

Funding and investment in electricity distribution infrastructure – extracts from the World Energy Council study on Energy Policy Scenarios to 2050

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In November 2007 the World Energy Council published a study on Energy Policy Scenarios to 2050. The study was of 3-years duration and involved in excess of 400 energy decision makers from some 67 countries. A sub-study dealt with the question of Investment and Funding.

This paper is an extract of the relevant and important findings of that work as pertains to the electricity distribution sector

Main characteristics of the distribution sector

Transmission and distribution assets are infrastructure type of assets and, in almost all countries, are considered as part of the regulated environment. From this perspective, the funding issue is comparable to the broader one of other infrastructure projects in the country with the exception that the revenues are managed through the electricity billing system.

Whereas distribution assets are local and limited in size (albeit multiple on a countrywide scale), transmission assets are strategic for a country/region. For both sectors the critical point is their development over time. This is in turn influenced by obtaining the necessary permits and the stability of regulation, which is mostly based on a return on capital. The supply business is normally a moderate capital but high credit risk business and it is up to the collector of the money to secure the whole system.

Globally, the following main features all have an impact on investments into the sector:

- It is a moderately capital intensive industry where the pay-back period exceeds ten years or more depending on the project's specific characteristics.
- There is a geographic imbalance between production areas and consumption centres, with increasing distances requiring additional capital expenditures. Deeper penetration into rural areas comes with reducing consumer density which further increases the cost of supply to individual consumers.
- In many emerging countries, access to energy is limited and future needs are huge. Increasing access to electricity will require important investments in the whole value chain (Generation, Transmission and Distribution) while financial capabilities of the developing countries are limited.

In terms of funding the development of the energy infrastructure, the study noted the following global trends:

- Less and less governments can afford public funding of energy infrastructure, except for oil & gas exporting countries, and only then when these commodity prices are high.
- States that have limited financial resources tend to exit the energy sector, focusing on other sectors, and tend to invite other investors to their energy market. Indeed, the utilization of public debt for energy projects reduces governments' ability to finance other projects, most of which are even less attractive to private investors than energy projects.
- Most of the emerging countries have difficulty in attracting private funding and the volume of these invested funds has decreased in the past five years compared to previous periods.
- One of the models proposed for emerging countries is the model of public-private partnerships or management contracts. The "Management Contract" model is often the way the private sector first enters the energy sector in an emerging country. This does however come with a number of issues, such as :
 - o management contracts are rather short term (two-five years) while the efficiency timeframe of the business is in the long term;
 - o few emerging states can afford to fund energy systems from their public budget which limits the ability of the private contractor to introduce technical improvement;
 - o split accountability means there might be a lack of incentive to invest efficiently.
- There has been a lack of private and global investment in most segments of the electricity chain during the period 2000-2004 due to the lack of perceived predictability (deregulation and unbundling) and surplus capacity leading to low electricity prices.
- The reasons for decreasing investment and the difficulty of attracting private funds to the infrastructure sector in general are multiple:
 - o sub-sovereign rather than governmental risk,

- currency risk,
 - regulatory risk,
 - payment and creditworthiness risk,
 - country risk,
 - weak project structures,
 - lack of legal protection for investors.
- In the electricity sector, historically the returns were based on a utility return operating in a highly predictable and limited risk environment. In the current market circumstances (re-structuring, liberalisation, unbundling, fluctuating primary energy prices) the risk/volatility are quite different, so there is a need for higher returns or better predictability.
 - The consumers are increasingly unwilling to pay for the additional funding that is necessary for enhanced performance of the sector. This is especially so at the moment when energy prices are already increasing sharply for other reasons.

Barriers to investment

One of the key elements in any investment decision is the cost of capital. This study presented a number of elements that have a direct impact on the sustainability of the cost of capital in the energy sector and its ability to attract investments in comparison with other sectors that also compete for the same funds.

In order to attract investment in the electricity sector and more specifically in the distribution sector, which is subject to local conditions, a number of business climate conditions should be met in the host country. The investment climate in a country is a direct driver of the cost of capital and debt and is an all-encompassing notion that captures a broad number of concerns that are all considered by an investor or a financial institution:

- Sustainable macro-economic stability and economic growth but also the ability to overcome economic shocks
- Risk of deterioration of the political and economic condition of a country, usually resulting in a rating/category downgrading
- Political events such as war, civil war, revolution, invasion of the country, acts of foreign enemies, mobilisation, rebellion, blockade, riots, sabotage, embargoes,
- Stable business regulation such as ability to repatriate profit, safety of the assets, stable and efficient customs' and trade regulations
- Risk of uncontrollable events which can make the profitability of the project questionable, such as specific laws (e.g. tax) or regulations that are changed or not enacted as anticipated
- Institutional climate: contract enforcement (rules do not only exist but are observed and respected), protection of property rights, effective judicial and contracting system, corruption,
- Labour availability, productivity and education
- Efficient financial system
- An acceptable level of personnel security in the operating environment

The above elements have a direct impact on the ability of a country to attract investment and on the cost of such capital. In addition to the aforementioned elements, the regulatory framework and the predictability of the project's revenues are a cornerstone in the determination of the cost of capital and are by far the two single most important challenges for funding large energy projects.

Regulatory framework

With respect to financing, the study recommends the focus should be on the regulatory environment; overseeing and defining the context and framework within which the energy sector is organized and protecting both the investors' and public short-term and long-term interest. As a basic condition, the core regulatory scheme needs to be robust. The regulator needs to be a credible party with the necessary technical / market capabilities and empowered with clear objectives, independent from the political authorities. Key requirements of a regulatory system and the legal framework embodying it are that it should bring stability and efficiency over the long term. This need for a well conceived, transparent, strong, predictable and independent regulation exists in all three sectors of generation, transmission and distribution.

Regulatory risk exists in several important areas:

- The regulator may exercise its powers in such a discretionary way that it undermines previously agreed contracts with other governmental entities.
- Certainty that the tariff and the key parameters will allow the investor to reach its return objectives, particularly during the initial period, is essential. Arbitrary tariff reviews or inappropriate review periods will increase the risk.
- Quality (technical and customer service) standards that may be arbitrarily changed, thus leading to unforeseen investments.

- Absence of an impartial dispute resolution mechanism, including international arbitration.
- The more the regulatory body and decision is local, the higher are the risks for political short-term intervention combined with the increasing difficulty of conflict resolution at sovereign level.

It is important for regulators to design regulatory tools that stimulate investments. An important element is the licensing system. As part of offering predictability to the investors, it is crucial to have advance regulatory approval for large projects, rather than having to wait for a review until after the facts. This is even more important in an environment of high investment costs and a growing NIMBY attitude.

Within the whole spectrum between fully centrally regulated business and regulation by contract, it is important to have national regulation rather than local. If regulation is implemented at the local level, it reduces the predictability as the regulation is subject to the interest of fewer persons. Local authorities tend to focus on short-term matters and voters' satisfaction. If regulation is placed in a national context, there are generally more influential players in the mix. This provides a more balanced view and tends to make the regulatory environment more stable.

This regulatory feature has an important impact on the ability to fund the energy system, through both equity and debt. Long-term contracts with regulated distribution companies bring a certain predictability and stability that helps secure cheaper financing

The presence of regulated distribution companies is not a sufficient condition per se. This scheme has been unsuccessful in many countries because governments did not allow a pass-through of cost drivers when needed. Distribution companies, aggregating the residential customers, are a stabilizing element only when governments and public owners act fairly and respect their contracts.

Therefore, the study considers that for emerging markets and as a first start in the deregulation process it is important to have a secured collection of revenues through distribution companies that are regulated with medium/long-term competitive supply contracts and that have the incentives to make their consumers pay. This will bring more certainty to the generators that will be able to invest in time and at the lowest cost over the long term helped by a lower funding cost and long-term predictability. It is important that the governments limit the use of that collection system as a tax collector.

Predictability of revenues

As already indicated, predictability of revenues is an equally important requirement for attracting a low cost funding.

Over the last years, several developments have been observed that accentuate the problem of lack of predictability. These are normal business elements, but combined with the aforementioned uncertainties, they increase the importance of predictability.

- When predictability is low, investors will require a higher return. Thus the energy prices will be higher and indirectly it will have a negative effect on the competitiveness of the national economy. This brings along a risk of political intervention and policy makers changing the rules.
- The behaviour of governments will be very important: interventions on electricity, stability of regulation, fairness toward industry players will be essential to reduce risk perception, the resulting cost of capital and finally the ability to attract new investments.
- The volatility in commodity prices has impacted both investment costs (eg steel is a major element) and the primary energy cost. Effective and fair pass-through mechanisms are an essential element of predictability.

In many countries, the focus is on short-term issues such as balancing and network access regulation. However the aspects of long-term development (how to organize network capacity increases and expansion and how to ensure adequate investment in generating capacity) were and still are often not adequately addressed. So the key issue is how electricity sectors can be organized in such a way that they provide sufficient incentives for the right investment.

Financing considerations

Availability of financing sources

One of the key questions, in the aftermath of the Enron debacle was “Is there enough money? Is someone still willing to invest?” We do not think that today there is a lack of financial resources to fund the development of needed energy infrastructure. There are sufficient available financial resources. It is however important to understand that these funds are competing (i) for the best projects within the energy sector (risk/reward) and (ii) also with other infrastructure projects (e.g. toll roads, offering, as we can see today, more predictable revenues). What is critical is the framework to attract these resources at the cost that doesn't kill the competitiveness of the investment and the terms and conditions coherent with the long-term nature of the investment.

Considerations for emerging countries

The need for energy in emerging countries is huge; few people have access to electricity in these countries. These needs cannot be met without subsidies, donations or soft loans. These subsidies will also enable the developing countries to direct their own funding sources towards other important sectors such as education and health. To be clear, this study does not question the need and importance for donations or soft loans to developing countries in order to allow them to develop their energy infrastructure. However it strongly recommends that these development aid mechanisms should be closely tied to a commitment by the host government to put in place an adequate institutional climate and framework to enable and facilitate the transition towards commercial funding at some point in the future.

Investment funds, subsidies or donations – whether through private or public sources - will only solve short-term funding needs and will not be sustainable funding sources over the long-term unless the right framework is in place in emerging markets.

Investors essentially need governments of emerging markets to commit to predictability in their behaviour and a commitment that the regulatory context will be stable and long term focused. The study believes that these intermediate funding schemes are doomed to fail if this stability is not provided to the investors. Support from international sources, essentially inspired by political considerations, can be temporarily considered as a catalyst, but for a commercial funding system to develop, one should look at predictable legal, political and business conditions, so as to enable non-subsidized investments to follow for the longer term

Level of sovereign support in order to mitigate sovereign and sub-sovereign risk

In addition to the need for a predictable and stable environment, investors are also concerned by the sovereign and sub-sovereign risks in emerging markets.

Therefore, issuing [to the benefit of the investor] a sovereign guarantee in certain emerging countries does take away part of the political risk and bring a necessary element of stability. In order to attract the necessary investments in the energy sector, the study suggests that it may be important to consider issuing state guarantees for emerging countries, either by the country itself or indirectly by sponsor countries, but only for an intermediate period.

Contracts at sub-sovereign level add sub-sovereign risk to the already challenging environment and should be avoided for developing countries. Globally, when investing in a country, one can indeed contract political risk insurance at the level of the host country, but not easily at the level of the municipalities for instance. The key message is to try as far as possible to have national, impartial, independent regulators and regulations. Having regulation at sub-sovereign level introduces additional risks and additional costs in mitigating them.

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