INSTITUTIONAL, REGULATORY AND COOPERATIVE FRAMEWORK MODEL FOR THE NILE BASIN POWER TRADE

DELIVERABLE 9: PROCEDURES AND GUIDELINES FOR DATA PROCESSING

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CONTENT

LIST OF FIGURES

LIST OF TABLES

LIST OF ACRONYMS

ACCC	Australian Competition and Consumer Commission
AEMC	Australian Energy Market Commission
AER	Australian Energy Regulator
AFC	Available Flowgate Capability
ARR	Auction Revenue Rights
BA	Balancing Authority
CAT	Curtailment Adjustment Tool (in SPP)
CEB	Communauté Electrique du Benin
CEM	Common Energy Market
CIE	Compagnie Ivoirienne d'Electricité
CIS	Commonwealth of Independent States
CoAG	Council of Australian Governments
CR	Congetion Rights (SIEPAC)
CRIE	Regional Regulatory Agency (SIEPAC)
CVT	Variable Transmission Charges (SIEPAC)
DAM	Day Ahead Market
EAPP	Eastern African Power Pool
EAC	East African Community
ECOWAS	Economic Community of Western African States
EECI	Energie Electrique de la Côte d'Ivoire
EGL	Energie des Grands Lacs
EIS	Energy Imbalance Service
EOR	Independent system and market operator (SIEPAC)
EPC	Electricity Power Council (in CIS)
ESAA	Energy Supply Association of Australia
FCM	Forward Capacity Market
FERC	Federal Energy Regulatory Commission (US)
FTR	Financial Transmission Rights
GMS	Greater Mekong Sub Region
ICC	Information and Coordination Center (in WAPP)
ICE	Intercontinental Exchange (US)
ICT	Independent Coordinator of Transmission (SPP)
IDC	Interchange Distribution Calculator
IGA	Inter–Governmental Agreement on Power Trade in the Greater Mekong Sub–Region
IPP	Independent Power Producers/Project
IPSCIS	Interconnected Power System of Commonwealth of Independent States
JOA	Joint Operation Agreement
LIP	Locational Imbalance Prices (in SPP)

LMP	Locational Marginal Price
LOLE	Loss of Load Expectation
LSE	Load Serving Entities
LTTR	Long Term Transmission Rights
MCE	Ministerial Council on Energy (Australia)
MER	Regional Electricity Market of SIEPAC
MISO	Mid-West Independent System Operator
MO	Market Operator
MOI	Memorandum Of interest
NBI	Nile Basin Initiative
NBPTF	Nile Basin Power Trade Framework
NE - ISO	New England Independent System Operator
NEM	National Electricity Market (Australia)
NEMMCO	National Electricity Market Management Company
NERC	National Electricity Reliability Council
NSI	Net Scheduled Interchange
OMVS	Organisation pour la Mise en Valeur du fleuve Sénégal
PAC	Participant Advisory Committee (Australia)
PJM	Regional Market of Pennsylvania, New Jersey and Maryland
PMU	Project Management Unit
PPA	Power Purchase Agreement
PRSG	Planned Reserve Sharing Group (in MISO)
PTC	Power Technical Committee
PTOA	Regional Power Trade Operating Agreement (in GMS)
RPM	Reliability Pricing Model in PJM
RPTCC	Regional Power Trade Coordination Committee (in GMS)
RPTP	Regional Power Trade Project
RRO	Regional Reliability Organization
RSC	Regional State Committee (in SPP)
RTEPP	Regional Transmission Expansion Planning Process in PJM
RTN	Regional Transmission Network (in GMS)
RTO	Regional Transmission Organization (US)
RTR	Regional Transmission Grid (SIEPAC)
SADC	Southern African Development Community
SADCC	Southern African Development Co-ordination Conference
SAP	Subsidiary Action Program
SAPP	Southern African Power Pool
SCED	Security-Constrained Economic Dispatch
SCUC	Security-Constrained Unit Commitment
SERC	Southeastern Reliability Council (US)
SIEPAC	Central American Regional Electricity Market
SMD	Standard Market Design (NE-ISO)

SONABEL	Société Nationale Burkinabè d'Electricité
SPP	Southwest Power Pool
SRMC	Short Run Marginal Cost
STEM	Short Term Energy Market (in SAPP)
SVP	Shared Vision Program
TSO	Transmission System Operator
TUOS	Transmission Use of System
UES	Unified Energy System
UPS	Unified Power System (in CIS)
USSR	Union of Soviet Socialist Republics
VOLL	Value of Lost Load
VRA	Volta River Authority
WAPP	Western African Power Pool
WSPP	Western Systems Power Pool

Table 1: Acronyms

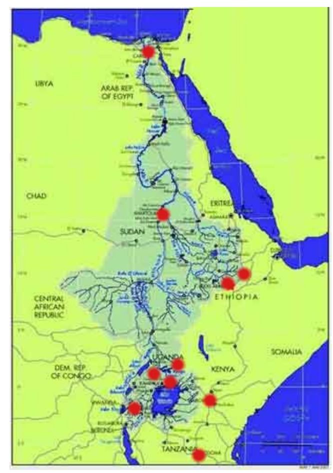
FOREWORD

The purpose of this report, named "PROCEDURES AND GUIDELINES FOR DATA PROCESSING", is to present procedures and guidelines for data mining, screening and identification as well as templates and recommendations for processing and making public the information. The report is strongly based in experiences of data gathering and publicising information of developed regional markets.

This report is the Deliverable 9 and corresponds to Activity 7 "*Regional data templates*" and 8: "*Procedures and Guidelines for data processing*" of the reviewed terms of reference of the project agreed during the inception mission in Dar es Salaam.

BACKGROUND AND CONTEXT OF THIS PROJECT

The Nile Basin Initiative (NBI): Formally launched in February 1999 by the Council of Ministers of Water Affairs of the Nile Basin States, the NBI provides a forum for the countries of the Nile to move forward towards a cooperative process in order to realize tangible benefits in the Basin and build a solid foundation of trust and confidence.



The NBI has two primary areas:

1. Basin-wide projects - "Shared Vision Program" (SVP) to help create an enabling environment for action on the ground
2. Sub-basin projects - "Subsidiary Action Program" (SAP) is aimed at the delivery of actual development projects involving two or more countries

The Regional Power Trade Project (RPTP) is one of the thematic projects to be implemented basin-wide, to help establish a foundation for trans-boundary regional cooperation and create an enabling environment conducive for investment and action on the ground, within an agreed basin-wide framework.

The RPTP aims to establish the institutional means to coordinate the development of regional power markets (such as a Power Pool) among the Nile Basin countries, through the creation of a power trade framework which can contribute to achieve poverty reduction including expanding access to reliable and low-cost power supply, in an environmentally sustainable manner.

The broad benefits envisaged from the NBI are poverty alleviation through improved, sustainable management and development of the shared Nile waters, and enhanced regional stability through increased cooperation and integration among the Nile states.

The project activities are coordinated by the Project Management Unit (PMU) at the regional level and by the PTC members at the country level. Activities include the establishment and operation of a power trade framework, the conduct of a comprehensive basin-wide analysis of long-term power supply, demand and trade opportunities, the identification of potential development projects within the NBI SAPs, the preparation of a public participation plan and stakeholder analysis, and the development of knowledge management tools. These activities are carried out through studies, consultations, workshops, seminars, and through other modalities, for which the project may seek assistance from national and regional research and training institutions, NGOs, consultants, and other public or private organizations from the Nile basin region.

The current project: "CONSULTANCY TO DEVELOP AN INSTITUTIONAL, REGULATORY AND COOPERATIVE FRAMEWORK MODEL FOR THE NILE BASIN POWER TRADE" falls within the RPTP framework. Among key project objectives are to:

1. Assist the RPTP and the NBI Power Technical Committee (PTC) in reviewing institutional arrangements adopted by regional power trade organisations, and submitting discussion papers to the RPTP, comparing and contrasting the different arrangements.

2. Conduct an information gathering tour so as to collect basic information of the countries in the region which will permit in the future develop recommendations and perform an informed decision making process.

3. Propose a model for developing Regional Power Trade at the Nile sub–basin and basin levels.

4. Draft Memoranda and legal documents as required.

PROCEDURES AND GUIDELINES FOR DATA PROCESSING

1. GENERAL

This deliverable provides recommendations for the cooperative process of necessary data collection related to power sector planning and operation among various control areas (service areas, countries, etc.).

The report addresses the different needs for different stages of regional cooperation. The approach taken is to describe some of the operational issues involved in regional cooperation for which accurate and timely data is necessary – in particular, regional planning and modelling in which the results of the activities are only useful if the inputs are correct. Modelling a system based on incorrect data or assumptions in the end provides no benefit, or may even cause damage in the future.

The proposed information deemed as necessary (content that is provided in a template format by each control area) is developed based largely on European experience (Nordel and UCTE), and adjusted to the reality in the region. Experience is taken from Europe because of its long history of successful cooperation between countries, and ever increasing levels of exchange of information as it has evolved towards an integrated power market. This exchange of information has been facilitated by use of e-mail and Internet.

No matter the stage of integration in the Nile Base region, the information database can begin to be developed.

2. GENERAL NEED FOR AGREEMENTS AND INFORMATION

This section describes the need for inter-governmental political and inter-utility operational agreements, as well as the context in which the information is used.

2.1. COORDINATION OF PLANS

Independent of who takes the initiative in cooperation, a coordinated approach to generation (and transmission) expansion planning is important. In such a task it is necessary to investigate the technical possibilities for cooperation and their potential economic results.

A very practical and common approach taken to coordinated planning is the agreement and signature of an Intergovernmental MOU (by political authorities), after which the participating utilities sign an Inter Utility MOU which mirrors the objectives of the political MOU. In the case of the NBI, the political MOU already exists.

Following the MOU signature, an Executive Committee (or a Project Management Committee) typically coordinates the work.

The general process requires estimating the growth of power consumption (demand) in the region where cooperation is planned. The possible projects for investment in generation are then evaluated in order to plan for the most economically optimal generation expansion to meet the expected load. Corresponding investments in grid must also be considered at this time.

The experience from areas with cooperation is that a Planning Committee, an Operational Committee and an Environmental Committee are needed. After some development there will also be need for a Market Committee.

It is important that the members of the committees have:

- interest and skills for the work
- enough time for the work
- a central position in the company in the field handled by the committee

The coordination work will require some funding, which can be managed by establishing a budget for this work. The stakeholders would pay their shares of these costs.

Another possible solution is that the companies in the committee cover the costs of their own participants. In a region where there are large differences between the financial strength of the power companies this model could be difficult to practise.

2.2. CONNECTION OF AREAS

The first step of cooperation will be to connect neighbouring network areas in order to improve the operational conditions.

This has benefits for the connecting areas, but additional work must be done before the connection can be done in practice; among most important activities can be mentioned:

- The two parties must be informed of technical details of the whole system.
- Protection schemes have to be adjusted.
- Metering systems on the borders have to be installed.
- An operational agreement has to be worked out.
- Simulations on interconnected operations have to be done.
- Emergency plans have to be worked out.
- Operating staff has to be trained.

In this stage it is important to have an efficient operational agreement. Situations that have not been foreseen during the preparation period will normally occur during the tests, and the operating committee must be prepared to propose changes in operating rules when necessary.

2.3. POOLING ARRANGEMENTS

The objective of pooling arrangements is that the performance of the electricity system in some areas can be improved if the resources belonging to the participants are treated as a common resource.

The differing roles between the Pool and its members if often described as:

The Pool shall perform tasks in the instances in which it can be more effective or efficient (usually in economic terms) than the members themselves.

Economic efficiency is a central incentive to forming a pooling arrangement. The pool should create a win-win situation for all participants in the arrangements. In addition, one of the objectives of the development pooling arrangements is to seek pooling solutions that increase the security of supply.

A typical first step in a pooling arrangement is to define what information is needed to allow the pool to function effectively. Members will need to understand the benefits of participating in the pool and thus benefit of submitting information to the pool instead of keeping the information as propriety commercial or security interests.

The sharing of reserves and emergency exchange of power is typical in pooling arrangements. The pay back of this type of service will in the first phases be “in kind” (with electricity services) since pricing mechanisms of such services have not been developed.

The Pool will normally have rules to protect business sensitive information from being disclosed. The Pool will publish accumulated information to the benefit of their members.

2.4. INTRODUCTION OF TRADE

One of the main objectives for regional cooperation is to utilise the generation resources in an optimal way.

The value of different potential projects is calculated, as mentioned above, during the planning phase. A possible project will often be developed with a higher capacity if the power can be sold on a regional basis in addition to the local market.

This leads to a planning phase where bilateral contracts for exchange of energy are taken into account. Those contracts should also be taken into account when the need for transmission capacity is calculated.

This type of bilateral contract normally serves as the backbone for pooling arrangements for several years. Scheduling of bilateral contracts and different types of flexible utilisation is often a large part of the work for a power pool.

In addition, ancillary services for increasing security of supply will be priced and will have to be paid for. This is done on a bilateral basis in the first phase.

When this type of bilateral contracts trading is introduced the delivery schedule for the contracts has to be defined and also the emergency procedures in case of faults and congestions.

The contracts will define the parties’ responsibilities for delivery of service. The system operator will subsequently need rules for contract management in the event of faults and constraints in the power grid.

Deviation in delivery of the contracted volumes must also be managed.

2.5. INTRODUCTION OF MARKETS

When a pooling mechanism has been established and the infrastructure is well developed, the pressure will increase to achieve more efficient trading.

Liquidity in the market is key for reaching market prices that the participants consider as correct. Standardisation of contracts has proven to be an efficient tool for creating this liquidity. Marketplaces will be established for trade of standardised power contracts, and the number of traded contracts will thus increase while the contract portfolio of market participants will change more rapidly.

This change will increase the need for standardisation of information exchange, metering and communication protocols.

In deregulated electricity supply, definitions of roles and responsibilities are extremely important in all areas in the electricity business.

3. NECESSARY INFORMATION FOR COORDINATION OF TASKS

Activity 7 is described in the Inception Report are the following:

The information to be researched and therefore the templates to be developed will deal basically with the following topics:

- *i)* *Regional generation planning, assessment, evaluation and selection.*
- *ii)* *Power sector master planning integrating water and energy resources.*
- *iii)* *Power system operations including power plant operations and power system protection schemes design.*
- *iv)* *Power system stability and reliability studies.*

v) *Power system security, black out mitigation and system restoration modelling and analysis.*

vi) *Load forecasting and growth pattern modelling.*

vii) *Regional power sector policy development and regulation.*

viii) *Regional power market and power trade analysis and operations including transactions management.*

ix) *Economic and financial assessment of power projects.*

x) *Power EIA and socioeconomic evaluation.*

xi) *Project risk assessment, evaluation and mitigation planning.*

xii) *Development of documentary videos and high quality information brochures on investment opportunities in the region.*

The different topics or tasks listed here will be handled separately to indicate which data is necessary in each for good performance.

These tasks are quite different from one another in the structure. Smaller tasks will be described first below. Input to more complicated tasks will be described subsequently as a combination of the information already existing and that which is needed as additional information.

3.1. ECONOMIC AND FINANCIAL ASSESSMENT OF POWER PROJECTS

Information on the plans for power projects must be collected from the national institution responsible for the projects.

Normally this will be the utilities or IPPs

Initially the following is collected:

- Expansion plans in generation and transmission: identification of main projects, characteristics and expected commissioning date.
- Potential generation resources.

In addition the following information has to be collected from the countries:

- Generation cost (US$/MWh) per unit (or using another standard currency such as Euros)
- Origin of fuel for generation
- Special supply agreements for fuel used for generation.

When agreements on non-disclosure of detailed information have been reached between the coordinator and the project manager, detailed information can be exchanged for use in regional planning.

3.2. REGIONAL GENERATOR PLANNING

The different participating countries in a pooling arrangement must estimate their future generation needs to cover their own consumption for a period of approximately 10 years.

The national plans must order generation projects according to those already under implementation and those are under consideration. The information has to be collected and handled by a regional planning committee that can prioritise projects from regional point of view. This committee must take into account the costs of the different projects and the possibilities for them to substitute other generation in different countries. The available transmission in different time horizons must also be taken into account.

It is important to keep in mind that the selection of projects will in this context be based on least cost planning. If national legislation imposes limits on electricity export or import, it will in turn limit the use of generation in a regional market.

Necessary information for this task is:

- Information of existing generation (collected initially in this project's fact finding mission)
  - Installed capacity (nominal)
  - Current available capacity
  - Plant technology (steam turbine, gas turbine, hydro, etc)
  - Additional information on hydro plants:
    - Number of generators and power of each
    - Type of turbines (Kaplan, Pelton…)
    - Run-of-river or with reservoir regulation
    - Capacity of reservoir for regulation: seasonal, monthly, etc.
  - Age of the plant (year it was commissioned and years of main modifications / refurbishments)
  - If there is more than one "interconnected system" in the country, indicate in which system the power plant is located.
  - Rehabilitation programs indicating capacity that it is expected to be added and year of commissioning.
- Investment plans
  - Type of generation
  - Installed capacity
  - In case of hydro, maximum, average and minimum annual generation
  - Investment costs
  - Fuel costs
  - Estimated time of commission

During the information gathering task of the RPT project, the following information has been gathered from the countries (to varying degrees of completeness):

- Generation cost (US$/MWh) per unit
- Energy produced (generated) in the last 10 years per company
- Production of energy by source (thermal, hydro) in the last 5 years
- Origin of fuel for generation
- Special supply agreements for fuel used for generation.
- Potential generation resources.

The information should be updated once a year for each country. The best solution for this type of update is by using encrypted access to a central web page to enter the information from various sites, and subsequently transferring this information to a centralised database.

3.3. LOAD FORECASTING AND GROWTH PATTERN MODELLING

As mentioned above, participating countries will need to estimate future consumption over a 10-year future period. Some historical information should be collected and used as base for the prediction, although different countries will have different methods for load forecasting.

Based on this historical information countries have to develop some factors for how to forecast the consumption. Following aspects have to be taken into account:

- The degree of electrification may be limited because of missing generation capacity
- Expected growth in population
- Expected economic growth
- Historical relations between growth in population and consumption of energy
- Historical relations between economic growth and consumption of energy
- Political signals on issues like energy efficiency, priority of rural electrifications etc.

The projected consumption in the different stages has to be collected from the participating countries to be aggregated and presented in an appropriate form.

During the RPT project information gathering task, the following information as well as basic socioeconomic information was gathered from the countries (to varying degrees of completeness):

- Guidelines of energy policy
- Guidelines of the power sector policy
- Energy distributed per type of client (residential, industrial, etc) in the last 5 years
- Revenue collection ratio
- Number of customers in the last 5 years
- Population, electrification rate in the last 5 years
- System peak (MW) in the last 5 years
- System losses: transmission & distribution
- Studies of demand forecast. Load shedding data / suppressed demand.

3.4. REGIONAL POWER SECTOR POLICY DEVELOPMENT AND REGULATION

In the beginning of this project the following information was collected from the participating countries:

- The role of the State
- Role of private sector: current and foreseen
- Sector structure: main actors, their roles
- Industry structure: companies intervening, ownership
- On going reform process if any
- Objectives of the process
- Guidelines of the power sector policy
- Which is the policy regarding power trade (with neighbouring countries or the region)?
- Main challenges of the power sector
- Advances in the process
- Expected advances for next years

The regional power sector policy should be a description of how all of those policies – or their most relevant features – could be joined in a common document for the region. If the differences are too large between the countries, it may be necessary to define some criteria for participation in the common system and delay entrance for participants that cannot fulfil the criteria.

In the Nordic area the connection of Denmark to Nord Pool was delayed a couple of years to enable the country to fulfil some criteria defined for participation in a common market.

In this area reporting should be done on the basis of changes made to national policies. An Inter-Governmental MOU should define an obligation for the Ministry to report changes in policy to the regional office at the moment the change takes place (rather than at an annual date set for regional reporting in other data).

3.5. POWER SECTOR MASTER PLANNING

The master plan for a region is especially important where differences in the national resources could be better utilised if there was available transmission capacity between the different areas. In this case, a common planning of a wide region results in stronger economy and higher security of supply.

Prior to a regional master plan, however, each participating country should develop a national power master plan.

The master plan should contain forecast for development of generation, power lines, consumption and the market possibilities, and take into account local legislation and political signals.

In cases where hydro generation is involved, the quality of plans is dependent upon the quality of the simulation tools available for computing available water for generation (a function of precipitation and water allocated for irrigation and other purposes).

Sophisticated models need a large volume of precipitation and reservoir inflow data over several years. Such data is not available in many developing market areas (such as in the NBI countries) and estimations have to be based on more simplified estimations of possible maximum, minimum and average generation.

The regional master plan shall contribute to a coordinated and systematic future planning where all the participating country systems (the entity in charge of national planning) provide their contributions.

The regional plan requires the following information:

- Regional power policy, development and regulation
- National generation plans (from the database of generation planning)
- Regional load forecasting and grown pattern modelling

The plan should have different time horizons.

- 3-4 years into the future in which predictions are relatively known.
- A longer horizon in which the plan has to consider different possible scenarios for development and it is possible to consider new investments to improve the results.

Possible trade between the regions is important factor for the plan.

The plan also has to take all agreed reliability planning criteria into consideration.

The first step in this task is to study the political framework and the obstacles to regional planning that could occur. The responsibilities declared by each country in the Inter-Governmental MOU are important for determining the depth of the information that could be obtained for this task.

The methodology for prediction of generation and consumption is important. In the start up phase, the generation estimation will be a arithmetic total of the generation capacity predicted by each country. The new generation capacity available in the year (or range of years) the plan in covers should be taken into account, and other future possible generation should be indicated as less certain.

The consumption (demand) forecast should be based on the national estimations and added to a regional forecast. The gap between generation and consumption will then be computed.

Existing and planned power lines should be taken into consideration to detect possible trade that could reduce the need for additional capacity to be constructed in a given country (if it could be imported from another source with excess capacity).

Proposals should be made for new interconnections between areas that could facilitate trade and increase the security of supply. This is very important in districts where generation capacity hardly can cover the estimated consumption.

When an area has become more integrated as a pool (the Nordel area for example) the estimation of generation is built on computer models that take into the account the probability of different inflows in different areas of the synchronous area. This is important in order to calculate the maximum, minimum and average generation capacity for hydro generation. The model takes into account thermal generation with estimation of fuel costs for different scenarios and of possible development of taxes and other costs.

This type of modelling requires an extensive amount of statistical data. In the Nordic system before those computer models were developed, the estimations were based on the different utilities' estimations, which in turn were based on historical data and more or less a "best guess" of the future. The estimations were accumulated to a national level and then submitted to Nordel. The registered values were distributed in annual reports so the participating countries could compare the estimations with real life and improve the accuracy of predictions in the future.

The result of the Master plan (on either a national or regional level) should be:

- Capacity balance between generation and consumption
- Energy balance between generation and consumption
- Estimation of energy prices based on available generation
- Security of capacity supply
- Security of energy supply
- Indication of transmission congestions
- Calculation of socioeconomic costs of congestions
- Indication of possible investments that will create a better situation

When this master plan has been approved by all participating parties, it should be distributed as a document for information. The plan should be reviewed on an annual basis.

3.6. POWER PROJECT EIA AND SOCIOECONOMIC EVALUATION

Included in the development of the master plan, the impact on environment for the different alternatives must be considered:

- National policy, preferences, and strategy on use of renewable energy
- Impact of emissions and possible prices/penalties for emissions
- National strategy for use of nuclear fuel
- Environmental Impact of different alternatives for building power lines
- Local strategy for use of underground cables instead of overhead lines

These types of issues are not easy to connect to economic figures. In densely populated areas there will normally be protests when transmission capacity is built as overhead lines because they are considered as "ugly" and many people worry about possible damages from radiation. These concerns are subjective and qualitative which make them difficult to put a price on; unlike the technical, quantitative calculations that can be made in the cost of building new capacity and/or transmission lines.

It is however important to handle environmental impact in cooperation with local residents. By openly explaining alternatives the number of complaints and thus delays in the project can be reduced.

Usually the environmental impacts are regulated as a part of the national energy acts. They may include conditions on making Environmental Impact Assessments (EIA) and Resettlement Action Plans.

Socioeconomic calculations must be based on national estimations of generation costs and the marginal value of increased load. In the event of possible supply curtailment, the value of lost load (VOLL) should be estimated.

A simulation can be done by creating a merit order list for generation and a similar list for consumption. The consumption is normally not heavily price-dependent. By simulating the marginal price in each area as an island, the local marginal price for different loads can be calculated.

The next step is then to input all available interconnection capacity between areas and calculate the prices in this coordinated operation. The marginal prices in the areas will change, and the generator as well as consumer benefit can be measured.

New investment projects can be added in the simulation and socioeconomic benefit can be calculated.

Such a simple simulation will also show the exchange of electricity between countries in different scenarios.

SAPP has a simulator of this type that was used in the discussions of how the competitive market should be designed.

3.7. PROJECT RISK ASSESSMENT, EVALUATION AND MITIGATION PLANNING

The regional organisation has the coordination task to collect information on possible local projects and prioritise them.

Generation projects have to be described in terms of the type of project, the estimated costs and the potential income from the project (payment from consumers).

Transmission projects have to be described by the type of project and the potential income paid by the users of the transmission line. The users could be parties of a bilateral contract or transmission system operators at the both ends of an interconnector.

The evaluation of the project should be based on this information and a prioritised list should be worked out, with the most profitable project for the region at the top.

National projects could also be added to the list.

The different projects should be presented to potential donors, investors and financial institutions. This could be done by arranging a conference where all those parties are invited.

The different projects should then be presented in a tendering process, and final project(s) for the region to support be chosen after information from this process is available.

The participating (or beneficiary) countries could then seek supporters for the regional project and should be able to get donors to assist in further needed evaluation.

3.8. DEVELOPMENT OF DOCUMENTARY VIDEOS AND HIGH QUALITY INFORMATION BROCHURES ON INVESTMENT OPPORTUNITIES IN THE REGION

The information on different projects should be produced locally and collected in the region.

The regional task will be to view the material and make a homogenous presentation of the material.

A regional brochure should then be produced and used together with invitation to an investor conference.

In this conference the local utilities should be given time to present their own projects with technical facts, pictures and videos where this is appropriate.

3.9. POWER SYSTEM OPERATIONS INCLUDING POWER PLANT OPERATION AND POWER SYSTEM PROTECTION SCHEMES DESIGN

Power system operation is a local and national responsibility.

In the region there exist rules for how the control areas shall manage the balance between generation and demand. If any of the parties have problems following the guidelines or meeting the requirements, these problems must be reported to the regional coordinator.

Plans should be developed on a regional basis to determine the level generation reserves there should be in each area. In case there are not enough generating reserves, the region should have guidelines for load shedding.

System protection schemes can be automatic by shutting off load or generators by overload of power lines or by high frequency deviations.

Plans for manual load shedding to be used under severe situations should also be drafted and approved.

3.10. POWER SYSTEM STABILITY AND RELIABILITY STUDIES

When the operation of the synchronous network has been planned, the use of the (N-1) criteria is normally used for system reliability.

Computer software (mostly PSS/E) is used to conduct network stability and reliability studies. Normally the data for static load flow is sufficient for most of the planning work, but when data necessary for dynamic analyses are available it those should be included in the model.

A common model for the whole region under consideration should be established and used for this purpose, so as to avoid multiple and differing results of network simulation arising from differences in software. When the software for analyses is chosen, participants from all countries should attend training to learn how the software is used for analyses and which data is needed.

The national representatives will have the responsibility to update the information from their area in the database.

The regional committee or responsible entity will then receive the file with all data and can test if the model is working. Necessary fine tuning of the model will be done on a regional level.

Data should be undated in a coordinated manner on an annual basis, or more frequently if large changes are made to the system.

The model should be maintained at the regional basis and studies can be done when necessary.

3.11. POWER SYSTEM SECURITY, BLACKOUT MITIGATION AND SYSTEM RESTORATION MODELLING AND ANALYSIS

When the model is available on the regional basis, it is natural to define typical scenarios that can cause operational problems.

The regional level will have information on typical generation, load, etc., during peak hours, off-peak hours, dry years, wet years etc.

In the case of operational planning for a peak load period in a wet year the model can be loaded with data for such a situation. The case can then be adjusted for known differences in generation, demand, and transmission facilities off-line for maintenance work.

Subsequently, contingency scenarios can be analysed based on (N-1) criteria. If there are risks of overload, low voltage or similar problems, system protection schemes can be activated, or restoration plans can be updated when the probability of black out is significant.

This software should also be used for defining available transmission capacity between control areas.

To describe different scenarios the load flow should be registered within the countries and between the countries at the same time at least once a week. The registration of MW and MVAr should be done for all main power lines, for all transformers on the main grid and for main generators. In addition, the voltage should be registered in some main nodes in the grid.

All the information should be registered on a single line picture of the grid, kept on record and sent to the regional level.

3.12. REGIONAL POWER MARKET AND POWER TRADE ANALYSIS AND OPERATIONS INCLUDING TRANSACTION MANAGEMENT

Regional power trade must be scheduled between the system operators in the area. The transactions based on bilateral contracts must be reported between the system operators and the possibility for commercial trade in addition to this must be computed.

This will be arranged in the start up phase of regional trade between neighbouring system operators.

On a regional basis it is important that there exist commercial meters on the interconnections and rules for handling of trade across the borders.

It is of great importance for the region that information on historical trade between the countries are registered and published.

The reporting can be on a monthly basis as exported energy and imported energy on all interconnectors.

With this type of registration the actual exchange of energy can be compared to the socioeconomic analyses to detect possible improvements.

4. DATA TEMPLATES, COLLECTION PROCEDURES AND DISTRIBUTION OF INFORMATION

4.1. GENERAL

When different nations and power companies join to create a regional pool or market, members need information from one another to be able to judge the situation in the region. It is important to distribute defined information to all members at the same time to engender trust among them.

Depending on the development of a central organisation managing the cooperation, the possibilities to collect large volumes of information and distributing them will be possible, but the costs are high for the most sophisticated systems.

An example of advanced information system is the information from EU. Here large amounts of information can be downloaded at the address:

http://epp.eurostat.ec.europa.eu/portal/page?_pageid=0,1136239,0_45571444&_dad=portal&_schema=PORTAL

Those large amounts of information will hardly be necessary for NBI for the next 10 years.

As another example it can be mentioned the information exchange within Nordel. This organisation has published information from the participating countries since before it was common to account for it with computers. At that time, telephone, mail and telex were the common channels for communication.

Despite more efficient communication, Nordel has chosen the principle that the different countries (with the TSOs as responsible parties) should collect the information from the different companies internally in the country and aggregate it.

The information submitted to Nordel is mainly based on this national information.

Information available in the Nordel annual reports from 1978 (oldest published on web) and up to 2006 can be compared to see the evolution in the data collection and in the market on the whole since its early stages.

The information in the 1978 edition has been worked out manually and drawings and figures have been made without computer tools. The 2006 edition is worked out with modern technology, but the content is more or less the same. Information can be found at the address: http://www.nordel.org/content/Default.asp?PageID=235

4.2. PROCEDURES FOR DATA COLLECTION AND PROCESSING

The national body responsible for collection of data could be the national TSO (National utility if not unbundled) or another national authority.

The procedures for data collection including the reporting frequency should be agreed upon between the NBI and each national body. The reporting of data to the NBI-organisation should thus be coordinated with the procedures for data collection to national authorities like Bureaus of Statistics.

In the early stages of regional cooperation annual information should be sufficient. When the network becomes more meshed, more frequent information will be necessary.

As an example of timing:

- Annual national information could be collected between January and February each year, and the national compilation could be done in the beginning of March.

- Reporting of data from the TSOs to the region could be done at the end of March, and regional reports could be worked out in June to prepare for the coordination tasks.

The annual information received should be compared with information from the previous year. Deviations should be explained.

After a draft regional report has been finished, the different responsible bodies in each country should review it and confirm their part of the content.

Processing of data should be done by the NBI-organisation/PMU in order to facilitate the information flow for the necessary coordination tasks. If no coordination task will be performed by the NBI-organisation, the need for necessary data might be reduced, thus leading to a release of resources needed for the data collection and processing.

It is also necessary that the regional data collected and compiled by the NBI should be coordinated with regional data from other regional organisations like the East African Community. Overlapping of data collection may lead to inaccuracy and hamper the practical analytical work.

There should be agreements between NBI and other adjacent regional organisation related to the procedures for data collection and processing.

The figure below represents a possible framework for data gathering, processing, validating, requesting clarifications, final processing and publication.

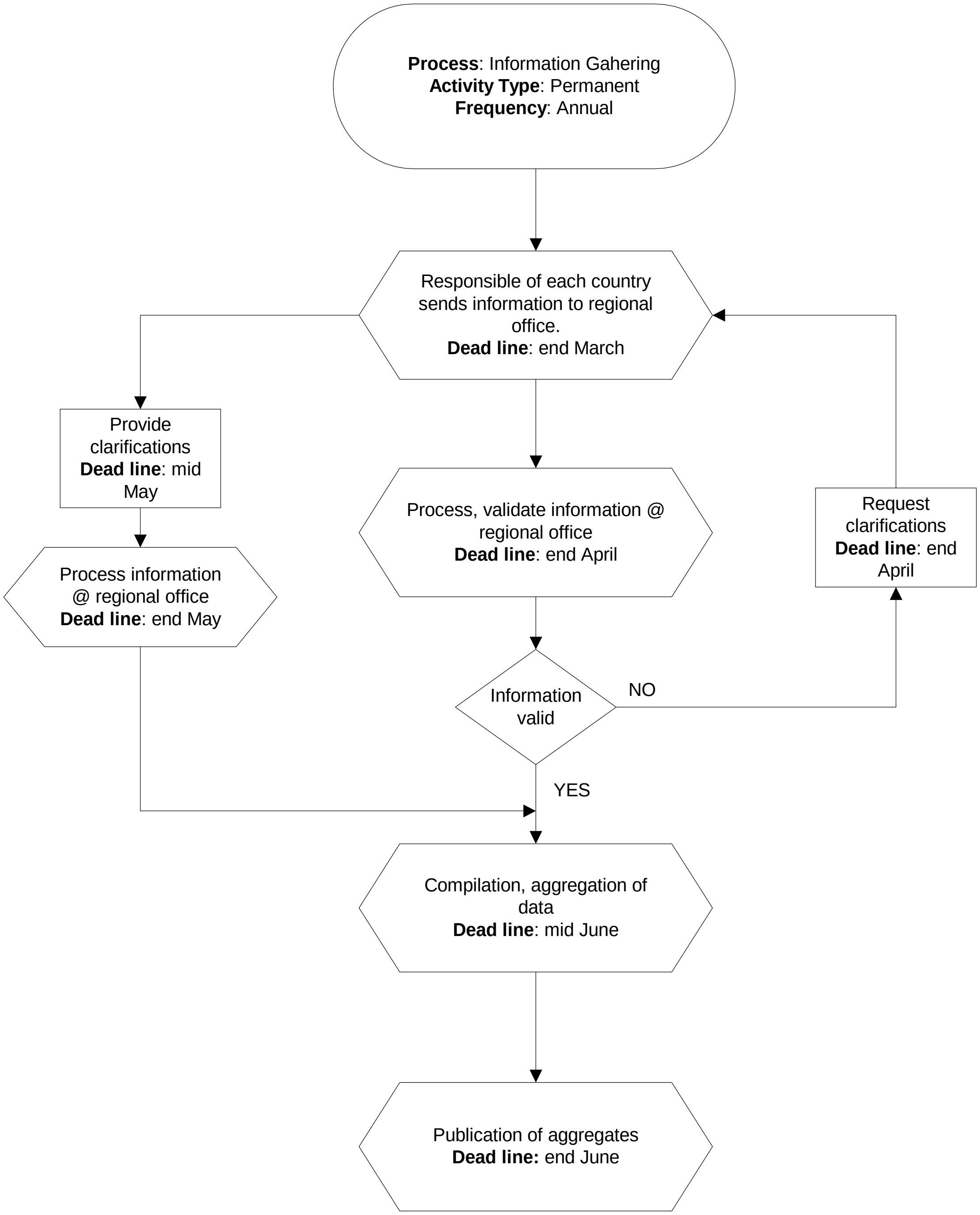


Figure 1: Process for data gathering and processing

4.3. TEMPLATE FOR ECONOMIC AND FINANCIAL ASSESSMENT FOR POWER PROJECTS

Section 3.1 describes how this task is performed. Below is a template for the information that should be collected.

The full template is attached in a spreadsheet.

Data should be reported annually at the specified date.

Section 1: Socioeconomic and financial assessment of power products	
Description of information needed	
1.1	List all planned expansion projects in generation and transmission
1.2	Define the type of generation the projects cover and the planned commission date
1.3	For each of the generating projects:
1.3.1	List the added capacity for the planned projects (MW)
1.3.2	List the added annual energy for the planned projects (GWh)
1.3.3	Generation costs for the project (US$/MWh)
1.3.4	Variable generation costs for the project (US$/MWh)
1.3.5	Origin of fuel for generation
1.4	Define the transmission expanding project and the planned commission date
1.5	For each of the transmission projects:
1.5.1	Define the capacity of the project (transmission capacity)
1.5.2	Define the impact the project will have on interconnections
1.5.3	Report on the Environmental Impact Assessments
1.5.4	Report on the Resettlement Action Plans

Table 2: Socioeconomic and financial assessment

4.4. *REGIONAL GENERATION PLANNING*

Section 3.2 describes how this task is performed. Below is a template for what information should be collected.

The full template is attached in a spreadsheet.

Data should be reported annually at the specified date.

Section 2: Regional Generation Planning	
Description of information needed	
2.1	Installed capacity detailed per plant and specification of plant technology (gas turbine, combined cycle, steam, hydro, etc.). Currently available capacity (MW). Rehabilitation programs.
2.2	Generation cost (US$/MWh) per generation unit
2.3	Current available capacity (MW)
2.4	For hydro plants please provide information on:
2.4.1	Number of generators (#) and size of the units (MW)
2.4.2	Type of turbines (Kaplan, Pelton----)
2.4.3	Run of river or with reservoir
2.4.4	Capacity of lake for regulation (season, month, week?)
2.5	Age of the plant (with indication of refurbishment)
2.6	For investment plans please give the following information
2.6.1	Type of generation (hydro and type or thermal and type)

Section 2: Regional Generation Planning	
Description of information needed	
2.6.2	Installed capacity (MW)
2.6.3	In case of hydro, maximum, average and minimum annual generation (GWh)
2.6.5	Investment costs (million US$)
2.6.6	Fuel costs (US$/kCal)
2.6.7	Estimated time of commission (year)
2.6.8	Generation costs (US$/MWh)
2.7	Total energy produced (generated) in the last 10 years in the company (GWh)
2.7.1	Thermal (GWh)
2.7.2	Hydro (GWh)
2.8	Origin of fuel for generation
2.9	Special supply agreements for fuel used for generation
2.10	Potential other generation resources

Table 3: Regional generation planning

4.5. LOAD FORECASTING AND GROWTH PATTERN MODELLING

Section 3.3 describes how this task is performed. Below is a template for what information should be collected.

The full template is attached in a spreadsheet

Data should be reported annually at the specified date.

Section 3: Load forecasting and growth pattern modelling	
Description of information needed	
3.1	Guidelines of the energy policy
3.2	Guidelines of the power sector policy
3.3	Energy distributed per type of client (residential, industrial, etc) in the last 5 years (GWh)
3.4	Revenue collection ratio
3.5	Number of customers in the last 5 years
3.6	Origin of fuel for generation
3.7	Population, electrification rate in the last 5 years (%)
3.8	System peak (MW) in the last 5 years
3.9	System losses: transmission & distribution (%)
3.10	Studies of demand forecast. Load shedding data / suppressed demand
3.11	Population, electrification rate in the last 5 years (%)
3.12	Possible limitation in the degree of electrification
3.13	Expected population growth (%)
3.14	Historical relations between population growth and energy consumption (%pop growth / % energy consumption growth)

Section 3: Load forecasting and growth pattern modelling	
Description of information needed	
3.15	Historical relations between economic growth and consumption of energy (%economic growth / % energy consumption growth)
3.16	Political signals on issues like energy efficiency, priority of rural electrification etc.
3.17	Expansion plans in generation and transmission: identification of main projects, characteristics of project and commissioning date foreseen

Table 4: Load forecasting and growth pattern modelling

4.6. REGIONAL POWER SECTOR POLICY DEVELOPMENT AND REGULATION

Section 3.4 describes how this task is performed. Below is a template for what information should be collected.

The full template is attached in a spreadsheet

Data should be reported annually at the specified date. In addition to the annual reporting period, any relevant change should be reported immediately.

Section 4: Regional power sector policy and regulation	
Description of information needed	
4.1	Role of the State
4.2	Role of the regulatory authority (functions, responsibilities, activities)
4.3	Regulatory authority set up
4.4	Changes in Laws that regulate the power industry
4.5	Changes in power sector structure
4.6	Changes in industry structure
4.7	Ongoing reform process?
4.8	Objectives for potential reforms
4.9	Is there a centralized dispatching?
4.10	Guidelines of power sector policy
4.11	Policy regarding power trade
4.12	Main challenges for the power sector
4.13	Progress in meeting the challenges
4.14	Expected progress the next years

Table 5: Regional power sector policy and regulations

4.7. REGIONAL POWER MARKET AND POWER TRADE ANALYSE AND OPERATIONS INCLUDING TRANSACTION MANAGEMENT

Section 3.12 describes how this task is performed. Below is a template for what information should be collected.

The full template is attached in a spreadsheet

Data should be reported annually at the specified date. In addition to the annual reporting period, any relevant change should be reported immediately.

Section 5: Regional power market	
Description of information needed	
5.1	International agreements for power trading
5.1.1	Parties
5.1.2	Characteristics
5.1.3	Amounts traded
5.1.4	Pricing
5.2	Existing PPAs
5.2.1	Main characteristics of PPA
5.2.2	Parties
5.2.3	Quantities sold
5.2.4	Pricing formula and adjustment formula
5.2.5	Deviations treatment
5.2.6	Term
5.3	Opportunity exchanges of power, support in emergencies, ancillary services coordination, inadvertent energy
5.4	Settlement of short term transactions

Table 6: Regional power market

This information is needed when contracts are changed, and the TSOs must have the responsibility for informing the region of changes.

The planned utilisation of interconnections must be reported between the TSOs and information published on a regional basis.

In the Nordic area all information of exchange between TSOs are calculated by the power exchange and published after the price calculation every day at approximately 2 PM.

Much of information from the market is published at: http://www.nordpool.com/

There is no common power exchange within the UCTE system and most of the trade is scheduled as bilateral contracts between Balance Responsible parties in the different countries.

The rules for this reporting are given in the Scheduling and Accounting Rules at the address: http://www.ucte.org/ohb/e_default.asp

4.8. OPERATIONAL INFORMATION

Section 3.10 describes the need for reliability studies. Information of observed failures is important to obtain in order to analyse the security of supply.

The full template is attached in a spreadsheet

Data should be reported annually at the specified date.

Section 6: Operational Information	
Description of information needed	
6.1	SAIFI: number of customer interruptions / Total customers in system
6.2	CAIFI: Number of customer interruptions / Number of customers who had at least one interruption
6.3	SAIDI: sum of the durations of all customer interruptions / Total customers in system
6.4	CTAIDI: sum of the durations of all customer interruptions / number of customers who had at least one interruption
6.5	MAIFI: number of customer momentary interruptions / Total customers in system
6.6	CALCI: sum of all customer load curtailments / number of customers who had at least one interruption
6.7	MaxD: the maximum expected total time in a year that any customer in the area being studied will be without available power
6.8	MaxF: the expected maximum number of times in a year that any customer in the area being studied will have power availability interrupted

Table 7: Operational information

4.9. *REGIONAL FORECAST*

Section 3.5 describes the planning function. It is important that each country develops the forecasts and the region then aggrgates the information in the plans for the region.

The full template is attached in a spreadsheet

Data should be reported annually at the specified date.

Section 7: Regional Forecasts				
Description of information needed				
7.1	**Installed generator capacity (MW)**	**Last year (year N)**	**Expected year N+3**	**Expected year N+10**
7.1.1	**Nuclear power**			
7.1.2	**Other thermal power**			
	Thermal type 1			
	Thermal type 2			
	Thermal type 3			
7.1.3	**Hydro power**			
7.1.4	**Renewable**			
	Renewable type 1			

Section 7: Regional Forecasts				
Description of information needed				
	Renewable type 2			
	Renewable type 3			
7.1.5	**Geothermal generation (GWh)**			
7.1.6	**Mothballed generation (GWh)**			
7.2	**Registered consumption (GWh)**			
7.2.1	**Gross consumption (GWh)**			
	Temperature corrected consumption (GWh)			
	Losses (%)			
	Pump storage power (MW)			
7.2.3	**Net consumption (GWh)**			
	Housing			
	Industrial			
	Trade and services			
	Agriculture and others			
	Population (millions)			
7.3	**Gross consumption per capita (kWh/hab/year)**			
7.4	**Registered peak consumption (MW)**			

Table 8: Regional forecasts

4.10. Information Exchange

The countries will register the energy flow between them on a regular basis. At the end of the year they should fill in their part of the following template:

Section 8: Exchange Information					
Description of information needed					
(GWh)	Country A Import from	Country B Import from	Country C Import from	Country D Import from	Country E Import from
Country A Export to					
Country B Export to					
Country C Export to					
Country D Export to					
Country E Export to					

Table 9: Exchange information

The information should be provided annually at the established date and published in an annual report.

5. PUBLISHED INFORMATION

5.1. *NORDIC DATA PUBLICATION AGREEMENT*

The information in the Nordic market is described as an example of what the distribution of important information in a modern market may look like.

This kind of information was also collected and published in the very early days of the Nordic market, but with low frequency. In the 1970s and 1980s the information was collected on an hourly basis every third Wednesday in the month.

The TSOs in Sweden, Denmark, Finland Norway and the Nordic Power Exchange Nord Pool Spot AS have in place an agreement called Data Publication Agreement.

The Agreement is not yet published on the Web pages, but this will be done in near future.

The content of the Agreement is as follows:

1. Purpose of this agreement
2. Information and disclosure from TSOs
3. ETSO Information Platform
4. Publication of information
5. Information excluded from this Agreement
6. NPS-TSO information Forum linked to this Agreement
7. Renegotiation
8. Monitoring
9. Non-fulfilment
10. Force majeure
11. Limitation of liability
12. Confidentiality
13. Duration and termination
14. Applicable law Arbitration

The more detailed contents of #2 "Information and disclosure from TSOs" are:

- Price sensitive information: This is information that may have impact on power prices as changes in outage plans, status of generators, limitations in grid etc.
- Value for trading Capacities
- Reasons for limitations
- Congestions in the Nordic grid
- Transmission capacity outages and plans for limitations
- Planned electricity flow from and to the Nordic Area

- Sealed-in production or consumption
- Information on generation units
- Historical data
- Correctness of data, contingency plan

The data that shall be collected and published by Nord Pool Spot are:

Type of information	Time resolution
Power Situation	
Reported total production for Norway (NO1/NO2/NOX), Sweden, Denmark (DK1/DK2) and Finland Sum total	Hourly values
Reported total calculated consumption for Norway (NO1/NO2/NOX), Sweden, Denmark (DK1/DK2) and Finland Sum total	Hourly values
Measured exchange for Norway (NO1/NO2/NOX), Sweden, Denmark (DK1/DK2) and Finland Sum against each country Sum against areas/system per country	Hourly values
Planned trading capacity for Norway (NO1/NO2/NOX), Sweden, Denmark (DK1/DK2) and Finland Sum against each country Sum against Elspot area	Hourly planned values -for the next trading day -prognosis for the next week
Planned capacity for Elbas (on the day) trading	Hourly capacity between trading areas.
Planned flow to and from the Nordic Electricity Exchange Area Sum against each country Sum against Elspot Area	Hourly planned value for the next trading day
Long-term evolution of the transmission infrastructure	New agreed long-term grid related investments that increase capacity on interconnectors, or other long-term changes that effect grid capacities in a positive or negative way

Outages and plans for limitations	
Transmission outages, failures and plans for maintenance or limitations	Continually via the Urgent Market Messages application provided by Nord Pool Spot
Sealed in production or consumption	Continually via the Urgent Market Messages application provided by Nord Pool Spot
Markets	
Regulating/Balancing power market Prices (up and down regulating price) Turnover (activated per country/Elspot area) Values for each country and Elspot area	Hourly values

Table 10: Data collected and published by Nord Pool Spot

5.2. *EXAMPLES OF INFORMATION PUBLISHED FROM NORDEL*

All the following examples are information that is published on Nordel's web pages with address: http://www.nordel.org/Content/Default.asp?

Key figures for 2006

		Nordel	Denmark	Finland	Iceland	Norway	Sweden
Population	mill.	**24.8**	5.4	5.3	0.3	4.7	9.1
Total consumption	TWh	**405.4**	36.4	90.1	9.9	122.6	146.4
Maximum load[1]	GW	**66.8**	6.3	14.2	1.1	19.9	25.4
Electricity generation	TWh	**393.9**	43.3	78.6	9.9	121.7	140.3
Breakdown of electricity generation:							
Hydropower	%	**51**	0	14	73	98	44
Nuclear power	%	**22**	-	28	-	-	46
Other thermal power	%	**24**	86	58	0	1	9
Wind power	%	**3**	14	0	-	1	1
Geothermal power	%	**-**	-	-	27	-	-

[1] Measured 3rd Wednesday in January   - = Data are non-existent   0 = Less than 0.5 %

Figure 2: Information published by Nordel - General

Generation capacity and electricity production

S1a Installed capacity[1] by production types on 31 December 2006, MW

	Denmark	Finland	Iceland	Norway	Sweden	Nordel
Installed capacity total [1]	12 699	16 544	1 707	29 268	33 819	94 037
Nuclear power	-	2 671	-	-	8 965	11 636
Other thermal power	9 554	10 743	113	244	8 094	28 748
- Condensing power	993 [2]	3 301	-	0	2 298	6 592
- CHP, district heating	7 687	3 737	-	131	2 954	14 509
- CHP, industry	567	2 924	-	49	1 229	4 769
- Gas turbines etc.	307	781	113	64	1 613	2 878
Hydro power	10	3 044	1 162	28 691	16 180	49 087
Wind power	3 135	86	-	333	580	4 134
Geothermal power	-	-	432	-	-	432
Mothballed[3]	0	0	0	0	500	500

[1] Refers to the sum of the rated net capacities of the individual power plant units in the power system, and should not be considered to represent the total capacity available at any single time.
[2] Includes 100% condensing power in Denmark. The rest is included in CHP, district heating.
[3] Mothballed capacity that can be recommissioned by decision of the power plant owner. All mothballed plants are considered as unavailable no matter how long in advance the decision of recommissioning must be taken. Mothballed capacity are not included in the total installed capacity.

Figure 3: Information published by Nordel – Installed Capacity

S5 Electricity generation 2006, GWh

	Denmark	Finland	Iceland	Norway	Sweden	Nordel
Total generation	43 328	78 590	9 925	121 715 [2]	140 314	393 872
Nuclear power	-	21 982	-	-	64 984	86 966
Other thermal power	37 198	45 119	5	1 123	13 167	96 612
- Condensing power		17 547	-	0	778	18 325
- CHP, district heating	35 433 [1]	14 505	-	113	6 912	56 963
- CHP, industry	1 762	13 064	-	561	5 464	20 851
- Gas turbines, etc.	3	3	5	449	13	473
Hydro power	23	11 342	7 289	119 919	61 176	199 749
Wind power	6 107	147	-	673	987	7 914
Geothermal power	-	-	2 631	-	-	2 631
Total generation 2005	34 353	67 497	8 679	137 948 [2]	154 609	403 086
Change compared to 2005	26.1%	16.4%	14.4%	-11.8%	-9.2%	-2.3%

[1] Includes condensing production.
[2] Gross production.

Figure 4: Information published by Nordel - Generation

S9 Electricity consumption 2006, GWh

	Denmark	Finland	Iceland	Norway	Sweden	Nordel
Total consumption	36 392	90 111	9 925	122 572	146 366	**405 366**
Occasional power to electric boilers	-	56	171	3 513	1 312	**5 052**
Gross consumption	36 392	90 055	9 754	119 059	145 054	**400 314**
Gross temp corrected consumption	*36 520*	*90 683*	*9 656*	*123 018*	*146 923*	***406 800***
Losses	2 092	3 398	469	9 280	11 260	**26 499**
Pumped storage power	0	-	0	540	50	**590**
Net consumption [1]	34 300	86 657	9 285	109 239	133 744	**373 225**
- housing	9 800	20 900	934	35 503	40 100	**107 237**
- industry (incl. energy sector)	10 100	50 163	6 905	48 393	59 900	**175 461**
- trade and services (incl. transport)	11 400	14 694	963	23 703	27 300	**78 060**
- other (incl. agriculture)	3 000	900	434	1 640	6 444	**12 418**
Total consumption 2005	35 723	84 511	8 679	125 908	147 217	**402 038**
Change compared to 2005, %	1.9 %	6.5 %	14.4 %	-2.6 %	-0.6 %	**0.8 %**
Population (million)	5.4	5.3	0.3	4.7	9.1	**24.8**
Gross consumption per capita, kWh	6 693	17 112	31 772	25 549	16 154	**16 168**

[1] Estimated net consumption.

Figure 5: Information published by Nordel - Consumption

5.3. NORDEL ANNUAL REPORT 1978

The report is available at the address:

http://www.nordel.org/content/Default.asp?PageID=235

Most of the report is unfortunately in Scandinavian language, but the figures have English text.

An electronic copy of the report is attached to Delivery 9.

5.4. NORDEL ANNUAL REPORT 2006

The report is available at the address:

http://www.nordel.org/content/Default.asp?PageID=235

An electronic copy of the report is attached to Delivery 9.