Republic of Latvia
Ministry of the Economy

Report on the Implementation of Directive 2004/8/EC of the European Parliament and of the Council of 11 February 2004 on the Promotion of Cogeneration Based on a Useful Heat Demand in the Internal Energy Market and Amending Directive 92/42/EEC

Riga, 2008

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Introduction

One of the objectives of the National Energy Policy of Latvia is to increase energy production through cogeneration.

On 27 June 2006, the Cabinet approved the policy planning document *Guidelines for Development of the Energy Sector for 2007-2016* (hereinafter referred to as 'the Guidelines') drafted by the Ministry of the Economy, which determines the main principles of Latvia's energy policy, development targets and actions for the next ten years and outlines directions for the long-term development of the industry.

Effective cogeneration has expanded considerably in the energy sector in Latvia since 2000.

In Latvia, the proportion of the centralised heat supply and consumption accounted for by co-generation has increased by 18 percentage points over the 2000-2006 period, and currently amounts to 55.4% of all district heating. The proportion of electricity produced from cogeneration has also grown substantially; the increase amounted to 171.4% in 2006 in comparison to 2000.

Pursuant to the Guidelines, the unused potential of average heat loads over the heating season in district heating systems is estimated at approximately 550 MW_{th}, and is distributed as follows:

- Riga - about 50 MW_{th}[1];
- in Latvia's major towns - 250 MW_{th} (Daugavpils - 100 MW_{th}, Liepāja - 80 MW_{th}, Ventspils - 40 MW_{th}, Rēzekne - 30 MW_{th});
- other towns (with a population of at least 4,000) - 250 MW_{th}.

The Guidelines stipulate that technical and administrative procedures for linking cogeneration units, in particular small units (up to 4 MW), to the energy supply system must be simplified as a means of supporting cogeneration technologies. Special attention should be paid to the development of cogeneration technologies where renewable energy resources are utilised (in Latvia this is mainly firewood).

One of the priority directions for increasing the proportion of electricity[2] produced from renewable resources involves providing support for the effective use of biomass in the production of both heat energy and electricity. The total planned capacity of cogeneration units using biomass and biogas fuel is 70-80 MW_{el}; highly effective cogeneration using biomass

[1] Use of such potential has no impact on of the way the current cogeneration units workm because their heat supply areas are not connected.

[2] In 2010, the proportion of electricity produced from renewable energy resources (RES-E) should reach 49.3% of the total electricity consumption in the country.

should amount to at least 8% of the overall electricity produced from renewable energy resources (including from the Daugava hydro-electric power station cascade) in 2016.

Pursuant to the Guidelines, in Latvia's major towns (including Riga) the cogeneration potential of total heat load used should reach approximately 300 MW_{th} over the period by 2016. In other towns in Latvia, the cogeneration potential of the total heat load used should reach approximately 100 MW_{th}.

To facilitate the development of cogeneration units and energy production from renewable energy resources, potential electricity capacity should be increased both in the transmission and distribution system.

To this end, two support instruments have been selected:

1. compulsory purchase at a fixed price;
2. to facilitate the development of cogeneration units that utilise renewable energy resources, a special subsidy financed from European Union Structural Funds is to be provided for investment in the construction of such power stations.

1. Legislation

In Latvia, pieces of legislation specifically governing cogeneration are the Energy Law, the Electricity Market Law and its associated Cabinet Regulation No 921 'Rules on Electricity Production from Cogeneration', and the Law on Regulators of Public Utilities and its associated Cabinet Regulation.

1.1. Electricity Market Law

The Electricity Market Law was adopted on 5 May 2005 and includes legal norms pursuant to the following EC Directives:

1) Directive 2001/77/EC of the European Parliament and of the Council of 27 September 2001 on the promotion of the electricity produced from renewable energy sources in the internal electricity market;

2) Directive 2003/54/EC of the European Parliament and of the Council of 26 June 2003 concerning common rules for the internal market in electricity and repealing Directive 96/92/EC;

3) Directive 2004/8/EC of the European Parliament and of the Council of 11 February 2004 on the Promotion of Cogeneration Based on a Useful Heat Demand in the Internal Energy Market and Amending Directive 92/42/EEC.

Pursuant to the Law, a producer who produces electricity in the process of cogeneration may acquire the right to sell the produced electricity within the framework of the compulsory purchase (Section 28(1)).

In accordance with Section 28(2), the Cabinet shall prescribe the following criteria:

- for the qualification for acquiring the right to sell the electricity produced within the framework of the compulsory purchase;
- the procedures for the compulsory purchase and the supervision thereof;
- the procedures for the determination of electricity prices depending on the electric capacity of a cogeneration plant and the fuel used;
- the procedures for covering the compulsory purchase expenses and the procedures for refusing the right to sell the electricity produced within the framework of the compulsory purchase.

In cases in which the producer wishes to sell the produced electricity within the framework of the compulsory purchase and the cogeneration plant thereof conforms to the criteria specified by the Cabinet, all surplus electricity produced which remains after using the electricity for own needs, shall be procured by a public trader for a price and in accordance with the procedures specified by the Cabinet.

A public trader shall make a separate calculation of the volume and expenses of the electricity procured in accordance with the procedures specified by the Cabinet. The expenses of such procurement shall be covered by all electricity end users in Latvia in proportion to their electricity consumption by purchasing from the public trader a definite portion of the electricity produced in cogeneration power plants or by compensating the expenses of the procurement thereof. The Cabinet shall specify the procedures for the coverage of the procurement expenses, but the Regulator – the methodology of the expense extension calculation (Section 28(5)).

Cogeneration power plants which conform to the determined criteria may receive a proof of origin of the produced electricity in accordance with the procedures specified by the Cabinet. An institution authorised by the Cabinet shall issue the proof of origin (Section 28(7)).

1.2. Law on Regulators of Public Utilities

The Law on Regulators of Public Utilities classifies energy, including heat supply, where electricity is produced during the production process, i.e. cogeneration, as an industry regulated by the State.

Pursuant to the Law on Regulators of Public Utilities, on 3 July 2001 the Cabinet issued Regulation No 297 on Types of Public Utilities to Be Regulated and determined that in heat supply, where electricity is produced during the production process, simultaneous production of thermal energy and electricity shall be regulated in production equipment where the maximum load exceeds one megawatt.

The Public Utilities Commission (hereinafter – the PUC) shall regulate the production of thermal energy and electricity in cogeneration installations and determine tariffs and the method for the calculation of tariffs.

Decisions taken by the PUC within the scope of its competence pursuant to regulatory enactments shall be binding administrative acts in respect of cogeneration.

Within the scope of its competence, the PUC shall determine standards regulating energy supply and provide the relevant explanation.

1.3. Cabinet Regulation No 921 ‘Rules on Electricity Production from Cogeneration’

Pursuant to the Electricity Market Law, on 6 November 2006 Cabinet Regulation 921 ‘Rules on Electricity Production from Cogeneration (hereinafter Cabinet Regulation No 921) was issued that regulates compulsory purchase produces of electricity produced in the process of cogeneration at a fixed price (see Section 2 of the Report).

Cabinet Regulation No 921 incorporates legal norms pursuant to Directive 2004/8/EC of the European Parliament and of the Council of 11 February 2004 on the Promotion of Cogeneration Based on a Useful Heat Demand in the Internal Energy Market and Amending Directive 92/42/EEC.

1.4. Draft Cabinet Regulation 'On the Operational Programme ‘Infrastructure and Services’ Activity 3.5.2.2 ‘Development of Cogeneration Power Plants Utilising Renewable Energy Sources’'

For a considerable increase in the production volume of electricity and thermal energy from renewable energy sources, for the diversified supply of primary energy resources and for enhancement of electricity supply for own needs, which would result in reduced dependence of Latvia on import of primary energy resources, the Republic of Latvia Ministry of the Economy has worked out draft Cabinet Regulation 'On the Operational Programme ‘Infrastructure and Services’ Activity 3.5.2.2 ‘Development of Cogeneration Power Plants Utilising Renewable Energy Sources’' to determine procedures of financing allocation under the Operational Programme ‘Infrastructure and

Services', Activity 3.5.2.2. Development of Cogeneration Power Plants Utilising Renewable Energy Sources', Priority 3.5 'Promotion of Environmental Infrastructure and Environmentally Friendly Energy', Measure 3.5.2 'Energy', Activity 3.5.2.2 'Development of cogeneration power plants utilising renewable energy resources'.

The draft Regulation provides for support of the construction of new cogeneration units and reconstruction of current units. The total financing amounts to MEUR 24.68; moreover, intensity of the support may be up to 50% of the eligible expenditures under the project. The minimum and maximum volume of public financing is from LVL 100,000 to LVL 4,000,000 per project.

2. Electricity production from cogeneration

Cabinet Regulation No 921 of 6 November 2006 issued under the Electricity Market Law, whereby Directive No 2004/8/EEC was implemented, determines:

- The criteria cogeneration units must fulfil to obtain the right to sell the produced electricity within the framework of the compulsory purchase;
- the compulsory purchase of electricity produced in a cogeneration unit and the procedures for the supervision thereof;
- the procedures for the specification of the price for electricity produced in a cogeneration unit depending on the electrical capacity of the cogeneration unit and the fuel used;
- the procedures by which a merchant may refuse to sell electricity produced within the framework of compulsory purchase;
- the procedures by which a merchant that has obtained the right to sell electricity produced within the framework of compulsory purchase may receive a guarantee of origin.

2.1. How cogeneration units are to fulfil the requirements for meeting the economically justified demand for produced useful heat

Cabinet Regulation No 921 determines the criteria that cogeneration units are to fulfil and how compulsory purchases are to be monitored. Such criteria meet the requirements set out in Directive 2004/8/EC.

Section II of the Regulation sets forth efficiency criteria and the requirements that cogeneration units must fulfil to acquire the right to sell electricity produced within the framework of a compulsory purchase.

The Regulation includes the following criteria:

– technological criteria;

– efficiency criteria.

Cogeneration units that produce electricity and useful thermal energy simultaneously through one or several of the following production technologies may qualify to obtain the right to sell electricity produced within the framework of compulsory purchase or receive the guarantee of origin: combined cycle gas turbine with heat recovery, steam condensing extraction turbine with a steam discharge pipeline for heat supply, steam backpressure turbine, gas turbine with heat recovery, internal combustion engine, microturbines, Stirling engines, fuel cells, steam engines, organic Rankine cycle, or any other types of technology or combinations thereof if by using them it is possible to produce electricity and useful heat energy simultaneously.

In order to specify the efficiency of a cogeneration unit, the primary energy savings that are obtained when energy is produced by the cogeneration unit shall be calculated in accordance with the following formula:

[1.]

$$PEI = \left(1 - \frac{1}{\frac{\eta_{el}^{CHP}}{\eta_{el}^{ref}} + \frac{\eta_{th}^{CHP}}{\eta_{th}^{ref}}} \right) \times 100\%$$

where:

PEI is primary energy savings, which are obtained when energy is produced by the cogeneration unit via cogeneration, [%];

η_{el}^{CHP} is the electrical efficiency coefficient of the cogeneration installation within a certain period of time, which is calculated in accordance with the following formula:

[2.]

$$\eta_{el}^{CHP} = \frac{E^{CHP}}{B}$$

where:

E^{CHP} is the amount of electricity produced in the cogeneration installation within the relevant period of time which is not less than 6 months, [MWh];

B is the total amount of fuel consumed for the production of electricity and useful thermal energy in the cogeneration installation within the relevant period of time, which is not less than 6 months, [MWh]

η_{el}^{ref} is the efficiency coefficient for separate electricity production depending on the type of fuel used[3];

η_{th}^{CHP} is the heat efficiency coefficient of the cogeneration installation within a certain period of time, which is calculated in accordance with the following formula:

[3.]

$$\eta_{th}^{CHP} = \frac{Q^{CHP}}{B}$$

where:

Q^{CHP} is the amount of useful thermal energy produced in the cogeneration installation within the relevant period of time which is not less than 6 months, [MWh];

B is the total amount of fuel consumed for the production of electricity and useful thermal energy in the cogeneration installation within the relevant period of time, which is not less than 6 months, [MWh]

η_{el}^{ref} is the efficiency coefficient for separate thermal energy production depending on the type of fuel used (Annex 1).

Pursuant to Cabinet Regulation No 921, the cogeneration unit complies with efficiency criteria and is entitled to sell electricity produced within the framework of compulsory purchase if the primary energy savings calculated in accordance with the following formula are:

- more than 1% for small scale[4] cogeneration units;
- not less than 10% for other cogeneration units.

When calculating the efficiency criteria of a cogeneration unit, it shall be assumed that the amount of electricity produced via cogeneration which remains after the utilisation of electricity for the needs of the cogeneration installation is equal to the amount of electricity transferred to the electricity grid during the period of time for the settlement of accounts, if one of the following conditions is observed:

[3] mentioned in the Annex to Caninet Regulation No 921
[4] a cogeneration unit where electricity production capacity set is up to 1 MW

- the actual total efficiency coefficient of production of energy for the cogeneration installation, in which a combined cycle gas turbine with heat recovery or a steam condensing extraction turbine with a steam discharge pipeline for heat supply are used, is 80% or more;
- the actual total efficiency coefficient of the production of energy for the cogeneration installation, in which any steam backpressure turbine, gas turbine with heat recovery, internal combustion engine, microturbines, Stirling engines or fuel cell technologies of this Regulation are used, is 75% or more.

Peculiarities of cogeneration units are also taken into account when calculating the amount of electricity produced, where the ratio between electric and thermal capacity set for the cogeneration installation in accordance with the data of the technical documentation is required.

Such ratio shall be determined depending on the cogeneration technology use (see Table 1).

Ratio between electric and thermal capacity set for the cogeneration installation for different cogeneration technologies

Table 1

No	Cogeneration technology	Power to heat ratio (α)
1.	Combined cycle gas turbine with heat recovery	0.95
2.	Steam condensing extraction turbine with a steam discharge pipeline for heat supply	0.45
3.	Steam backpressure turbine	0.45
4.	Gas turbine with heat recovery	0.55
5.	Internal combustion engine	0.75

Peculiarities of various fuels shall also be taken into account. For example, different efficiency coefficients are applied for separate production of thermal energy and electricity in determining primary energy savings.

Efficiency coefficients for separate production of thermal energy

Table 2

No	Fuel	Efficiency coefficient, η_{th}^{ref}
1.	Gaseous fuel	0.90

2.	Liquid fuel	0.88
3.	Solid fuel	0.80

Efficiency coefficients for separate production of electricity

Table 3

No	Fuel	Efficiency coefficient, η_d^{ef}
1.	Gaseous fuel	0.45
2.	Liquid fuel	0.40
3.	Solid fuel	0.30

2.2. Administrative procedures for obtaining rights for compulsory purchase of electricity produced via the cogeneration process

Any merchant that plans to obtain the right to sell electricity produced in the cogeneration unit within the framework of compulsory purchase shall submit a submission to the Ministry of the Economy in accordance with the requirements specified in Cabinet Regulations No 921.

A submission shall be prepared using the sample form referred to in the Annex, stating the following information:

1. information regarding the submitter (registration number, registered address, contact information);
2. information regarding the cogeneration unit (licence number, location, transmission operator, types of fuel used, technology used, set capacities, users of thermal energy and volumes of thermal energy sold to them);
3. information regarding the operating data of the cogeneration unit (fuel consumed and energy volume produced across months and per year).

The Ministry of the Economy shall examine a submission within a period of 20 days. If a submission does not contain all information required or all the documents specified are not attached to a submission, the Ministry of the Economy shall request to submit them within 30 days. If a merchant fails to submit what is required within the specified period of time, the Ministry of the Economy shall take a decision to reject the submission and inform the merchant accordingly.

If a submission and documents attached thereto comply with the requirements set out in this Regulation, the Ministry of the Economy shall

check the compliance of the cogeneration unit with the efficiency criteria pursuant to this Regulation, on the basis of the information provided, within 20 days after receipt of all necessary information.

If the cogeneration unit complies with the above criteria, the Ministry of the Economy shall take a decision regarding the granting of rights to the merchant to sell the electricity produced in the relevant cogeneration unit within the framework of compulsory purchase.

2.3. Procedures relating to the compulsory purchase of electricity produced in cogeneration and the supervision thereof

Procedures and supervision of compulsory purchase shall be regulated by Cabinet Regulation No 921, part III.

The compulsory purchase shall be implemented on the basis of a contract between a public trader and a merchant or an authorised person thereof. Before entering into a contract a merchant shall submit to a trader one of the copies of the decision of the Ministry of the Economy regarding the granting of rights to the merchant to sell the electricity produced in the relevant cogeneration unit within the framework of compulsory purchase.

In order to sell electricity within the framework of compulsory purchase, the cogeneration unit shall be equipped with:

- electric energy meters for recording the electricity produced in the cogeneration installation, transferred to the electricity grid and received from the grid, which comply with the technical requirements specified and published by the operator of the relevant electricity system;
- thermal energy meters or a meters system, which ensures the separate records of the thermal energy produced in the cogeneration installation, separate boilers of production of thermal energy or thermal energy produced in another way and useful thermal energy sold to a user; and
- a system of measurement equipment or measurement means which ensures separate records of the fuel consumed in the cogeneration installation and other installations for the production of thermal.

The period of time for the settling of the accounts regarding the sale and purchase of electricity within the framework of compulsory purchase shall be one calendar month.

The amount of electricity produced during the period of time of settlement of accounts and which is left after the utilisation of electricity for the needs of the cogeneration unit shall be determined in the following way:

– the actual total efficiency coefficient of the energy production of the cogeneration installation shall be calculated in accordance with the following formula:

[4.]

$$\eta_{fakt}^{CHP} = \frac{E_{np}^{r} + Q_{np}}{B_{np}} \times 100\%$$

where:

E_{np}^{r} - is the amount of electricity produced in the cogeneration installation during the period of time for the settlement of accounts which is specified in accordance with the indicators of the meters at the generator output, [MWh].

Q_{np} is the amount of the useful thermal energy produced in the cogeneration installation during the period of time for the settlement of accounts, [MWh];

B_{np} is the amount of fuel consumed in the cogeneration installation during the period of time for the settlement of accounts, [MWh].

– it shall be assumed that the amount of electricity produced via cogeneration that remains after the utilisation of electricity for the needs of the cogeneration installation is equal to the amount of electricity transferred to the electricity grid during the period of time for the settlement of accounts, if one of the following conditions is observed:

  - the actual total efficiency coefficient of production of energy for the cogeneration installation, in which a combined cycle gas turbine with heat recovery or a steam condensing extraction turbine with a steam discharge pipeline for heat supply are used, is 80% or more;
  - the actual total efficiency coefficient of the production of energy for the cogeneration installation, in which any steam backpressure turbine, gas turbine with heat recovery, internal combustion engine, microturbines, Stirling engines or fuel cell technologies of this Regulation are used, is 75% or more.

– for cases in which the calculated actual total efficiency coefficient of the cogeneration installation is less than the abovementioned values, the amount of electricity produced via cogeneration that remains after the utilisation for the needs of the cogeneration unit shall be calculated in accordance with the following formula:

[5.]

$$E_{np}^{CHP} = Q_{np} \times \alpha$$

where:

α is the ratio of the electric power set by the cogeneration installation to thermal capacity in accordance with the data of the technical documentation. Unless such data are available, the referred to value shall be determined depending on the cogeneration technology used (Annex 4).

A merchant may sell the amount of electricity that is not recognisable as produced in cogeneration to any member of the electricity market upon mutual agreement regarding all conditions of sale or to a trader at a lower price in the relevant period for the settlement of accounts.

Each year until 1 March, a merchant shall submit a report to the Ministry of the Economy regarding the operation of each cogeneration unit in the ownership thereof in accordance with the report proforma pursuant to Cabinet Regulation No 921, including the following information:

- general information regarding the cogeneration unit (location, licence number, merchant's registration number, system operator, thermal and electric capacities set, cogeneration technology used and types of fuel, number of employees and user of useful thermal energy);
- information regarding the operation of the cogeneration unit across months of the year (fuel consumed, energy volume produced and sold, its price, electricity produced and transferred to the grid, actual efficiency coefficient of the cogeneration installation, electricity produced in cogeneration, price of electricity produced in cogeneration).

The State Energy Inspection shall control the compliance of the operation of a cogeneration unit with the requirements of the regulatory enactments regulating the energy sector, and the system operator and trader – the state of the electricity and thermal energy meters.

The Ministry of the Economy shall evaluate the compliance of the cogeneration unit with the efficiency criteria within 3 months after the receipt of a report. For cases in which upon examination of the relevant report it is established that a cogeneration unit fails to comply with the efficiency criteria under this regulation, the Ministry of the Economy shall send a warning to the merchant regarding the non-compliance of the cogeneration unit and the possibility of losing the right to sell electricity produced within the framework of compulsory purchase.

A merchant shall renew the compliance of the cogeneration unit with the specified efficiency criteria within 6 months after the receipt of a warning and shall submit a report to the Ministry of the Economy regarding the relevant period of time in accordance with the form specified. If such repeated report indicates that the cogeneration unit still fails to comply with the efficiency criteria, the Ministry of the Economy shall prepare a decision to deprive the merchant of the right to sell the electricity produced in

cogeneration within the framework of compulsory purchase within 20 days, and send it to the merchant, trader and system operator.

A trader shall terminate the operation of the relevant contract between the public trader and the merchant on the basis of such decision. The cogeneration unit may continue operation and sell electricity produced to any market member after the termination of the contract upon mutual agreement regarding the conditions of sale.

If a merchant wants to waive the right to sell electricity produced from cogeneration within the framework of compulsory purchase, it shall notify the trader, the Ministry of the Economy and system operator of the decision. The Ministry of the Economy shall prepare the relevant administrative act within 30 days after the receipt of a notification and send it to the trader, system operator and merchant. The operation of compulsory purchase of electricity produced in cogeneration shall be terminated not earlier than within three months following notification of a merchant regarding the decision to waive the right to compulsory purchase.

A merchant still has a duty to submit the report regarding the operation of each cogeneration unit in the ownership thereof after the termination of operation of the contract.