Electricity Market Restructuring and Statistical Data Collection

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1. Introduction

The electricity sector of the European Union undergoes considerable change as a result of the application of the EC Electricity Directive of 1996 about electricity market liberalisation. All member-states have implemented the directive in their national legislation and electricity market opening has begun showing multiple implications.

The changes introduce gradual restructuring of the industry and sharper competition. Public utility orientations change into a view under private interests, increasing market and investment risks. Liberalisation of the electricity sector is also changing the industry's relationships with policy makers, regulators and consumers to a profound degree. The EU Electricity Directive, reinforced by Member States' policy decisions on market liberalisation (and, in some, privatisation), will increase competition in the European electricity and wider energy market. These new market circumstances are accompanied in some countries by structural rationalisation and consolidation via vertical and horizontal integration, mergers, take-overs and/or strategic alliances. The industry's structure will evolve over time: perhaps leading to a few world-scale integrated companies (as in oil); some multi-utility companies (e.g. electricity, gas, heat, water and telecommunications); some regional players in the EU; and numerous small- and medium-sized companies with strong local or national affiliations with their customer base, or serving niche markets. Many new players, such as bankers, financial analysts, brokers and traders, will play important intermediate roles. In sum, the industry's structure is changing rapidly. It will be less homogeneous than in the past, and motivated by different incentives, leading to new regulatory and policy requirements.

Under these circumstances it is imperative for Eurostat to reconsider the settings for information collection about the electricity sector and design a new process to meet the growing needs for information in this sector. It is also imperative because Eurostat and the member-state offices are asked to support monitoring and policy making for the electricity market, including issues about transparency and competition conditions. Eurostat and the other offices have met, in the past, the requirements about information on electricity, but these were very different than those needed to monitor the market. For the information required in the past, to observe physical flows and technologies was sufficient. The new information needs imply higher complexity, requiring careful design of the information system. The private character of the information needs addressing the confidentiality issues very carefully, for the information system to be sustainable over the future.

The present note addresses these issues and proposes a framework for discussion. Its purpose is to set the basic principles around which a redesigned information system for the electricity sector could become useful to the multiple actors of the new electricity markets and to the policy makers and regulators of this market. There will be need for important work to set the details of such an information system. There will be also need for legislative work to put such a system into force, especially under the circumstances of an increasingly competitive market.

2. New role for Eurostat's information

For a long time Eurostat and the member states were collecting data on the electricity sector but not on the electricity market. The data, mostly in physical units, were serving the core mission of Eurostat in the energy domain, which refers to the publication of the energy balance sheets. Eurostat was collecting data on the electricity sector about the following:

1. Electricity production, transmission and distribution losses, imports and exports (kWh)

2. Electricity consumption (kWh) subdivided into several demand sectors

3. Quantity of fuel and energy forms (e.g. renewables) used to produce electricity (ktoe)

4. Electricity production (kWh) decomposed according to the purpose of the generator: utility, auto-producer

5. Electricity production (kWh), installed capacity (MW) and fuel consumption (ktoe) decomposed according to generation technology: thermal, GTCC, hydro, nuclear

6. Electricity tariffs (€/kWh) for a set of predefined tariff categories for industry and household sectors

7. Surveys on renewable electricity and cogeneration of heat and power reporting on installed capacities and production, further decomposed by technology type

The purpose of this data collection, as carried out up to now, was to support policy analysis at a rather macro level. Market issues were not addressed. The main policy uses of the current data set of Eurostat can be listed as follows:

- Analyse electricity supply and demand and their role in the energy balances

- Analyse the requirements for fuels and energy forms, in order to appraise security of supply issues

- Analyse the use of fuels in order to monitor emissions of pollutants and carbon dioxide

- Analyse the main trends about power technology choice and the possible decentralisation of generation

- Compare the prices of electricity across the European Union regions in order to infer about regional competitiveness and social conditions

- Analyse the penetration of renewables and cogeneration in order to monitor the corresponding European Union policies.

The above list of policy uses of the data does not include observation of the electricity market and obviously cannot support the analysis of issues related to transparency and competition conditions in the electricity market, as required for Eurostat and the member-state offices.

The new requirements for Eurostat information on the electricity sector does not offset the previous requirements and their role, since the above mentioned policy objectives still remain valid and of high importance. Consequently an important issue for Eurostat is first of all to ensure no loss of statistical information under the new competitive structure of the market and the continuous supply at least of the current level of information. As we shall explain, this is not a trivial objective given the private character of many data under the new structure.

The new role of Eurostat's information on the electricity sector requires collection of additional data items that concern the observation of the market and its players/actors.

This new role of information ensues from the broadening of the policy aims that the information has to support, as illustrated below:

- The energy policy aims about security of supply, technology choice, environmental management, promotion of renewables and cogeneration, and similar, still remain valid. It follows that that at least the current information provided by Eurostat should be maintained.

- National and Community authorities need to monitor and evaluate the implementation of the Electricity Directive and the resulting degree of opening of the market towards the establishment of an Internal Electricity Market. This implies a need to observe market prices, companies (and their merging) and other market players.

- In addition the authorities have to evaluate the fairness of competition, the transparency of information and prices (e.g. publication of transmission tariffs is an explicit obligation in the Directive) and detect any signal of emerging oligopoly or monopoly situations.

- National and Community authorities need to assess the implications of the opening of the market on consumers and their perception of public service (e.g. reliability), degree of satisfaction and market accessibility. This is a new requirement because the social and reliability aspects are not granted, as before, but have to be monitored under the new market conditions.

- Numerous new market players (traders, investors, consumers, providers of ancillary services, etc.) have to be supported by information, as they will prepare their investment and commercial decisions. Among other objectives, the policy underlying the market opening also seek increasing the business activity, promote and support small and medium enterprises and employment. The new players are smaller in size, than previously the utilities, and may not afford the cost of collecting information on their own.

- Eurostat's role as a supranational information provider is strengthened under the new market conditions. In a sense there is a globalisation (at the EU level) of the segmented regional markets. The players and the policy objectives mostly require information for the whole of the EU market, in a harmonised way in order to compare the regions and detect market opportunities (for the players) or observe distortions from the unified market (for the policy authorities).

3. Implications from the new circumstances in the market

Under the previous electricity market regime, Eurostat was collecting data on rather few items related to the electricity sector. The data collected were about kWh (and kW) and included two activities: production and consumption of electricity.

The following sub-sections illustrate how the new market regime will influence the role and the requirements about Eurostat's information.

3.1 Higher variety of information

Under the new circumstances, Eurostat and the national offices will face a considerably higher complexity. The variety of information increases substantially, as it has to address:

- More commodities: kWh and kW as before but also ancillary services, reliability and a large set of prices

- More activities: production and consumption as before but also wholesale trade, retail trade, contracts and other transactions

- Actors: market entities (generators, traders, suppliers, consumers) have to be observed

- New definitions: imports and exports of electricity in the EU internal market are not any more foreign trade transactions but just commercial transactions between actors located in different regions;

- New type of information: legal status of companies, share holding, number of legal entities are examples of information types that are new for the statistical offices.

The following two figures illustrate the increasing variety of market actors and commodities under the new regime.

Figure 1: Actors in the New Market

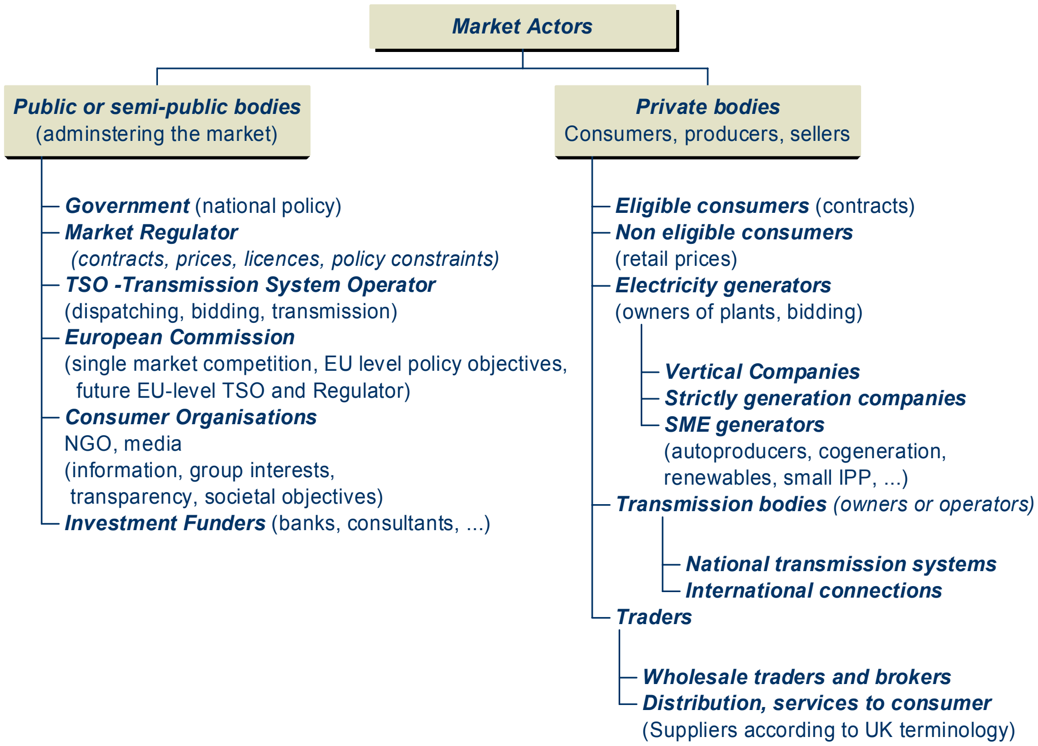
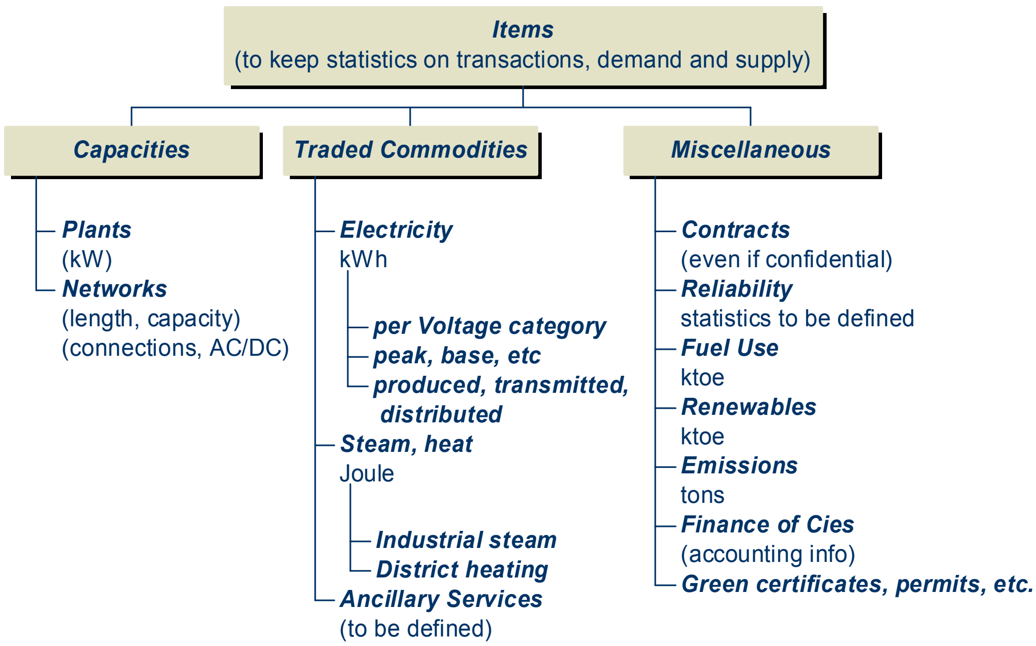


Figure 2: Information Items in the New Market



3.2 Conflicting interests of market participants

Under the new market circumstances the market players will often have conflicting interests. In general they will require information on other players but without willing to disclose their own information. This situation, which is quite common in other sectors, is the source of the major problems to be faced by statistical offices, regarding the collection of information, the presentation of information and the confidentiality issues.

Almost all member-states have established a market regulatory body. One of the missions of this body is to ensure transparency of competition conditions and equal access to information, both for current market players and new entering players. It is therefore logic to consider these regulatory bodies as the natural repository of the electricity market information and the basis for legally addressing the issue of confidentiality and information disclosure. It is expected that the regulatory bodies will establish legislation (for example contractual obligations to allow an entity to play in the market) that will rule the disclosure of information and somehow will resolve the conflictual situation described above. It follows that the statistical offices have to rely on this basis to address the issue of information collection and publication.

A major difference between the information provided by a regulatory body and that provided by a statistical office lies in the timeliness of information. A regulatory body has to be synchronous with market operations for the information to be relevant and useful to market players. A statistical office cannot serve such a purpose and can afford providing the information after a significant delay, in order to supply rich and relevant information without so much harming the private interests. Therefore the timeliness of the information is for the statistical offices a key to solve the conflicts arising from the privacy of market players. However the same information even published after a delay, will be still of utmost importance for policies to evaluate and monitor, as well for assessing the evolution of market competition.

3.3 Complexity of information to monitor policies

The policy making authorities and other organisations (like NGOs) will need more information and indicators to monitor policies and evaluate the implications under the new market regime. Issues regarding consumers, reliability and competition structures have been mentioned before. In addition policies regarding the environment, the renewable energy forms, the small generators, cogeneration, etc. will need information that will be also probably available under conflictual situations. Again the role of regulatory bodies is important, as they are the conveyors of such policies in the market place.

3.4 Higher legal risks

The legal responsibility of Eurostat and national statistical offices increases under these circumstances. This does not only concern confidentiality issues but also issues related to the use of information for investment and bidding.

3.5 Risks in the transition period

The correct management of the transition period is important for the statistical offices and Eurostat. During this period, the rules about handling of information at the level of the regulatory bodies are not yet well established and the legislation supporting Eurostat activities is not yet set. The electricity companies are also themselves in a transition period and often have tendency to over-emphasise the importance of keeping most of the information confidential.

So in the transition period there is clearly a risk of loss of information. This would harm the continuity of statistical time-series but would also undermine the future availability of the same level of information. For example fuel consumption in some plants may not be considered as information to disclose under the new market conditions. Under non adequate legislation, the statistical offices may not be able to publish the information, therefore there will be a serious problem in the continuity of statistics.

Another risk in the transition period concerns the possible unequal coverage of the member-states. There is lack of harmonisation in the setting of the rules about information and confidentiality in the different member-states, also because the member-states develop the market at different velocities. This may cause increasingly diverging situations regarding the quality and the availability of current Eurostat statistics as collected by member-states. Such a situation would be unpleasant for the coverage of the Community wide policy objectives and information needs.

Therefore there is need for Eurostat to take urgent actions to ensure continuity of the current statistical collection system, even before expanding the system to cover new information needs. As explained, such actions should also focus on the harmonisation aspects and about that the role of Eurostat is important.

3.6 Preparatory actions by Eurostat

Given the complexity of the information on the new electricity sector, Eurostat has to undertake preparatory actions referring to methodological and organisational issues. The undertakings must start early enough in order to manage the transition period and effectively address the new requirements.

A rough list of preparatory actions is as follows:

- Define a methodological framework for the new electricity information system. This would include the definition of statistical variables to observe, their measurement, their linkages and the timeliness of information collection. The methodological framework has to be general and comprehensive enough to be relevant for a long period of time. Even if today one sees difficulties about the collection of some data, their definition has to be included in the framework if there is hope to complete the statistical work in the future. The methodological framework also serves as a basis to establish a progress in the dialogue between Eurostat and the member states about the new information system. It is an objective way to systematically address the different issues and problems.

- Re-shape the sources of information, the formal linkages with these sources and harmonise the national information systems on the same subject. In view of the confidentiality issues and the new bodies (regulator, TSO), the formal linkages of Eurostat with the sources have to be revised and institutionally established. This is a complex process the outcome of which is crucial for Eurostat to obtain completeness of the data coverage, reliability of information and mostly harmonisation across the European Union. The harmonisation issue should not be underestimated because it is a non-granted objective for the Union, given that the formation of the liberalised markets follows at present a bottom-up process. To obtain harmonisation, Eurostat has a tutorial role, as well. The establishment of a methodological framework with the member states is one of the ways to progress towards harmonisation and the establishment of institutionalised links with the information sources.

- Explicitly address the confidentiality issue and start defining a new approach. The standard approach, stating that information cannot be published if it concerns few legal entities will pose many problems if applied to the electricity sector, which by nature (e.g. economies of scale) may have few entities. Since monitoring of transparency and fairness of competition is of concern, such a rule would extremely limit the availability of information. A new approach would consider the substance of the confidentiality issue in accordance with the rules that the national regulators apply in practice. For example, harmonising the information disclosure and the timeliness with the regulators would allow Eurostat to increase the availability of information.

- Define a minimum set of statistical variables, data aggregation and indicators that is possible to observe and publish in the short term, possibly mostly based on existing information sources. It is important to start publishing this information under a new format to signal the willingness of Eurostat to cover this sector, supply new customers and position Eurostat in relation to the new regulatory bodies of the members-states. Of course, current surveys (e.g. renewables, cogeneration) and other statistical activities in Eurostat (e.g. economic data on the sectors) have to be evaluated, regarding their compliance with the new requirements and revised accordingly.

4. Elements of a methodological framework

The previous section emphasised the importance of establishing a methodological framework to shape the information system required for the new electricity market regime and the related policy aims. Although in a very preliminary stage, it is necessary to propose some basic elements in this note.

First it is necessary to agree on some basic terminology that refers to the new market regime. In the previous sections figures 1 and 2 showed the organisation of the actors in the new market and the information items. The purpose of this section is to link the information items with the actors and provide a preliminary evaluation of the accessibility of the information by Eurostat and national offices.

Under the new regime, it is expected to see complex structures regarding the legal entities playing in the market. Independently of ownership status, the market actors that hold information can be summarised as follows:

- Generators are entities that operate a power or cogeneration plant and may make bids in the liberalised market

- Distributors are entities that operate the physical transmission and distribution of electricity

- Suppliers are entities that sell electricity to end-use customers either eligible to choose their supplier or not eligible; the distinction of customers according to eligibility is changing over time;

- Traders are entities that sell or buy wholesale electricity; [1]

- TSO: transmission system operator that operates and clears the transactions and ensures the physical functioning of the system and the market

- Regulator[2]: a public body that observes the market, accords licences, validates contracts, regulate prices where applicable and applies general policies to the market.

The sub-sections below group the links between actors and information items under the general policy purpose that the information system has to serve.

4.1 Purpose: analyse physical demand and supply and their implications

Electricity demand is measured in kWh and is subdivided into demand sectors. The classification of the sectors needed for analysis is close to NACE but the statistical sources usually observe demand either according to the voltage (high, medium or low) either according to tariff categories. The primary information about electricity demand is available at the level of the TSO and the suppliers. It is expected that if the data are sufficiently aggregated, so as not to disclose information about the consumption of particular customer, there will be willingness to provide the data. The transformation of consumption data by sectors needs work from a statistical office.

The observation of electricity load curves and peak demand is necessary to evaluate global reserve margins and the implications of the electricity market on electricity supply reliability. At present some companies qualify this information as commercially confident. In the future there must be an arrangement with the TSO or the regulators to publish a global load duration curve and peak demand information, because this is also an element useful for public policies and essential for transparency facilitating new entry in the market.

The observation of electricity consumption for customers that are heavy users of electricity is necessary for many purposes: monitoring of eligibility of customers as an

[1] Imports and exports of electricity in the EU is a result of a variety of transactions: a supplier or a generator may provide electricity to a customer in different country, a trader may exchange electricity across different countries, etc.

[2] Not established in all member states

element of observing market opening; monitoring of electricity consumption to support environmental policies and demand side management. Total consumption at high and medium voltage is one source of information. It will be further necessary to split by economic sector (e.g. iron and steel, non ferrous, etc.) as stated above. The observation of the eligibility and the choices of eligible customers is more difficult because this is in conflict with confidentiality of electricity contracts under the new regime. Probably there must be an arrangement with TSO to publish a few aggregate indicators on the choices of eligible customers, their volume of consumption and source of supply.

Statistics about technological aspects of electricity generation (also cogeneration and district heating) are important for technological and environmental policies. It is necessary to publish a subdivision of electricity generation (and steam/heat) by technology type of the plant: e.g. nuclear, hydro, renewables, GTCC, etc. The primary data, e.g. electricity generated by a particular plant, will be available at the level of generators but it is expected to be qualified as commercially confident.

Data on the use of fuels in electricity (and heat/steam) generation are necessary for two purposes: evaluate total demand for fuels and analyse the prospects about energy security of supply; evaluate emissions of pollutants and compare against environmental objectives or commitments.

Consumption, generation and fuel use data are essential parts of the detailed energy balances.

To obtain the data on electricity generation by technology and the use of fuels will be a delicate issue under the new market regime and again this has to be handled at the level of the regulator. The regulator has a mission to accord licences to generators and consider both the technology and the fuel they are going to use. It is therefore logical to demand from the generators a periodic report about the generation by technology type and the use of fuels. For large generators having multiple plant types, a periodic report on generation and fuels that does not disclose the cross-section between plants and fuels would not be a problem. In any case, the regulator in cooperation with Eurostat and the statistical offices must define a questionnaire on generation and fuel use and oblige the generators to provide the information as a condition to accord generation licences.

Other community legislation, like the large combustion plant directive, also requires such information. Environmental monitoring will also require additional information on emissions and probably on pollution abatement equipment. Again the only possible approach to collect this information on a periodic basis is through the regulator and a questionnaire.

4.2 Purpose: analyse generation capacity, availability and reserve margin

As mentioned before, it is not for granted under the new market regime that the system ensures building enough generation capacity to reliably meet demand in the long run. The regulator and TSO, as well as general public policy need monitoring the market regarding the capacity availability issue.

It follows that for Eurostat and the statistical offices there must be an arrangement with the regulator to agree upon a common questionnaire and indicators that measure generation capacities (possibly by technology type and energy form), the global availability of plants and the system reserve margin. These normally have to be published at a regular basis.

A difficulty will arise about the collection of information on the availability of individual plants, the outages, the maintenance schedules and the cold or spinning reserves. The TSO normally has to collect such information at a detailed level in order to plan for capacity additions, allocate any tariffs that should be paid to generators supplying reserve to the system and the ancillary services (e.g. spinning reserve, etc.). This information is expected to be qualified as confidential. In a short period dispatching also the TSO has to collect information on outages and maintenance schedules, in order to ensure reliability and availability of supply.

Public information on these issues can be envisaged only through well defined but aggregate indicators that show at a global scale the evolution of generation reliability, availability and capacity reserve aspects. So again the statistical offices have to agree with the regulator and the TSO on how to measure and publish these indicators.

4.3 Purpose: Analyse availability of transmission lines

For the fairness and openness of competition under the new regime it is of utmost importance to dispose sufficient and available transmission lines and generally transmission capacity. This is an issue for the domestic competition (within the territory of the member-states) but also for the opening of a EU internal market of electricity[3]. It is also important for the relations with the neighbourhood of the EU and the availability of sufficient system reserve.

It follows that observing the availability and sufficiency of the transmission system serves the monitoring of market operation and competition and the appraisal of system reliability.

Since the transmission system operates under regulated monopoly regime, it is logical to expect that the detailed information on transmission capacities will be available at the level of TSO and somehow will be published to allow for new investment, new entry in the market and for supporting fairness and transparency of transmission tariffs (set by regulation to recover long run costs).

Eurostat and the statistical offices only need aggregated indicators on transmission availability and sufficiency of infrastructure. These needs can be recovered through an agreement with TSO about a periodic publication of such indicators. The primary information is very complex, because it involves spatial data and complex engineering data. To infer, by using the primary data, about sufficiency of transmission capacity and reliability is very complex and cannot be handled by a statistical office.

[3] The Union have further interests on this issue in relation to the Trans-European Networks policy.

It is also difficult to define indicators about transmission that would appraise the transmission sufficiency separately for the interior of a member-state territory and the electricity trade across member-states.

4.4 Purpose: Observe prices and assess fairness of competition

A fundamental expectation from electricity market liberalisation is the fall of electricity prices as a consequence of increasing competition. Prices may fall as a result of two basic mechanisms: because of competition the producers and suppliers are expected to move towards a more efficient organisation and the ensuing cost reductions will be reflected on prices; oligopoly or monopoly rents that may have prevailed under the previous market regime are expected to vanish leading to lower prices for the consumer.

There are two ways of accessing farness of competition by using observed information: a top-down and a bottom-up approach.

- In a top-down approach, one observes certain information at a macro level and then infers about the degree of competition.
    - The observed information is used as signals and is interpreted according to general economic theory. For example, by observing the number of independent companies that act in a market, one may indirectly conclude about whether the market is or not dominated by an oligopolistic structure. Also observing entry and exit one may infer about the openness of the market.
    - The advantage of a top-down approach is that one may use easily accessible or even published information. The drawback comes from the complexity of the inference. Out of the macro information one may easily conclude with misleading results about the degree of competition. For example, observing the number of companies often is not enough. One may have observed hundreds of operating companies, but possible each one may be a monopoly in its own market segment (for example in case of regionally segmented markets). Also, one may have observed one dominant vertically organised company, but this may be formally unbundled and may act in a strongly competitive environment.
    - To draw inferences out of information about the number of companies one has also to observe ownership, merging and acquisition information.
    - Using market shares as a proxy is also questionable in some cases. Because of this complexity, statistical offices have extensively used for other sectors the Herfindahl index approach, which is also recommended as an adequate tool for the electricity sector. The Herfindahl index measures the degree of concentration in a sector and in a way normalizes the acting companies to compute the number of 'equivalent' firms.
    - The electricity sector, however, involves different markets, including the generation, wholesale trading and retail trading, for which the indicators must be different. This is also a complication in technical terms.

- A bottom-up approach consists in an attempt of reconstructing the cost structure of the representative firm and compare against the observed prices.
    - In case of a large gap and even worse in the absence of a downward tendency for this gap, one may conclude that oligopolistic rents prevail in the market.
    - In technical terms, to do so one has to dispose a model for cost calculation and collect for more data than in the case of a top-down approach. These data are difficult to find since they usually are confidential at a company level.
    - In the electricity generation domain, one has to first observe the prices and taxes of the fuels used for electricity production. Although the prices in a spot market for fuels are usually observable, the prices in fuel supply contractors are confidential. Most generators use fuel contracts rather than the spot market for their basic needs. Then one needs to have estimates of heat rates and technology evolution, which may be approached through engineering studies. An engineering approach may also be effective to obtain estimates about capital costs and maintenance costs. Other variable costs may be approximately by using the published accounting balances of the generating companies.
    - The bidding prices are available at the level of the TSO, for bids operating within the electricity pool. Probably the TSO will not be informed about the prices of electricity supply contracts, especially when those contracts are agreed with large eligible customers.
    - The TSO and the regulator might have interest to construct price indicators out of these bidding prices in order to observe their evolution over time and infer about the progress of competition and indirectly conclude about the trends in generation costs.
    - Such indicators are valuable also for Eurostat and the statistical offices and have to be collected in an agreement with TSO and regulator. This has to be carried out independently from the attempt to calculate generation costs. <u>Such price indicators can be used as a stand-alone signal of the effects of market operation on consumer prices</u>.

The approach is different for the transmission prices and fees. The transmission activity is regulated as a natural monopoly and there must be transparency about costs, prices and fees as an element of fairness of competition among generators and traders. The EU electricity directive provides rules for publishing those transmission prices. Therefore Eurostat may directly access and use this information.

It is yet unclear whether the same transparency will be applied for the distribution of electricity. If multiple electricity suppliers act on a single distribution network, then it is natural to see an exigency about full transparency on distribution costs and prices. Oligopolistic structures in the distribution business may obstruct such transparency. Sooner or later the regulators will also apply transparency on distribution prices, therefore the statistical office will access the information.

Observing the end use consumer prices is normally feasible. As mentioned, to observe prices of contracts evolving eligible customers, will be impossible. Knowing retail prices is first possible by observing tariffs as announced by electricity suppliers. It is expected however that, under the competition, the tariffs will increase in variety. Suppliers will offer a variety of contracts to the different categories of customers that may include: discounts, variation of tariffs according to interruption possibility, tariffs for ancillary services, offers on packages of services, etc. Therefore to access the information on retail prices, a statistical office has to follow a model, collect a sample of data and then compute indicators about the real (normalized) prices of electricity paid by the customers. Such standardization must be invariant over time so as to allow for conclusion drawn from the evolution of the price indicator.

It is also important to observe the evolution of wholesale prices. To meet the policy requirements, the statistics have to separate the wholesale trading that takes places in the territory of a member state form the trading indirectly concerning two or more member states. This is needed to infer about the establishment of an EU internal market of electricity. Logically, it is in the mission of TSO and the regulator to assess wholesale trading transactions. Eurostat has then to arrange with these bodies for the publication of adequate price indicators for wholesale trading. Such information goes together with data on the quantities interchanged under wholesale trading.

Under the agreement with the regulatory bodies, it is recommended for Eurostat and the statistical offices to observe a large number of 'institutional' information that may be used to indirectly conclude about the degree of competition and the effectiveness of the market. The following is an indicative list:

1. Number of applications to obtain a licence and connect to the system
2. Number of generators, traders, suppliers
3. Amount of new capacity connected or disconnected
4. Number of customers per supplier
5. Number and total capacity of eligible customers
6. Indicators about the number of wholesale trading transaction
7. Published tariffs about the use of the network
8. Published tariffs for retail market
9. Data on fees, levies and taxes

4.5 Purpose: Observe consumer satisfaction and accessibility

Under the new electricity market regime there will be growing interest about observing customer satisfaction and observation of the degree of adequate public service that the liberalised market succeeds to offer to the customers. Governments, politicians, consumer associations, marketing professionals and NGOs will be users of such information.

This issue has three aspects:

- **Reliability**: whether the consumers obtain reliable and good quality electricity supply, measured for example through frequency of disruptions, frequency of distribution failures, maintenance and connection services, quality indicators (voltage, system frequency, harmonics) etc.

- **Accessibility**: whether all classes of customers have equal access to electricity supply under the same quality conditions in relation to logical tariff differentials; the social impacts of market restructuring are very important and concern whether certain categories of customers are likely to take advantage of the new market regime (e.g. consider elderly and poor classes, islands and isolated regions).

- **Satisfaction**: whether the consumers feel satisfied with the offered service in relation to the fairness of the price they pay; for example consumer satisfaction surveys may be carried out and be used as a source of data.

The domain of consumer satisfaction is new for Eurostat's energy services. It is probably also new for the national statistical offices. Therefore, these must be a design and a schedule about how to cover these needs for information.

There also exist other aspects that sooner or later must be covered by the statistical information:

- Consumer and regional protection: is the competition at the level of the consumer and regions (e.g. islands and isolated areas) succeeding to offer fair prices and conditions?

- Grouping of customers: have the customers the possibility to band together in a certain area to exercise negotiation leverage as a group or obtain advantages from economies of scale?

- Demand side management: is the competition at the level of the consumer compatible with the goals about efficiency of electricity use? (for example, counting of appliance consumption is possible?)

4.6 Purpose: supply information to investors and bidders

It is expected that under the new electricity market regime there will be opportunities favouring the emergence of numerous new actors, including investors and bidders. It is also expected that these might be increasingly smaller in size. Public policies favour the promotion of small size companies because they sustain employment. It follows that there is willingness to monitor whether the market structures are helping them or obstructing them from surviving in the market place.

Such small-size market actors cannot afford investing in information collection and in studies that would suggest about the opportunity for a new investment or bid. Information collectively gathered will be cheaper and if available publicly will greatly help sustaining free entry to the market place.

Therefore there is a role for the national offices and possibly for Eurostat (supporting aspects of the EU internal market of electricity) to prepare information packages for new investors and bidders. Such a package could, for example, include by region the following information:

- Existing generation, subdivided by technology type
- Fuel consumption
- Peak load and structure of demand
- Capacities of transmission and volume of exchanges
- Reserve margin
- Institutional aspects (number of companies, accounting data, traders, licences, contracts etc)
- Published prices and tariffs concerning the pool, the wholesale and the retain markets
- Links to engineering information and other suppliers of information

Most of these data have been mentioned before in previous sections. The packing of these data, the timeliness, the accuracy of the content and the presentation are important elements to ensure diffusion and usability in the milieu of investors, bidders, banks etc.

5. Addressing the confidentiality issue

Successfully addressing the confidentiality issue is of utmost importance for the sustainability of the information system about the electricity market. It is also important in the transition period.

In theory there are two opposite approaches to the confidentiality problem:

- Consider the electricity sector similarly as statistical offices do for other sectors and apply usual practices and rules about confidentiality. This approach will result in an aggregated and macro-economic, rather that detailed and engineering view of the electricity sector. It will result in a reduction of information about the sector and certainly most of the policy aims mentioned before will not be sufficiently supported with statistical information.
- Consider that there exist major reasons referring to protection of general public interest that justify the collection and publication of specific and detailed information on the sector. Seeking a specification that ensures private information not harming private interest has to be explicitly addressed and agreed upon, conditionally on the view of protection of general public interest. Such a

protection is justifiable in terms of security of supply, reliability, consumer protection, environment and competitiveness.

Obviously only the second approach can ensure the provision of information as mentioned in the previous sections and can serve to the policy aims currently prevailing.

The formal interlocutors of the statistical offices and indirectly by Eurostat are the TSO and the regulatory bodies. There will be less formal connections with the ministries and agencies. There is therefore need for long term agreement ruling cooperation. There will be also need for far more effort to be devoted to methodology, definitions and statistical frameworks that will increase the objectiveness of the approach and facilitate acceptance of information collection, their content and their use by policy makers and market players. Regarding the statistical techniques, there will be more use of sample-survey and cross-sectional work, rather than total inventory approaches, in particular in relation to the retail market.

All the above call upon legislative work to which the role of Eurostat is very important as a guarantee of harmonization and equality across member states and regions in the EU internal market of electricity.

There exist contain rules for the statistical work that facilitate acceptance and address the confidentiality issue in a more effective way. Such rules are the following:

- Collect data uniformly using standardized forms regardless of ownership or market coverage

- Publish statistics and disclose information on an equitable basis for all market actors

- Explicitly define timeliness for each information item and for some accept reasonable delaying of publication when this removes confidentiality conflicts

- Coordinate with the national regulatory bodies and TSO to keep confidentiality at the same level

- Use as much as possible indicators computed according to a data model because this may be more accepted even if referring to few legal entities

- As a last resort only follow the principle about keeping confidential information that may reveal the identification of an individual entity

- Coordinate the legislation about statistics on the electricity sector with the rules of regulatory bodies that aim at ensuring transparency and possibly oblige minimum reporting as a condition for licencing

- In general preserve confidentiality for customer-specific financial data but disclose operational data at a sufficient aggregation level

In summary, the recommendation is for Eurostat to start pushing for legislation in cooperation with the member-states. The policy basis is the role of Eurostat as observatory of the operations and implications of the EU internal electricity market and the pan-European general public interest (environment, harmonisation, competitiveness, consumer and regional equity) that need supporting information.

6. Conclusions

The EU Electricity Directive and the dynamics of change in the market places of the member state require a considerable revision of the current statistical system on electricity. The revision includes:

- Preserving the current level and quality of information
- Considerably extending the coverage and address new issues and requirements
- Establishing a well organised methodological framework
- Formation of official links with new information providers, in particular the TSO and regulatory bodies
- Addressing the confidentiality issues

The preparatory actions for Eurostat and the strategy need considerable work and design.

The challenge is high but the strategic benefits are also important. As a result of successful work, Eurostat can:

- Become a provider of information on the markets rather than a supplier of statistical data
- Considerably enlarge the audience of Eurostat's information
- Increase the policy and commercial value of the information provided
- Play an important role as a EU observatory to harmonize information and watch the evolution of the market and its implications.

The statistical steps are also important because errors may jeopardize the whole effort. Among the possible steps for short term, the following are recommended:

- Renew short-term agreement to preserve current level of information
- Complete the current statistics with new variables that are possible to quantify in the short-term on the basis of existing or easily accessible information (see detailed discussion on a list of variable that took place in the Task Force).

- Contact the regulatory bodies and TSO in the member states, in cooperation with DG TREN, to start establishing formal links, inquire about the methodology and harmonize the approach about collection of information.

- Start preparing a comprehensive methodological framework about the information system on electricity sector and market and start detailed discussions with the interested parties

- Start preparing a reform of legislation about information and confidentiality; this has to be undertaken as a natural follow-up of the discussion with DG TREN, the member states and the regulatory bodies

- Decide upon a schedule for actions and milestones and reserve an adequate budget for investment.

It is going to be an ambitious but rewarding project for Eurostat and for the Union.

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