The study tour and workshop on Power Pooling in Europe for the Greater Mekong Sub-region (GMS) /ASEAN Power interconnection programme – Special newsletter No. 2

Supported by the ACE through the EC – ASEAN Energy Facility

1. Introduction

In framework of continuing support by ACE – EAEF for the Study Tour and workshop to the Nordic sub-region power system (see special newsletter N° 1, November 2003), a group of senior officials and managers from the Greater Mekong Sub-region (GMS) was able to visit some Nordic countries who participate in Nord Pool power market.

The Tour is led by Innovation Energie Développement (IED, France) and included officials from Cambodia, Vietnam, Lao PDR., and Thailand, as well as ASEAN Regional bodies, including the ASEAN Centre for Energy. The Tour was in the context of the **Initiative for ASEAN Integration (IAI)** objectives to set up an ASEAN Power Grid, in the hope that Nord Pool experience could be usefully adapted to these ASEAN objectives "*Cooperation for the mutual benefit of all*".

The study tour and workshop took place from 24 – 28 November 2003 and covered three members out of four in Nord Pool power market : Sweden, Denmark and Finland. It looked at the organization of power pooling in Nord Pool, especially :

- Nordic power market – history and its evolution from national into international market.
- Regulatory framework : transmission system ownership, grid owner, market participants and power exchange.
- Spot market, financial market and clearing services
- Cross border trade and GMS interconnection perspectives.

The workshop was assured by professional staff from Nord Pool consulting, Nord Pool ASA, IED and all participants from GMS countries. After the workshop, technical visits were arranged for the participants to see some activities of Nord Pool at its major three centres : Stockholm, Helsinki and Copenhagen.

2. Nordic power market

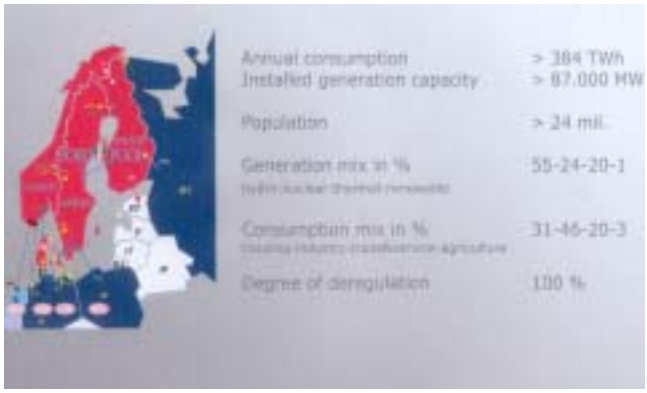

Figure 1 : The Nordic Power Pool.

With slight variations in structuring of functions and rules, Nord Pool comprises 321 traders and operators, including some members outside of the Nord Pool area (including companies and traders based in the UK and USA). These operators engage in a Spot Market, Financial Markets for derivatives (forwards and futures) with a range of financial instruments. The market therefore includes physical trading on the spot market and bilateral dealing as well as derivatives.

Nord Pool organises two different markets for trade in power: *Elspot* (the spot market) and *Eltermin* (the futures and forwards market).

Elspot market trades in hourly contracts for next day physical delivery on an auction basis. It is open to all companies that have signed the necessary agreements with Nord Pool. Elspot's price mechanism is used to regulate the flow of power where there are capacity restrictions in the Norwegian grid and between the various countries. Thus, Elspot may be viewed as a combined energy and capacity market. A market clearing price per MWh is determined for each hour during the next day by construction of aggregated supply and demand

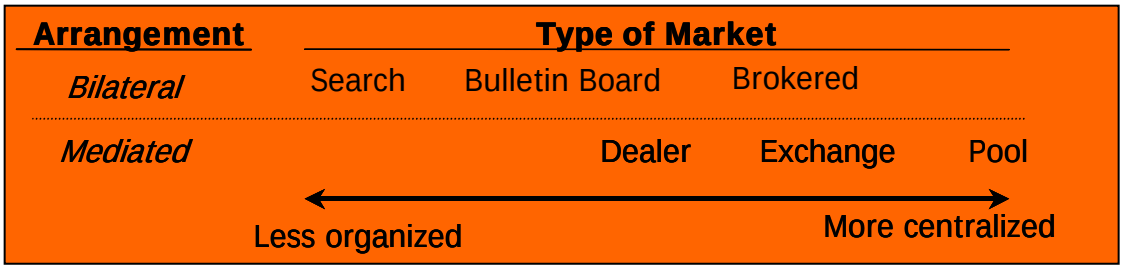

Figure 2 : Power market organization and its evolution

curves from participants bids and offers. This trading method is referred to as equilibrium point trading, auction trading, or simultaneous price setting.

Eltermin market is a futures market for cash settlement of a specified volume of power at a negotiated price, date and period. The contracts are traded weekly, four to seven weeks ahead, as blocks of four weeks up to fifty-two weeks ahead, or as seasons (Winter 1 for weeks 1-16, Summer for weeks 17-40, and Winter 2 for weeks 41-52) up to three years ahead. The system price (Elspot price) is used as a reference price for these contracts.

Beside the two markets organized by Nord Pool, Finnish EL-EX organizes an intermediate two-hour ahead market. This market allows the Swedish and Finnish participants the opportunities to adjust schedules closer to the hour of operation.

In addition to these markets, there is direct trading between parties in bilateral contracts. These bilateral contracts are normally for physical deliveries and treated the same way as spot power, i.e. scheduled with the Nord Pool. The reason for this is that Statnett (Norwegian Transmission network company) needs a continuous overview of the total power flow to manage congestion.

3. Market participants

Market participants include producers, distributors, retailers, traders and portfolio managers and a variety of consumer interests, including real estate companies, industries and municipalities. In addition to the traditional power company, other parties can trade on the market including brokers, oil companies, foreign power companies and power trading companies representing consumer groups.

Group participants noted the main features of market management including timelines, market splitting into operating areas and the complementary functions of the spot market, financial market and clearing and balancing functions. The initial picture was one of a level of sophistication and complexity that was difficult to imagine in a GMS context. However, the Nord Pool makes obvious the benefits of an international power exchange, an attractive option in future for GMS countries with small power systems and different generation mix in favor of hydro power potential.

4. Sector structure

Sector structure is important because it limits what governance and regulation can accomplish. Governance and regulation may succeed in establishing markets and system operators that are independent of market participants, but they may fail to establish a competitive market if the underlying structure does not support competition or its operators

lack necessary operational control and enforcement power. *The smooth transition to the international power market has been thanks to long tradition of cross-border bilateral trade and cooperation and the existence of cross-border transmission structure*.

The experiences from Nord Pool shows that setting up the power market did not require privatising public owned utilities. Different ownership, including cross-ownership between countries, companies continue to operate generation, transmission and distribution systems, but ownership of international interconnection system has been transferred to the grid company in each country. That paves the way for trading to all the parties in the power market.

5. Competition

Though the Nord Pool market has strict regulation of the network service to ensure third-party access, it is less regulated compared to other power markets. Because the Nordic countries already had a large number of players so the market is largely assumed to be able to take care of itself under the supervision of national regulation authorities.

There are also some particular aspects of the Nord Pool in terms of competition. The Nord Pool is a market for both sellers and buyers. Another feature is that the generators in the Nordic system are not obligated to sell all their power to the market. Hence to keep business from going elsewhere, the Nord Pool must ensure that it is an attractive market.

Retail competition which allows the customers to change suppliers is possible. Market access without hourly metering system is possible for small customers through a method of estimated load profiles for specific areas rather than customer-specific load profile in invoicing and settlement.

6. GMS perspectives

After the presentations by EDC, EDL, EVN, EGAT and IED representatives on power sector restructuring process in the GMS and their long-term development prospective, the participants discussed and exchanged their point of view on power market development. The Group noted the comparable market size between Norway, Sweden, Finland and Denmark and then between Thailand, Vietnam, Cambodia and the Lao PDR.

In Nord Pool, Norway has taken the lead in liberalization and market development with Sweden joining the more advanced part of the market. Finland joined but did not wish for an accelerated rate of development into the new market. The Finnish style was to take advantage of power pooling and spot and financial markets, but not too over-react on the pattern of institutional arrangements, for example tending to retain small and medium retailers to preserve jobs and local link.

The Group were encouraged to hear of the Finnish case, since it seemed to show that *the evolution of the regional market did not necessarily mean the imposition of globalized or generalized institutional patterns.*

For example in the Cambodian case, where inter-city links are only just being established as part of national, and eventually regional grid links, the Finnish case indicated that city based distribution systems might survive and thrive rather than simply being swallowed up into new oligopolies. Similarly the Finnish case seemed to show that regional integration could be achieved in steps, with physical interconnection links and increased bilateral deals to build mutual confidence, followed by a step-by-step approach to the opening up of the market.

This would imply that a practical approach towards standard cross border contracts, followed by the evolution of regional spot market, could eventually be followed by the evolution of a financial market involving forwards and futures. The whole package did not have to be built in one day, but the advantages of greater security of supply and shared power reserves could be obtained earlier, and financial market advantages would follow later.

In other words there seemed to be opportunities to adapt the Nord Pool experience and to adapt the lessons from it into Greater Mekong Sub Region conditions.

The international regulatory authority is also a difficult issue with regards to the national sovereignty, because regulatory responsibility has to be divided horizontally among equals rather than vertically among higher and lower level government authorities. Nord Pool is a unique example with relatively smooth national (Norwegian) regulation of international market thanks to Nordic history of economic cooperation. Other regulatory models with advantages and disadvantages are:

- Rotate responsibility for regulating the market among the different countries participating in the market and having similar legal powers and standards;
- Multinational regulatory authority of independent commissioners (under consideration for Western North America power market);
- Regional regulatory agency whose members are appointed by and reporting to the governments of the region (adopted in the Central American Electricity Market Treaty);
- National regulatory subject to a regional backup (taken by the European Union).

7. Recommendations

During the concluding session in Denmark several points were clarified which constituted recommendations for the GMS with respect to the possible introduction of power pooling and power exchange functions :

7.1. Broad Policy and Institutional Recommendations

- That the national decision to liberalize should be made in advance of the start-up of the regional power exchange market.
- That unbundling should start to be implemented before power exchange and regional market evolution got under way.
- That the regulatory framework for liberalization and separation of functions should be in place before regional competition begins.
- That the Competition Authorities in the member states should start to operate and function in the sector as the market starts.
- The main regulatory framework to achieve regional exchange and power pooling should be the adaptation of national regulatory frameworks.
- Meanwhile some regional regulation might catch up with such development later on, as in the European Union, where harmonization and common regulations came some time after the elaboration of Nord Pool and some other sub regional arrangements.

7.2. Specific and Technical Recommendations

- That the information technology, computer and communications facilities should be in place before the market starts to operate, as the power market required a huge amount of operational information to be treated on real time.
- Generators, TSOs (Transmission System Operators) and other potential market participants (retailers and suppliers, local authorities…) should be exposed to

training and simulation exercises on the operation of the spot market, financial markets and balancing transactions.

- That the TSOs must acquire expertise on cross border contracts, procedures and dispatching.
- Regulators should be exposed to the evolution of national regulations and the practical issues arising from regional market integration.
- All concerned parties should be exposed to workshops and training courses on market objectives, transparency and regulatory frameworks.

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For detailed technical papers and presentations visit web sites :
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