (ISIC rev 3.1: 402)	Foreign persons, in the aggregate, may not own more than 30 percent of the equity interests of KOGAS. A single shareholder's share of KOGAS's equity interests may not exceed 15 percent.	
c) Steam and hot water supply (ISIC rev 3.1: 403)	None	None

(1) This reservation does not apply to former private enterprises that are owned by the state as a result of corporate reorganisation processes.

(2) For purposes of this reservation, 'state enterprise' shall include any enterprise created for the sole purpose of selling or disposing of equity interests or assets of other state enterprises or governmental authorities.

(3) The measures for companies employing disadvantaged groups are applied in a non-discriminatory way.

(4) 'Petroleum' includes natural pitch and inflammable natural gas.

(5) Publishing and printing on a fee or contract basis is to be found in BUSINESS SERVICES under Other Business Services. r).



