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## 1. Brief introduction: General situation of renewables energies in the country of origin.

The main objective of the energy sector is to satisfy the energy needs of the Czech Republic for the long-term horizon. The current National Energy Conception, whose key priorities are safety, independence and sustainable development, envisages that safe supply of energy for reasonable prices shall be guaranteed primarily by the use of all available domestic energy sources as well as the best available global technologies in the most environmentally friendly manner. Renewable sources represent an important part of these domestic sources and are likely to gradually develop while fully respecting the size, climatic conditions and parameters of energy grids in the Czech Republic.

Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources lays down a 20% target for the overall share of energy from renewable sources and a 10% target for energy from renewable sources in transport for the European Union as a whole. Pursuant to this Directive, only the overall 2020 targets are mandatory for the Czech Republic, i.e. a mandatory target of a 13% share of energy from renewable sources in gross final energy consumption by the Czech Republic by 2020 which includes a mandatory target of a 10% share of energy from renewable sources in all kinds of transport in gross final energy consumption by the Czech Republic by 2020. Interim targets, till the year 2020, for individual years and individual types of renewable sources of energy are not mandatory, only indicative. Statistical data collected by the Ministry of Industry and Trade show that these indicative targets for the coming years will presumably not be met, mainly due to insufficient utilisation of biomass for energy purposes.

At present the Czech Republic offers the following types of financial support:

A) Investment support from subsidy schemes for the promotion of renewable energy and heat production:

- National Programme for the Promotion of Energy-Saving Measures and the Use of Renewable Energy Sources
- Operational Programmes in Business and Innovation (Ministry of Industry and Trade) and the Environment (Ministry of the Environment)
- Green Savings Programme (Ministry of the Environment)
- Rural Development Plan of the CR (Ministry of Agriculture)

B) Feed-in tariffs and green bonuses for the promotion of renewable energy production. The problem is that VAT is imposed on this subsidy (at present it accounts for 20% in the Czech Republic).

C) Tax exemptions or reductions and tax refunds:

- Income tax exemptions. In compliance with the provision of Act No. 586/1992 Coll., on income tax, as amended (hereinafter the "Income Tax Act"), the income from the green installations listed therein is exempt from taxes:
  - Small water power plants up to the capacity of 1 MW,
  - Wind power plants,
  - Heat pumps,
  - Solar installations,
  - Installations generating and using biogas and woodgas,
  - Biomass energy or heat generating installations,

- Installations generating biologically degradable substances as specified in a special legal regulation. This relates to the income from the operation of the below-mentioned installations in the calendar year in which they were put into operation and for the immediately following five years.
  - Tax deductions (pursuant to the Income Tax Act).
  - Tax exemptions pursuant to Act No. 261/2007 Coll., on public funds stabilization, as amended
  - Exemption from property tax (pursuant to the Property Tax Act):
    - Renewable energy projects provided the land and the installations designed solely for the purpose of improvement of the environment in the Czech Republic form one functional unit.

## 2. Current status of the biomass sector. Employment opportunities.

In general, biomass is usually defined as all matter of organic origin. It comprises a wide range of types, namely dendromass (wood biomass), phytomass (plant biomass, agricultural and energy crops) and biomass of animal origin. Thus, biodegradable waste (pure or sorted from other components) also serves as one of the sources of biomass.

Renewable energy sources (RES) have not seen real development as yet and that sustainable utilisation of biomass for the generation of electricity and heat from RES has not grown at a desirable and required pace, whereas the need for energy has been on the rise together with the will to invest into renewable energy sources and into sustainable agricultural activities and energy systems. This fact is apparent mainly in the field of energy utilisation of biomass and biogas, which also contains the biggest and relatively quickly mobilisable potential of stable energy supplies from RES.

In the Czech Republic there are approximately 977,000 ha of unused arable land – a common potential for the production of agricultural biomass as a source for direct burning and biogas and liquid fuel production while maintaining food security of the Czech Republic.

The Ministry of Agriculture supports the use of unused arable land for energy purposes, for example, by financial backing of and subsidies for establishing plantations of short rotation trees. Also, centres and consultation offices are operated to launch growing of short rotation trees on unused land, for example Silva Taroucy Research Institute for Landscape and Horticulture. Support is provided within the frame of the Rural development Programme (EAFRD) – Axis I focusing on modernisation of agricultural businesses.

Studies into the impact of renewable energy on employment demonstrate that renewable energy has the potential to generate employment opportunities. Renewable energy production is more labour intensive than conventional energy production in delivering the same amount of energy output. It also uses less imported goods and services, particularly during operation, since renewable energy sources are by their nature indigenous, local energy sources. A higher use of renewable energy can therefore benefit not only the national economy but is also a valuable industry at the local or regional level, where it can stimulate local investment and employment. Job gains are greatest in the agriculture and manufacturing industrial sectors. Biomass technologies in particular stimulate employment both in the biomass energy industry

and in fuel supply, including planting, harvesting, transport etc. Opportunities for employment are provided in a range of sectors, including manufacturing, project development, construction and installation, operation and maintenance.

### 3. Professional profiles required in the biomass sector.

### 4. Barriers to the development of biomass sector in the country of origin.

First we will deal with three basic groups of biomass. Barriers will be identified by underlined text. The basic division of biomass is into 3 basic groups: **agricultural biomass** – phytomass grown on agricultural land, **forest biomass** – dendromass, and **residual biomass** – by-products from agricultural and processing industries.

#### **Agricultural Biomass**

Agricultural biomass comprises the following:

- Targeted growth of biomass;
- Biomass from cereals, oil plants and fibre plants;
- Permanent grass growth (PGG);
- Fast-growing woody species (FWS) grown on agricultural land;
- Plant residues from primary agricultural production and landscape conservation.

#### **Benefits**

- Landscape conservation, water retention in the landscape;
- Efficient management of agricultural waste and surplus;
- Environmentally-friendly;
- Reduced unemployment rate;
- Utilisation of traditional agricultural engineering.

Undoubtedly, agricultural biomass is the most complex component of the biomass potential in the CR. The utilisation of phytomass grown on agricultural land meets conditions that follow from the restructuring of our agriculture by substituting food commodities with alternative technical or energy crops. Other effects of producing alternative crops include safeguarding energy self-sufficiency of rural areas, enhancing the attractiveness of municipalities and regional use of generated financial resources. However, the relatively demanding logistic aspects related to the traditional agricultural production have to be tackled together with the great amount and diversity of processing technologies.

The energy conversion may make use of a part of agricultural by-products (straw from oil plants and cereals), of which there is a sufficient amount thanks to the decreasing number of cattle, or of an unused part of hay formed as a result of maintenance of meadows and pastures. It is also possible to produce crops grown on target that have energy utilisation and that may include winter and spring crops grown for other than food purposes (cereals, corn, oil crops and fibre plants) as well as FWS grown on agricultural land (willow, poplar, acacia). With view to economic efficiency it is also suitable to pursue targeted growth of annual energy crops (mustard, safflower, prince's feather, hemp) or perennial crops (Jerusalem artichoke, knotweed, sorrel) and energy grass (Miscanthus, reed, Phalaris, bent grass).

#### **Forest Biomass**

Forest biomass comprises the following:

- Firewood;
- Residues from forest management.

Residual dendromass from forestry and the wood-processing industry may be utilised as fuel (residual wood matter from wood logging, thinning, cleaning, cuttings and residues from the wood-processing industry, fire wood). However, high handling and transport costs have to be taken into consideration together with local availability of the source. The Czech Republic has a forest biogas market, but it is by no means consolidated as yet.

Historically, Czech forests have been largely commercially utilised. The main principle has been sustainable management and protection of nature and the environment. The current as well as future aim of forest experts is to define the “safe” potential of energy forest biomass. The existing calculations of the forest biomass potential draw on environmental and economic grounds and are based solely on the principal logging rates and precondition of leaving 20% of forest biomass in the logged area.

The utilisation of logging residues should focus primarily on production forests pursuant to the Forest Act (No. 289/1995 Coll.). Under certain conditions some specially designated forests that produce wood matter may also be utilised (i.e. some military forests, spa forests and water management forests), but only provided that their primary function is safeguarded.

### **Residual Biomass**

Residual biomass comprises the by-products and residues from:

- The paper industry;
- The food industry;
- The wood-processing industry;
- The animal industry;
- Other industries;
- Biodegradable waste;
- Slops from the distillery industry.

Residual biomass comprises a wide range of types of biomass that are formed secondarily during the processing of primary sources of plant or animal biomass. The main volume of residual biomass comes from the paper industry and cellulose industry, wood production, processing of meat and other food processing industries as well as from the sorting of communal waste. Residual biomass from animal agricultural production, i.e. excrements produced by the bred animals, forms a separate item. Waste treatment sludge and sludge from specific production may also be quoted separately, if classified as biomass.

Residual biomass from agricultural production and the processing industry forms a significant part of the potential of energy biomass (mainly straw and residues from specific production).

Just like in any other industry, biomass utilisation also has its minor weaknesses. The increase in biomass production requires an expansion of production areas or a rise in the intensity of biomass production, which creates a need to increase investment into biomass production. Under the existing conditions of obtaining energy from biomass the utilisation of traditional energy sources is still competitive from the financial point of view, although with certain difficulties (this fact may gradually change with the

introduction of environmental legislation). The utilisation of biomass sources from the global point of view also remains a problem with view to the distribution of biomass sources and electrical appliances as well as with respect to difficulties related to the accumulation, transport and distribution of the obtained energy.

There are also other obstacles related to the autorisation procedures in the Czech Republic. The following obstacles in this area have been detected:

- Complex legislation (one of the most complex in the EU)
- Chaining of procedures (the specific order of administrative proceedings has to be followed – before progressing to the following step, the necessary opinion that is decisive for issuing permission (planning permission or a building permit) has to become effective) and possible reconsiderations of the issue are possible within the authorisation process.
- Complicated co-ordination of targets of individual public administration bodies involved in the process of considering, authorising and updating conceptual spatial development documents – the Spatial Development Policy of the CR or the Principles of the Regional Spatial Development.
- The process of considering spatial plans for line installations can take up to 120 months; only then can the preparatory stage of the relevant structure be initiated.
- The two-tier procedure in the preparatory stage (planning permission procedure and building permit procedure) usually takes up to 52 months for line installations, in relation to sources it depends primarily on the EIA procedure that lacks clear rules or deadlines.

5. Rules and regulations related to the sector of thermal applications of biomass:  
National and regional regulations and technical rules and standards about the facilities and installations.

The rules and regulations are publicly available at the web sites of offices and individual ministries and also municipalities have an obligation to keep the collection of acts and enable the public to consult it. There are specific procedures, for example simple notification, for small-scale, decentralised installations (such as solar panels on buildings or biomass boilers in buildings). There are simplified authorisation procedures (Section 4 of the Building Act directly imposes the use of simplified procedures where possible), but applicable solely in “flawless” cases. In the course of proceedings, the relevant public administration bodies involved may apply the statutory requirement for further procedures, for example, the EIA fact-finding procedure according to Act No.100/2001 Coll., on environmental impact assessment and amending some related acts, as amended (Act on Environmental Impact Assessment).

The description of individual simplified authorisation procedures:

- 1) For planning permission procedure and building permit procedure:
- According to implementing Regulation No. 195/2007 Coll., laying down the range of opinions on spatial development policy and spatial planning documentation, binding opinions on the protection of interests protected by Act No. 406/2000 Coll., on energy management, as amended, and conditions for the determination of energy installations.

- There are no simplified procedures for line installations conditioned by renewable energy source connection.
- Approximately 30 public administration bodies (not just the State Energy Inspection) are to provide their statements within the planning permission and building permit procedures. Even in simplified procedures (e.g. for biogas stations) their opinions may be, in the event of appeal by one of the participants, reviewed by superior bodies. If this is so, the time limits stipulated by the Code of Administrative Procedure are suspended. For planning permission/building permit procedure the time limits, including the time necessary for possible reviews, are approximately 225 days (for each of the procedure).

2) Energy generation and distribution licences:

- According to Energy Act No. 458/2000 Coll. licences are not required for the generation of heat energy supplied to end consumers through one supply heat installation from a heat energy source located in the same building or elsewhere provided it is used for the same purpose.
- According to Act No. 458/2000 Coll. currently in force the qualification requirements do not apply to applicants for licences for renewable energy production with capacity up to 20 kW. Furthermore, the financial requirements do not apply to licensed activities of production installations with a capacity lower than 200 kW. For production installations with a capacity up to 1 MW only a “declaration” on funds availability is required. Applicants for a licence for renewable energy production installations whose installed capacity does not exceed 200 kW are only required to provide simplified notification.
- For licences to generate energy, the amendment to Energy Act No. 458/2000 Coll. envisages only tax record keeping for low capacity sources (up to 5kW). This is a step towards simplification compared to the current practice, as at present all licensed energy sources are required to keep accounting books.

3) Environmental impact assessment:

The assessment is only carried out for installations classified as category I. and II.:

- In the course of the fact-finding procedure an environmental body may decide that the assessment has to be carried out even for smaller installations (with capacities lower than those set for categories I and II.).
- Category I: fuel-burning installations with a heat capacity over 200 MW.
- Category II: fuel burning installations with a heat capacity from 50 to 200 MW, wind power plants with the overall capacity over 500 kWe or a tower height over 35 meters, water power plants with the overall installed capacity over 10 MWe.

**Technical Specifications (Article 13(2) of Directive 2009/28/EC)**

a) There are certain rules that renewable energy technologies need to meet to benefit from support schemes. Act No. 180/2005 Coll. currently in force stipulates that the support of renewable energy production differs according to the type of renewable source and the installed capacity of the production plant and in the case of electricity generated from biomass also according to the biomass parameters laid down in the implementing regulation. The implementing regulation is Regulation No. 482/2005 Coll., on the determination of biomass types, methods of its use and parameters to promote the production of energy from biomass, as amended. The Regulation specifies all types of biomass, its parameters and methods of use that are entitled to receive support. Other quality requirements are laid down in the Price Decision of the Energy Regulatory Office. Other technical specifications are determined for the support of heating and cooling from renewable energy sources. Technologies for biomass heating

installations, heat pumps and solar collectors as required by Article 13(2) and (6) of the abovementioned Directive shall be incorporated in the new act on supported energy sources.

### **Buildings (Article 13(3) of Directive 2009/28/EC)**

Reference to existing national and regional legislation concerning the increase of the share of energy from renewable sources in the building sector:

- Act No. 406/2000 Coll., on energy management, as amended
- Regulation No. 148/2007 Coll., on energy performance of buildings (implementing regulation to Act No. 406/2000 Coll.).

Act No. 406/2000 Coll., on energy management and Regulation No. 148/2007 Coll., on energy performance of buildings stipulate that each new building and any building over 1,000 m<sup>2</sup> undergoing a major refurbishment has to undergo a renewable energy use assessment. In the amendments of the above-mentioned Act and Regulation this requirement is extended to cover all buildings undergoing a major refurbishment. The amendment of Act No. 406/2000 Coll. envisages that if renewable energy sources are technically, economically and environmentally feasible, they will have to be incorporated in all new or refurbished buildings - starting from 2012 this will apply to all public buildings and starting from 2015 to all other buildings.

#### **6. Level of qualification required by the regulations.**

and

#### **7. Required professional licenses related to the rules.**

Qualification and professional competence requirements for installers are generally laid down in Act No. 455/1991 Coll., on Trades, as amended (Trade Licensing Act). According to Annex No. 1 of the above-mentioned act, installation is a so-called craft trade. The professional competence requirements for craft trades are laid down in Sections 21 and 22 of the given Act.

Ministry of Industry and Trade is responsible body for setting up and authorising certification/qualification schemes by 2012 for installers of small-scale biomass boilers and stoves, solar photovoltaic and solar thermal systems, shallow geothermal systems and heat pumps.

Such certification schemes/qualifications are already implemented in Act No. 406/2000 Coll., on energy management, as amended, and they regard inspections of efficiency of boilers and air conditioning systems, drafting energy audits and elaboration of energy performance certificates.

Act No. 406/2000 Coll., on energy management, as amended, currently in force:

- An inspection of boilers and internal heat lines under subsections 2 and 3, and an inspection of boilers used for heating, with an output in excess of 200 kW, located in the heated building, may only be carried out by persons specified in Section 10, or persons authorised under a special legal regulation, tested by the Ministry. The scope of those tests shall be set in an implementing regulation.
- An inspection of air conditioning systems may only be carried out by persons specified in Section 10 or persons authorised under a special legal regulation 4d), and

tested by the Ministry in the field of energy efficiency and proposed measures. The scope of those tests shall be set in an implementing regulation.

- The certificate may only be elaborated by a person authorised under Section 10 or a person authorised under a special legal regulation 5b), tested by the Ministry in line with an implementing regulation with respect to the details of its elaboration.
- An energy audit may be carried out by a person settled in another European Union Member State if that person engages in the work of an energy auditor in the Czech Republic temporarily or occasionally, provided that the person is:
  - a) a national of a European Union Member State,
  - b) authorised to work as an energy auditor under the laws of another European Union Member State.

Certification and qualification systems for inspections of efficiency of boilers and air conditioning systems, elaboration of energy audits and energy performance certificates are publicly available as part of the “testing code” placed on the website of the Ministry of Industry and Trade. This website also comprises a list of persons authorised to carry out these activities and may be searched by name, region or specialisation.