4. Legal Aspects of Grid Interconnection

4.1. Introduction

The flow of electrical power, and of funds to pay for electricity received, across borders must occur within a long-term legal framework that ensures trust between partners, as well as structuring straightforward and transparent dealings between the trading countries and the public and/or private institutions that support grid interconnections. A legal framework is necessary in order to identify the parties responsible for paying for power interconnection infrastructure, for the power itself, and for the costs of operating the infrastructure. In addition, and as indicated in Chapter 3 of this report, legal agreements must specify the prices to be paid for electricity (and how those prices are to be calculated), what form of payment is acceptable, and other parameters of international funds transfer. Also, for example, legal agreements are needed to indicate which parties are responsible to any third parties harmed by interconnection-related activities, and describing how disputes between parties are to be addressed. The legal agreements needed to establish and operate a grid interconnection are both affected by and affect the status of the legal systems within the interconnected countries—these effects can be both positive and negative.

The Chapter that follows reviews the legal issues associated with international electricity grid interconnections, including providing a summary of the types of institutions likely to be involved in power trading (and thus required to be involved in legal arrangements related to power trading), describing the types of country-to-country legal agreements needed to establish and operate power lines (including legal agreements related to contractor selection), identifying some of the internal requirements needed to implement international legal agreements related to power trading—including characteristics of National legal systems that can make international legal agreements more complex, and noting some of the potential benefits to a national legal system from being involved in international agreements related to grid interconnections. In general, this Chapter focuses on legal agreements between and involving national governments, though agreements with others are described to some extent as well.

4.2. Potential Institutions and Groups Involved in Power Trading

The complexity of international power grid interconnection systems—including the physical systems themselves, the institutional arrangements necessary to make them work, and the economic arrangements needed to pay for them—mean that a number of very different "actors" may be involved in establishing and operating power trading arrangements. Legal agreements are needed to codify the rights and responsibilities of each of these actors relative to each other. Some of the potential "actors" (or "parties") in legal agreements related to grid interconnections, and some of the agreements that each type of party is likely to be involved in, include the following:

- **National governments/ministries**: National governments, usually operating through specific ministries (such as Ministries of Energy, Electricity, Infrastructure, and/or the Environment), are highly

likely to be involved as parties to all but the simplest electricity interconnection projections. At a minimum, governmental agencies must certify that other parties have existing rights to do business in the countries involved in the interconnections, and own or have existing rights to use the land on which interconnection facilities are built. More likely, government agencies will be responsible to some degree for energy sector planning activities that implicate grid interconnections, will be needed to provide licenses to operate for companies involved in the interconnection, will need to provide rights of access to publicly-owned land for power lines and related facilities, and will need to pledge state financial resources toward the repayment of loans—from the private sector and/or multilateral financial institutions, for example. In some cases, government ministries may be the ultimate buyers and/or sellers of electricity, obliging them to sign legal agreements to guarantee electricity supplies or consumption at a certain level.

- **Sub-national governments and agencies**: In many countries, the States, Provinces, Municipalities, or other jurisdictions that might host grid interconnection infrastructure (export-oriented power plants or power lines) may also be significant governmental actors in grid interconnection projects. The cooperation, or lack of same, of State and Local authorities can have a significant impact on decisions regarding grid interconnection projects, as the land-use, environmental, labor, and other rules at the State and Local levels must be considered in formulating legal agreements that define and guide interconnection projects.
- **National utilities**: In many countries, national utilities, whether wholly government-controlled or semi-autonomous, are likely to own generation and transmission/distribution assets, and thus be involved in legal agreements to sell, buy, and move electricity flowing through international interconnections. Utilities, whether public or private, may also be involved in building, operating, and/or maintaining power line infrastructure, and as such will require legal arrangements that designate their rights and responsibilities as participants in the project.
- **Private utilities, buyers, or sellers**: Where the generation and/or transmission/distribution assets to be used in power transfers are privately-owned, private utilities will be implicated as power buyers and sellers, and may also be providers of construction, operation, and maintenance services to the power line itself. Private utilities may require different legal structures from national utilities, as they are not (directly) backed by the government. As market mechanisms in the power sector mature, privately-owned generators or electricity or bulk electricity buyers (such as large industrial enterprises or firms purchasing bulk power for distribution to an aggregated group of consumers) may also arrange, via legal contracts, to buy or sell power that will flow between countries. In some countries, the activities of private utilities (and some other electricity market actors) will be regulated, and the regulatory body will likely also need to be consulted with regard to, if not have direct responsibility for, grid interconnection contracts.
- **Private construction and/or maintenance contractors and subcontractors**: The construction of a large-volume transmission interconnection may by itself cost a billion US dollars or more, and when the major power plants needed to feed electricity into a major interconnection are included,

the overall cost may be many billions of dollars. Legal contracts for construction services will need to be entered into between project sponsors (nations, private investors, and/or multilateral banks) and a firm, or likely many firms, engaged in construction of the grid interconnection. Often, prime contractors for all or a portion of construction services will work with subcontractors, under relationships also governed by legal agreements. Similarly, the maintenance contracts for the power lines may be arranged between private companies and private or national utilities, governments, or transmission consortia.

- **National or multi-national transmission consortia**: In some cases, the operation of a grid interconnection may be the responsibility of a transmission consortium created for the purpose, or a consortium already operating in one of the interconnected countries. These types of consortia, which may be public, semi-public, or privately-owned, will be governed by legal agreements with the governments involved that specify their areas of operations, and will also enter legal agreements with electricity buyers and sellers to provide transmission services.
- **Multi-national banks and other financial institutions**: Finally, the financing for grid interconnections, and often the new power plants designed to feed them, will often come in part from multinational development banks and/or private financial institutions (including national and international finance firms). These institutions will require contracts guaranteeing repayment from the countries and/or companies that will buy and/or sell the power flowing through the line, contracts secured by power line or generation assets, and often by general revenues from the countries involved as well.

4.3. Country-to-country Legal Agreements Required

The hosting of an international grid interconnection requires that the countries involved enter into a number of different types of legal agreements, often also involving some of the sub-national or multilateral/consortium parties described above.

4.3.1. Power purchase and pricing agreements

Perhaps the most obvious type of agreement that needs to be entered into between countries involved in an interconnection are agreements for selling and purchasing power, including agreements on power pricing. In power sales agreements, the seller is usually obligated to make available a certain amount of power (for example, in MW and/or GWh per year), and the buyer is usually obligated to purchase a certain amount of power. Both minimum and maximum purchases may be stipulated, or only minimums may be included in the agreement (as maximums are likely limited by the physical capacities of the line). In some cases, contracts are set up so that buyers must "take or pay", that is, must take delivery of a certain amount of energy per year, or pay as a penalty all or part of the cost of the energy that would have been "taken" had the buyer fulfilled its obligations under the contract. Conversely, contracts often specify financial penalties to sellers that do not meet their obligations to sell power. There are generally clauses, however, in power sales contracts to address circumstances beyond the suppliers' control that cause disruption in or curtailment of the delivery of power. Often referred to as "Force Majeure" or "uncontrol-

lable forces," these circumstances can include natural disasters, such as floods or droughts, epidemics and war[69]. In addition, as can be seen in the electricity system interconnection agreement between the United States-based utilities CLECO Power LLC and the Southwestern Power Company, it would not be considered a breach of contract if a disruption of power supply were to occur due to "installation, maintenance, repair, or replacement of equipment"[70].

In some cases, power exchanges across borders are set up not so much to facilitate net sales from one country to another, but to allow countries with complementary resource endowments and/or electricity demand (such as countries with hydroelectric outputs that vary differently seasonally or over years, or countries with different seasons or times of day of peak demand) to exchange power so as to reduce capacity and reserve requirements in both countries. In these cases, power sales and purchase contracts may be structured differently.

Power pricing agreements, as noted in the previous Chapter, are both legal and economic agreements. Power pricing agreements specify the price that a buyer must pay and a seller will receive for electricity. These agreements will typically have a long duration, since the power sales must pay the financing costs of the long-lived assets (power lines and power plants) that make them possible. Power prices may be fixed over time, may have a fixed escalation rate over time, may be set to escalate with one or more national or international price indices, or may be linked, in part, to international prices for other energy commodities (such as crude oil). International purchase/sales agreements will also typically specify the currency in which payments are to be made. In many developing regions, contracts may specify that payments be made in "hard" currencies, such as US Dollars or Euros, so as to insulate buyers and sellers from the impacts of local-currency inflation, as well as to provide hard-currency income for the electricity sellers. A review of the pricing arrangements and currency requirements in the Power Purchase Agreement (PPA) for the Theun-Hinboun Hydropower Project in Lao People's Democratic Republic (Lao PDR) illustrates this point. The main goal of the project, funded in part by the Asian Development Bank (ADB), was to promote economic growth in Lao PDR by increasing the foreign exchange earnings through exporting electricity to Thailand. The completed PPA requires that 50 percent of payments be made in Thai Baht and 50 percent in US dollars, all of which are paid to an offshore escrow account[71].

Power purchase agreements may involve parties other than the direct representatives of the trading nations, including national or private utilities, transmission consortia, or, in countries where electric sector restructuring

69 The following is a more comprehensive list of the circumstances that can be included under the category of Force Majeure: sabotage, strikes or other labor difficulties, riots, civil disturbances, acts of God, acts of public enemies, drought, earthquake, flood, fire, explosion, lightening, landslides, or similar cataclysmic events, or appropriation, diversion, or interruption of service by any court or government body having jurisdiction over such agreements.

Information for this section was obtained from the Electric Power System Interconnection Agreement between CLECO Power LLC and the Southwestern Power Company, November 2001, available at *http://www.cleco.com/uploads/RS17.pdf*, and the Unit Power Sales Agreement among Southwestern Electric Power Company American Electric Power Service Corporation, July 2001, available at *http://www.aep.com/newsroom/resources/corpsep/docs/ATT4.pdf*

70 Electric Power System Interconnection Agreement between CLECO Power LLC and the Southwestern Power Company, November 2001, section 5.15, p 11, available at *http://www.cleco.com/uploads/RS17.pdf*

71 Information obtained from the following sources: *The Theun-Hinboun Hydropower - Project Profile*, Asia Development Bank (ADB), March 3, 2005; http://www.adb.org/Projects/TheunHinboun/, and memo by Robert Kay, *Impact of the Financial Crisis of the Energy Sector: a Developer's Perspective,* GMS Power Public Company Limited, Bangkok, Thailand, *http://www.worldbank.org/html/fpd/energy/energyweek/kay_pres.doc* (date not provided, but probably 1999).

is relatively advanced, private suppliers and/or buyers of power. The nature of the electricity buyer and seller in interconnection arrangements has a strong bearing on both the prices ultimately paid for power, and how pricing arrangements are reached. For example, as noted by Neuhoff, in the case where integrated monopolies are the actors on both the importing and exporting side, rather than a negotiated market price for electricity…[72]

> "The price for the electricity will be between the costs of the exporting country and the costs of the outside option for the importing country. If long-term contracts are to be signed the outside option of the importing country is to construct new power plants. If short term prices are negotiated the outside option for the importing country can be anything between running inefficient diesel generators and cutting power supply to part of the demand side. If power trade is based on commercial interests and the exporting country has no competitive market and the import country has no short-term substitute for electricity imports then long term contracts are vital for the importing country."

In most international power purchase agreements to date, nations are typically the ultimate legal guarantors of purchases or sales. The Lao PDR Theun-Hinboun Hydropower Project mentioned above, and the Bujagali Hydro Project in Uganda, are examples here. In both cases the respective governments borrowed funds, in part from the Asian Development Bank in the former case and from the African Development Bank, the World Bank and the International Finance Corporation (IFC) in the latter case, to finance the majority of the costs of the projects. In the PPA of the Bujagali project, signed in November of 1999, the government guarantees all payments that are to be made by the Uganda Electricity Board (UEB.) If UEB should default on any payments, the government will immediately cover the costs. Therefore, although there is private sector involvement in both of these interconnection cases, the governments are the legal guarantors of the loan repayments[73].

4.3.2. Agreements on siting of power line and related infrastructure

In addition to agreements on the quantities of power to be transferred, and the prices to be paid for power, in virtually all circumstances where power lines cross national borders the nations involved must agree on the siting of power lines and related infrastructure, such as substations and control centers. Governments must agree to provide a right-of-way for the power line through publicly-owned land, and must work with private landowners to secure additional land or easement rights to traverse private land. Frequently, siting power lines will involve a process of negotiation between governments to determine which routing is "best" from the perspectives of each country and of the interconnection

---

72 Karsten Neuhoff (2001), *Economic Considerations for International Electricity Interconnections in North-East Asia*. Prepared for the "Workshop on Power Grid Interconnection in Northeast Asia", Beijing, China, May 14-16, 2001, and available as *http://www.nautilus.org/archives/energy/grid/papers/neuhoff.pdf.*

73 Information obtained from the following sources: *The Theun-Hinboun Hydropower - Project Profile*, Asia Development Bank (ADB), March 3, 2005; *http://www.adb.org/Projects/TheunHinboun/;* and *The Bujagli Power Purchase Agreement – an Independent Review, by Prayas Energy Group for International Rivers Network*, November 2002, *http://www.enteruganda.com/uploaded_files/Bujagali%20PPA%20Review.pdf*. Note that the independent review in the latter document found (in summary) "The Power Purchase Agreement of the private project is not in line with international standards, and entails massive extra costs for Uganda." This Particular Power Purchase Agreement should therefore be considered with great care before it is used as a model in any way.

as a whole, and will also involve negotiations with sub-national groups representing the populations in areas where power lines will pass.

4.3.3. Agreements on operation of power line

In power purchase agreements, or subsidiary agreements, the interconnected countries must agree on what entity will operate the power line, and how the governments will work with that entity (whether it is a public or private utility, a consortia of utilities and/or other public or private agencies, or a new entity created to run the line) to make sure that the power line operates smoothly and with adequate input from the parties to the power purchase agreements. Agreements will also be needed to specify the rights of generators and power consumers to, and costs to be paid for, transmission access ("wheeling") services. Legal agreements must also specify what "remedies"—opportunities to address problems—the parties to the agreement (the electricity buyer, the seller, and others) will have if there is a disagreement over how the power line is operated. For example, the legal agreement may specify that the power line operator, while responsible for day-to-day decisions related to the operation of the line also is subject to the oversight of a "board of directors", "transmission commission", or some such authority made up of members appointed from each of the countries involved in the interconnection. Such an authority would ideally be composed of members from different interest groups within their nation, including utilities, government, business, and civil society[74]. An agreement specifying the responsibilities of the power line operator, the authority of the operator over other parties in the interconnection, and the authority of the parties, through an overseeing body, over the operator, would typically be part of any electrical grid interconnection where the operation of the interconnection has a significant impact on the operation of the national grids that it connects.

As a part of power line operation, agreements will be needed as to which entity (for example, utilities, governmental ministries, and/or the transmission operator) will be responsible for maintaining the power line right-of-way in each country through which it passes. This will mean, for example, designating which organization will be responsible for making sure that vegetation in the right-of-way does not impede power line performance or present a fire hazard, as well as making sure that safety and environmental regulations (see below) with regard to power line operation are agreed upon.

4.3.4. Agreements on power line security

An electricity transmission interconnection that is relied upon to provide a significant amount of income to a national grid and/or to provide significant hard-currency income must be secured from attack or other damage. Here "attack" in most instances will probably mean malicious damage to the power line caused by sub-national groups unhappy with national government decisions (including, but certainly not limited to, decisions related to the power line itself). Power lines can also be damaged by thieves trying to illegally tap power lines to obtain "free" electricity, or looters looking to sell power line components (such as metals in towers and conductors). Agreements between countries participating in the interconnection will be needed to set out responsibilities for maintaining the security of the power line in the territory of each nation through which it passes, and to specify damages to be paid (and responsibility for repair of the line) if there are breaches in security.

---

74 For example, the transmission authority for the Australian state of New South Wales, know as Transgrid, is governed by a board of directors that includes a Labour Council representative. See *http://www.tg.nsw.gov.au/about_us/profile.html*.

4.3.5. Agreements on interconnection environmental performance

The construction and operation of power lines are typically subject to a variety of national environmental and safety regulations. These regulations include, for example, the width of the transmission right-of-way for lines of a given voltage and capacity, the required height of conductors above the ground and transportation crossings, and their distance from surrounding vegetation, the distance that power lines must maintain from human dwellings, and the strengths of electric and magnetic fields at specific distances from the lines. Regulations may also specify how construction of power lines must be managed to minimize environmental degradation, including mitigating impacts on vegetation, wildlife, and land use by indigenous populations. It may be necessary for countries sharing a power line to include in their legal agreements aspects such as the harmonization, for the construction and operation of the interconnection project, of safety, environmental, and other regulations in the trading countries. In some cases this harmonization may be driven by the requirements of multi-lateral lenders or other financing organizations[75].

The need for the harmonization of relevant environmental standards between the countries participating in the interconnection was noted in the context of the Baltic Ring interconnection project in Northern Europe, and deemed "…a challenging task, due to the difference in power generation portfolios, economic and political situation, as well as other framework conditions". The need for the interconnection consortium (in this case the BALTREL organization) to play an intermediary role in helping the harmonization process was noted[76].

4.3.6. Agreements on liability for power line failure or damage, and other issues of legal liability concerning grid operation

Agreements between nations, and between other parties involved in building and operating an interconnection project, will also require legal designations of liability for problems of different types. For example, vendors and/or installers of transmission equipment may be held liable for technical failure of transmission infrastructure up to a certain date. Construction and other contractors would typically be required to carry insurance to compensate any party who could prove they were injured by the power line. Beyond these considerations, however, nations may be required to agree on who is responsible, and who is not, for damages caused by the power line operation, or by its failure. These damages could include failure of appliances or commercial or industrial equipment caused by voltage spikes or frequency fluctuations, or claimed damages by businesses unable to operate due to power outages (or poor power quality) traceable to the operation of the interconnection.

---

75 Note that in some instances, including environmental regulations related to construction, for example, it may be possible to maintain different standards on the different sides of the border or borders spanned by the interconnection (though it is probably easier for construction contractors to comply with a single set of standards throughout the project). In other instances, environmental or safety regulations may absolutely need to be harmonized for the project in order to, for example, be able to choose what types of towers and conductors will be used to meet safety and electromagnetic field strength standards.

76 Baltic Ring Electricity Co-operation Committee (BALTREL, 2003), *Towards a Common Electricity Market in the Baltic Sea Region*, Report co-Financed by the European Commission, and available as *http://www.baltrel.com/Reports/Baltrel_021202.pdf*. Quote is from page 7.

4.4. Legal Agreements and Protocols for Selection of Interconnection Projects and of Contractors for Power Line Construction

A specific group of legal agreements not covered in the listing above are agreements as to how grid interconnection projects are selected, where several options exist, and how contractors and subcontractors for power line construction (and sometimes operation) are to be selected. These agreements would typically be signed by the nations involved in the interconnection, and will likely often be strongly influenced by the requirements of the organizations providing project financing. In countries where graft is consistently a problem, the clear designation and implementation of an impartial protocol for selecting one potential project over another, and for selecting, overseeing, and paying construction and other contractors, can be a significant measure to boost confidence between the countries.

4.4.1. Protocols to ensure transparency in the selection and evaluation of grid interconnection prospects

For any given proposed interconnection between neighboring grids there may be several distinct possible "projects" among which the parties to the interconnection must choose. A grid interconnection, for example, may be used to transport power generated at one or more of several different proposed power plants, over one or more of several proposed routes to one or more points on the receiving grid. Each option may well have its own set of specific beneficiaries and groups who are negatively affected—its own set of "winners" and "losers". As such, it is important that the countries participating in the proposed interconnection decide and codify early in the process a systematic, clear, and legally-based means of selecting among major project options. This process would include ensuring transparency between the countries partnering to trade power—for example, through an exchange of technical information on national power demand, power systems, power development plans, and environmental data—so that the interconnection option chosen could be assured, as much as possible, to be a "best fit" to the needs of all interconnected nations[77]. The process would also include transparency in terms of public information and participation in the project design process—meaning making all (or most) documents related to the discussion available for review by the public in general or by suitably accredited representatives of a wide variety of groups from the citizenry of all of the interconnected nations (and other, such as upstream and downstream countries potentially affected by hydroelectric development. Note that these two issues may also be pre-specified to a degree by the requirements of multilateral financial institutions, if the latter are involved in financing. Assuring that parties to the interconnection adhere strictly to legal protocols for information provision and for inclusion of all relevant groups is likely to prevent, or at least reduce, legal, political, social, and economic problems as the project is developed.

4.4.2. Protocols and requirements for selection of contractors

Many nations, both industrialized and developing, can be justifiably accused of having shown favoritism in the awarding of lucrative infrastructure design and/or construction contracts at various times in the past (if not the present). Such favoritism, at a minimum, leaves other potential contractors disaffected by the

77 This requirement for sharing information is described under the heading "Exchanging information on the development and operation of power systems" in Section 1 of the "Guidelines" volume of *Regional Electricity Cooperation and Integration (RECI), E7 Guidelines for the pooling of resources and the interconnection of electric power systems*, prepared by the E7 Network of Expertise for the Global Environment, dated approximately 2000, and available from *http://www.e7.org*.

selection process, and has the potential to create lingering resentment between the partner nations. More extreme potential results of an unfair contracting process can include wasted financial resources, shoddy workmanship by unqualified contractors (putting the project technically and/or environmentally at risk), and even the risk that the project will not be finished at all (among many other potential negative outcomes). To guard against the possibility of graft in contractor selection, participating nations should agree beforehand to a systematic, impartial contractor selection process overseen by a broad group of representatives from participating and affected parties in all of the nations involved in the project. This would include broad, public dissemination of calls for proposals, clear listings of the criteria by which competing proposals will be judged, clear and unbiased definition of contracting requirements, the definition of a transparent system for judging of proposals, and the public announcement of winning bids. For large projects, legal agreements between countries may also include requirements for the process with which contractors select local (or international) subcontracting firms, again to ensure that such selections are carried out in a manner that gives competing firms a fair chance and assures project participants (countries, financial institutions, and ultimately, electricity ratepayers) that their funds are being used wisely.

The same types of criteria for avoiding favoritism and graft in the selection of design and construction contractors also may apply to the selection of organizations that will provide project financing, or will operate the interconnection[78].

4.4.3. Institutional arrangements for governing grid interconnections

In addition to the types of legal arrangements needed for the day-to-day operation of a transmission interconnection (as noted in section 4.3.3 of this Chapter), legal agreements may be needed to specify how overall governance of transmission facilities connecting the power grids of two or more nations will be accomplished. The governance structure for an interconnection should, ideally, be in place, or at least agreed to, as planning for the interconnection begins, so that each party understands their legal responsibilities as project planning, construction, and operation goes forward. The governance structure for the project could include, for example, a professional Executive Director reporting to a board of representatives from all participating countries, and representing a diverse set of interest groups. Here again, clarity in the organization of the governance structure, and of the legal rights and responsibilities of each participant in the structure, is crucial to project success, and to minimization of conflict as the project develops. These types of governance arrangements, clearly set forth in such a way to give legal standing to the partners in the interconnection, are essential for securing international financing[79].

---

78 Notes on procedures for properly securing and evaluating bids on financing and operation of interconnections can be found in the "Module 6: Financing Interconnection Facilities" volume of *Regional Electricity Cooperation and Integration (RECI), E7 Guidelines for the pooling of resources and the interconnection of electric power systems*, prepared by the E7 Network of Expertise for the Global Environment, dated approximately 2000, and available from http://www.e7.org.

79 Some of the types of agreements needed to formalize the institutional structure of an interconnection, as well as some of the steps involved in reaching those agreements, are described in Chapter VI of "Module 6: Financing Interconnection Facilities" volume of *Regional Electricity Cooperation and Integration (RECI), E7 Guidelines for the pooling of resources and the interconnection of electric power systems*, prepared by the E7 Network of Expertise for the Global Environment, dated approximately 2000, and available from *http://www.e7.org.*

4.4.4. Case studies of legal and treaty arrangements for grid project development

A case study of the treaty and governing arrangements used to assemble and operate the Southern African Power Pool is provided in Box 4.1.

BOX 4.1: Case Study of the Southern African Power Pool

The Southern African Power Pool (SAPP), formed in 1995, was the first formal international electricity generation pool established outside of Europe and North America. The SAPP was established to increase the level of electricity grid interconnections in southern Africa, with the goal of reducing energy costs and creating greater supply stability in the region. Accordingly, "the purpose of the pool is to allow its members to coordinate the planning and operation of their systems while maintaining reliability, autonomy, and self-sufficiency, and to share in the benefits of operating the pool." The national power utility companies of the twelve southern African countries; including Angola, Botswana, Democratic Republic of Congo (DRC), Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia, and Zimbabwe, comprise the membership of SAPP.

Regional energy disparities, coupled with the diverse range of power sources found in certain areas of southern Africa, led to the exchange of power in the region. Ample low-cost hydroelectricity in the north, predominantly coming from the Inga system in DRC and the Cahora-Bassa reservoir in Mozambique, and large quantities of affordable coal-fired power in South Africa supply much of the electricity traded in the SAPP. Similar to the NORDEL/NordPool, the power pool in Scandinavia, the Southern African Power Pool was originally established as a "loose pool", with regional power cooperation being the main goal. Starting in the early 2000's it began moving towards a more competitive pool structure. The amount of electricity traded each year through the Pool continues to increase substantially .

The SAPP is based on a set of agreements as opposed to formal laws. The Inter-Governmental Memorandum of Understanding (MOU), signed on August 28th 1995, and its subsidiary agreements, the Inter-Utility Memorandum of Understanding, the Agreement Between Operating Members, and the Operating Agreement, outline the basic operating conditions of the pool. In December of 1995, the Inter-Utility Memorandum of Understanding was signed by the national power utilities of member countries to establish the specific rules and procedures upon which the SAPP would operate. The Inter-Governmental MOU states that the SAPP agreements and operating conditions must be in accordance with the SADC (Southern African Development Community) treaty, and that disputes among operating members will be settled in the SADC Dispute Resolution Tribunal. Furthermore, the energy ministries of SADC countries are the responsible parties for admitting new members into SAPP, and for resolving major policy issues of the pool .

As outlined in the current MOU, full membership of SAPP is limited to the national utilities of member countries, which are designated by the government of that country. There are two types of members; Operating members and Non-Operating members. The operating members are signatories of all the pertinent agreements listed above, are required to operate in accordance with all procedures and guidelines as outlined in SAPP, and must be internationally connected to at least one other operating member. Non-operating members are those who have only signed the Inter-Utility Memorandum of Understanding. These members participate in all activities of the pool with the exception of those related to the operation of the pool. An executive committee, functioning as the board of directors, is the organizational body of the SAPP, while a management committee, broken down into three sub-committees, planning, operating, and environmental, overseas the administration of the pool.

The diverse and complementary power sources of this region of Africa, the presence of a strong regional cooperation for economic development and stability, and the political will to increase regional electricity trade of the southern African countries have been three of the most important factors in determining the success of the Southern African Power Pool.

---

a Donald O'Leary, Jean-Pierre Charpentier, and Diane Minogue, Promoting Regional Power Trade – The Southern African Power Pool, Public Policy for the Private Sector, June 1998, available as http://rru.worldbank.org/Documents/PublicPolicyJournal/145olear.pdf

b Southern African Power Pool (SAPP), Energy Information Agency (EIA), November 2002, http://www.eia.doe.gov/emeu/cabs/sapp.html

c Energy Trading in the SAPP, ESI Africa, 2003, available as http://www.esi-africa.com/last/ESI_1_2003/031_36.htm

4.5. National Requirements for Legal Agreements to be Put in Place

In order for nations to reliably participate in the types of legal agreements identified above, as well as meaningfully participating in the negotiation and drafting of those agreements, a domestic legal structure is an important prerequisite. Although countries lacking a strong "rule of law" structure may be able to participate successfully in grid interconnection projects, countries with existing frameworks for contract enforcement, significant human capacity in the legal and judicial professions, effective and consistent regulatory structures, stable political systems, and experience in being a party to international legal agreements will have a smoother path to success in interconnection projects.

4.5.1. Effective existing legal framework

A key to smooth negotiation and enforcement of contracts related to international electricity grid interconnections is the existence of an effective legal framework for contract enforcement in each of the countries participating in the interconnection. The existence of an independent, experienced judiciary with (at least typically) predictable paths for registering and pursuing legal complaints allows contractors to proceed with a greater degree of confidence in agreeing to undertake activities related to interconnection construction or operation. Reliable and independent national judiciaries also give trading partners confidence that their grievances related to the interconnection (if any) will be fairly addressed. The existence of reliable and independent national judiciaries also allow contracts related to the interconnection to be formulated so as to indicate clear national jurisdictions over the different types of disputes that may occur during interconnection contracting, construction, and operation.

4.5.2. Professional legal capacity

Hand-in-hand with an effective existing legal framework, as a prerequisite for a smoother process of negotiation and enforcement of legal contracts between the parties to an interconnection, is the availability in each of the countries of adequate professional legal capacity. This means having groups of lawyers in each country who are sufficiently well-versed in their own nations laws and in international contract law to actively review and comment on draft contracts related to interconnections, or at least to oversee teams of outside lawyers engaged from outside for the purpose. Ideally, lawyers from each nation should have experience and training in contract law related to energy transactions. Similarly, the existence of a set of judges in each country who are reliably familiar with adjudicating contract disputes, and ideally also familiar with dealing with international contract disputes, is likely to make the process of resolving any disputes related to the interconnection much easier. It is recognized that experienced legal and judicial capacity, and especially lawyers and judges with experience in energy sales contract litigation, will be difficult to find in many developing countries that are potential partners in grid interconnections. As a consequence, professional legal training courses that build such capacities may be an effective early step in the exploration of interconnection opportunities.

4.5.3. Professional financial services capacity

Hand in hand with the need for legal capacity to create and enforce contracts is the financial sector capacity to service those contracts. This means assuring that national and regional banking systems are available and reliably up to the task of handling funds to pay contracts for construction and operation as

needed, and other tasks to generally assure the timely, smooth, and efficient flow of financial resources related to an interconnection. Other financial services, such as insurance, and performance guarantee instruments, will also be required in interconnection projects. In some countries, "gearing up" (preparing) to provide the legal services necessary to support an interconnection project will also involve building or reinforcing capabilities in the financial services sector[80].

4.5.4. Effective and consistent regulatory systems

Related to professional legal capacity, though (usually) not part of the legal sector strictly speaking, is the capacity for regulation of utilities, and particularly non-government-owned utilities. When the countries participating in interconnections have regulatory structures in place and functioning, and particularly when those regulatory entities share common structures and/or membership in common organizations (such as the southern Africa's Regional Electricity Regulators Association (RERA) and the African Forum of Utility Regulators (AFUR)), the specification of the regulatory requirements that must be met by organizations participating in interconnections may be simplified[81]. The existence of consistent, independent regulatory authorities helps to insure participants in interconnections against arbitrary changes in tariffs or other rules affecting their business[82].

4.5.5. Stability of government and impact on legal obligations

The stability of national governments is one of the political issues that can strongly affect the feasibility of grid interconnections between nations, and is treated as such in Chapter 5 of this Report, but governmental stability can have legal implications for interconnections as well. Partners in potential interconnection projects need to be able to be assured that the agreements that are signed between nations will be honored by succeeding governments. This does not necessarily mean that an individual government administration needs to be long-lived, but it does mean that countries with a clear and orderly means of government succession, a judiciary system that is independent of the administration in power, a pattern of retaining sub-ministerial level officials (who are likely to be involved in administering grid interconnections), and above all, a tradition of honoring contracts agreed to by previous office-holders, will make the best partners for international grid interconnections.

4.5.6. Agreements for appeal to international courts

Some aspects of contracts between countries in interconnection projects may call for appeals to international courts. If the national parties involved in the interconnection have a history of abiding by the decisions of international courts, particularly in issues related to trade, some aspects of interconnection contracts having to do with resolution of disputes between countries may be more easily dealt with by agreements to refer such matters to international jurisdictions.

---

80 Vladislav Vucetic (2004), *World Bank's South Asia Energy Program*. Presentation at the USAID SARI/Energy Semi Annual Meeting, New Delhi, October 12-13, available as 2004 *http://sari-energy.org/DynamicPPTShow/PPTDownloads/PPT103OCT04.zip*.

81 Margaret Matinga (2005), *Pooling African Power: Challenges and Issues in a Reforming and Integrating in a Southern African Power Sector*. Dated March 10th 2005, and available as *http://www.nepru.org.na/Regional%20Intergration/Power%20sector%20integration.pdf*.

82 Enrique Crousillat (1998), *Developing International Power Markets in East Asia, Public Policy for the Private Sector*, Note no. 143, May 1998, available as *http://rru.worldbank.org/Documents/PublicPolicyJournal/143crous.pdf*.

A paper from the Workshop on Regional Power Trade (held in Kathmandu, Nepal, in March 2001) makes the following point about the importance of the dispute resolution process[83]:

> "The dispute resolution process is an important element of governance [of grid interconnections]. In this context transparency may take on a slightly different meaning. Dispute resolution between private interests in different countries may be transparent to those parties but not be perceived as being transparent, or in the interest of the general public and government policy. For example, private interests who are operating under the North American Free Trade Agreement submit any disputes to one of two tribunals: the International Center for Settlement of Investment Disputes started by the World Bank or the United Nations Commission on International Trade Law. The workings of these tribunals are confidential to the disputing parties. While that may be appropriate for disputes between private parties, when the dispute involves public bodies the issue of openness and public accountability is raised. Disputes arising from regional electricity trading may transcend the purely technical or administrative issues involved in regional trading and encompass broader matters of social concern and public policy. Safeguards should be considered by the countries involved in regional trading to protect the public's interest."

4.6. Potential Legal Complications

The legal contracting requirements for a project as complex as a grid interconnection, as indicated in the preceding part of this chapter, are often more than substantial. These requirements become even more complex when contracts must link the activities within countries that may not only have different legal systems and traditions, but even different languages. The ongoing process of electricity sector restructuring—which is often in radically different phases in different countries—further complicates the negotiation and implementation of legal agreements related to grid interconnections.

4.6.1. Contracting between countries with different legal systems

Complications can arise when contracts related to construction and operation of grid interconnections must be written that involve countries with different legal systems and traditions. Countries with relatively independent judiciaries, for example, may not be comfortable trusting the courts in a neighboring country where the judiciary is known to be politically controlled. Further complications can arise where a partner in an interconnection project follows religious as well as secular law. Agreement must also be made concerning the language (or languages) of contract documents, and where several languages are used, a procedure is needed to assure that all translations of legal documents are functionally identical.

4.6.2. The impacts of privatization or restructuring

Recent trends in the worldwide utility industry toward private ownership and operation of generating resources, and/or toward restructuring of traditionally vertically integrated state utilities, may in

83 Workshop on Regional Power Trade (2001), *Regional Electricity Trading: Issues and Challenges*. Paper from the Workshop on Regional Power Trade, Kathmandu, Nepal, March 2001. Available as *http://64.224.32.197/Publications/shean.pdf*; quote is from page 6.

some instances further complicate the legal aspects of on setting up and operating grid interconnection arrangements between countries. In some of the countries that are contemplating international electricity grid interconnection projects today, the state-run utility electricity service providers that would be key parties to the legal agreements to buy or sell power may effectively cease to exist within 10 years—which would be well within the life of the interconnection infrastructure.

Within the next decade, many nations may have transformed their state-run monopoly utilities into partially or totally market-oriented electricity buyers, sellers, and transmission companies—with market regulation structures that may be strong or weak. Who, at that point, would be the buyer and/or seller of electricity from or to the international interconnection? As it is impractical, to say the least, to set up legal arrangements between businesses that do not yet exist, this means that the individuals and groups that draft interconnection agreements must keep in mind the changing structure of the electricity sector in the countries as they prepare contracts to buy and sell power. One possibility is that designated buying or selling organizations that are and by contract will continue to be state-run will be the primary buyers and sellers of power, and can then sell the power on to (or buy power from) buyers and sellers operating within a market structure at the national level. Another possibility, once grid interconnections between countries reach high levels, is that power from interconnections is sold and purchased through regional power markets, which require a whole different set of agreements, and possibly different financing arrangements as well. Given the possibility/probability that electricity sector actors that are parties to power sales and purchase contracts may well find their roles changing dramatically in the coming years, it may be prudent for interconnection contracts to include clauses allowing negotiations to be re-opened in the event of electricity sector restructuring, although such clauses may imply risks for project sponsors.

Conversely, once the electricity markets of one or more potential trading partners are restructured, the (presumably liberalized and clearly defined) markets that are created may help to clarify the potential role of power imports and exports in the electricity system, providing a clearer path to the pricing of traded energy, and thereby reducing the risk in investing in power grid interconnections.

4.6.3. Existing contracts

In some countries, existing long-term contracts between electricity suppliers and wholesale consumers (such as distribution utilities) may act as legal impediments to grid interconnections by mandating certain levels of supply from specific sources. These existing long-term contracts, depending on how they are structured, may effectively prevent (or dramatically increase the financial risk of) some of the potential partners in an interconnection entering into additional agreements to buy or sell power.

4.7. Potential Benefits to National Legal Systems

Complex as they may be, the experience of preparing and complying with the legal agreements required in setting up grid interconnections offer several potential benefits to National legal systems. These benefits include building of national professional legal capacity through the experience of negotiating, reviewing, and, as necessary, litigating interconnection contracts, but also the benefits of setting a precedent for legal standards in cross-border trades, and also demonstrating national reliability in adhering to international contracts.

4.7.1. Establishing cross-border legal standards

Completed, accepted, and successful agreements to share power resources between nations can serve as templates for other types of cross-border legal agreements. Other types of agreements between neighboring countries could include agreements to buy and sell other energy resources, minerals, or other natural resources, agreements to jointly build, maintain, and operate international transportation networks[84], agreements on conserving environmental resources (including water) that cross national borders, agreements related to greenhouse gas emissions trading, or even agreements on sharing labor resources. Once the required legal transparency for settling interconnection issues has been developed, the experience may help the implementation of needed reforms in other areas of the national legal system, leading ultimately to a more open and trustworthy (both for outside and domestic parties) national legal process.

4.7.2. Building confidence of outside parties in the national legal system

In addition to the implications of legal agreements related to interconnection for the national legal system, the demonstrated adherence by a country to an international contract (the interconnection agreement) may help to increase the confidence of outside parties in the country's national legal system. When a country, particularly a country that has previously had a record of difficulty in abiding by contracts with external parties, demonstrates its trustworthiness in making the contracted payments and providing the contracted energy covered by the interconnection agreement, outside confidence in the country's ability to follow through on legal obligations is enhanced. In a related manner, when legal proceedings related to the interconnection contract take place in a national court, and proceed in a smooth, orderly, and demonstrably fair fashion, one consequence is likely to be higher confidence by foreigners in the national legal system, thus lowering potential barriers to increased trade between countries.

4.8. Summary and Conclusions

International electricity grid interconnections, except perhaps in their very simplest forms, can be very complex legal undertakings, involving a variety of national, sub-national, and even international parties to the agreements required for planning, building, and operating power lines used to buy and sell electricity across borders. As such, binding legal agreements between countries (and between the countries and the outside lenders, if any, providing project financing), as well as the negotiation processes that produce the agreements, must be transparent and enforceable. This requires national legal capacity to draft, review, enforce, adhere to, and in the event of a disagreement, adjudicate contract issues.

A past history of having an unpredictable or corrupt legal system, or a legal system that changes markedly when governments change, may prove a detriment in negotiating power trading deals, whereas, conversely, a nation's history of adherence to the Rule of Law at a high international standard may smooth the path to power-sharing agreements. The existence of interconnection agreements can help to pave the way for agreements between nations on other important matters, including trade in other resources, and other joint projects. The experience gained in negotiating and complying with the international agreements required to build and operate an interconnection can also serve to build confidence in a country's legal system, as well as serving as a source of experience in international-standard legal system operations.

84 Often, the least environmentally and socially-disruptive areas to build electricity transmission lines are in existing transport corridors, such as along roads and railroads. Similarly, transmission corridors may serve as hosts for transport links between countries.

Some of the key issues, as discussed above, that must be addressed setting up a legal framework for international electricity grid interconnections include:

- **Power purchase and pricing** agreements, including agreements on the currency of payment, the escalation and/or indexing of prices to prices of other energy commodities over time, and penalties if sales or purchase minimums are not met.
- Agreements on **siting of power lines** and related infrastructure, such as routes between generating plants and consuming grids, and placement of substations and interconverter (for AC-DC-AC systems) stations.
- Agreements on **power line operation**, including deciding upon or constituting an joint authority to operate the interconnection, and agreeing on how the power line operator will be governed or overseen by both parties. Agreements on power line operation will also include agreements on how the interconnection right-of-way is to be maintained.
- Agreements on **power line security**, including agreements on which parties will be liable in the event of different types of incidents resulting in power line damage.
- Agreements on the **environmental performance** of the interconnection, potentially including environmental standards to be met during construction of the line, and environmental and safety (including fire safety) standards to be met during line operation.
- Agreements on **liability for power line failure**, including damages to third parties caused by power line failure.
- Agreements for the orderly, fair, and open **selection of contractors** to build and/or operate and maintain interconnection infrastructure, including agreements on how such contractors are to be overseen by parties to the project.

4.9. Resources for Further Analysis

4.9.1. References on legal requirements

"Module 6: Financing Interconnection Facilities" volume of *Regional Electricity Cooperation and Integration (RECI)*, E7 Guidelines for the pooling of resources and the interconnection of electric power systems, prepared by the E7 Network of Expertise for the Global Environment, dated approximately 2000, and available from *http://www.e7.org*.

Workshop on Regional Power Trade (2001), *Regional Electricity Trading: Issues and Challenges*. Paper from the Workshop on Regional Power Trade, Kathmandu, Nepal, March 2001. Available as *http://64.224.32.197/Publications/shean.pdf*.

4.9.2. References from multilateral institutions

The World Bank web page "Procurement: Information for Borrowers" includes access to a number of documents that provide guidance and training in Bank-approved and Bank-required processes for procurement and for the hiring of consultants for countries using Bank loan funds. See *http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/PROCUREMENT/0,,contentMDK:20064677~menuPK:84283~pagePK:84269~piPK:60001558~theSitePK:84266,00.html.*