

Action Plan for the Reduction of CO₂ Emissions by the ČEZ Group until 2020

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1. Summary

The objective of this Action Plan is to define the endeavors of the ČEZ Group¹ in the area of reducing greenhouse gas emissions. This agenda is important for the ČEZ Group not only because of the increasing emphasis on topics related to corporate responsibility, but also because of the fact that, due to its share in production from fossil resources, it is greatly exposed to the influence of policies and measures in the area of regulation of carbon and development of carbon prices on the European and global market. Not least, it is an important effect in the gaining of experience and focusing attention on areas that other Central European companies are not highly active in as yet, thus an opportunity exists to gain a crucial head start in this area.

The Action Plan is a public document that summarizes the ČEZ Group's strategy in the area of emissions reduction until the year 2020 and the plan of concrete measures until the year 2012 (which is an important milestone, because it is the end of the second EU ETS trading phase and the end of the first commitment period of the Kyoto Protocol). Because environmental legislation, technologies and markets are developing rapidly at present, the measures in the Action Plan will be specified and updated on an annual basis.

The measures in the Action Plan have four pillars.

The first pillar concerns the issue of renewable energy sources. In terms of development it concerns particularly two types of renewable sources – wind and biomass. The use of wind energy is currently a source whose potential can be used the soonest given the accessibility of technologies. However, from a strategic perspective it is necessary to devote attention to purposefully cultivated biomass (energy crops) and determine its availability on an industrial scale. The ČEZ Group will continue to contribute to the development of using electricity production from small hydroelectric plants. *The objective is to triple the share of energy produced from renewable sources in the ČEZ Group from 1.7 TWh per year (2005) to 5.1 TWh per year (2020).*

The second pillar is devoted to the issue of reducing the intensity of emissions during electricity production as the main effect of emissions trading, where the reduction of emissions while maintaining the level of production presents a strategic opportunity. In the short-term and middle-term perspective, these are particularly measures within the framework of improving the efficiency of coal power plants (power plant renewal programme). In the long term, these activities involve investments into the development of advanced combustion technologies with low CO₂ production, CO₂ separation and its storage in geological structures (Clean Coal Technologies, Zero Emission Power). *The objective is to reduce the intensity of greenhouse gas emission by the ČEZ Group by 15 %: reduce the total emission factor from 0.55 tCO₂/MWh (2005) to 0.47 tCO₂/MWh (2020).*²

¹ The document is conceived as the venture of the ČEZ Group. If ČEZ occurs in the text, it refers to the entire group, unless indicated otherwise.

² The stated emission factor values correspond to facilities in the CR. After consolidation of data on production and emissions for PL and BG, the emission factor values will be updated.

The third pillar is the area of energy savings, which together with the two previous pillars forms a complex whole in the energy policy field and which, apart from the obvious environmental benefits, also fulfils the strategic aims in terms of securing supplies in a situation of expected increasing energy consumption and increasingly stricter regulation frameworks in the area of greenhouse gas emissions. *The objective is to contribute to fulfilling the CR's national objective of reducing energy demand by 23 TWh per year by the year 2020 compared to the expected consumption of the CR without the implementation of savings.*

The fourth pillar is focused on the ČEZ Group's activities abroad in the form of investments into projects leading to emissions reduction. Until the year 2012, these include particularly the Joint Implementation and Clean Development Mechanism of the Kyoto Protocol, which ČEZ has been involved in since 2007. After 2012, a similar form of these mechanisms is expected. *The objective until 2020 is to contribute through these mechanisms to the implementation of projects with a total of minimally 30 million tones of CO₂ equivalents of emission reductions.*

2. Introduction

2.1. Global and European Context

2.1.1. Climate change in consequence of human activity

The issue of climate change and reducing greenhouse gas emissions from human activity as one of the major factors of accelerating climate change in recent years has become an integral part of a whole series of policies and measures. Discussions on the importance of addressing this topic have long abandoned just academic circles; instead, they are a part of numerous serious analyses, which consider how the climate will develop in consequence of human activity in upcoming years, or rather decades and centuries, and what kind of retroactive impact this development will have on human activity and life on Earth as such.

There is no doubt that the climate is changing. Observations from a number of locations on our planet indicate that changes of an irreversible character are underway, the final impact of which is very difficult to estimate given the complexity of links between the individual components. Yet it is evident that the potential negative effects of climate change are likely to cause the greatest damage in regions, whose economic power and infrastructure makes it very difficult to deal with similar events, and where – from our perspective – even a minor change, such as the prolonging of the dry period by a mere week, can have fatal consequences for millions of people. At the same time, we have to admit that mature industrial countries are responsible for a substantial part of the emissions created through human activity, while also consuming a major part of natural resources.

Despite the gradually increasing importance of countries whose developing industrial production will soon put them on par with mature countries, for example China and India, and despite incessant discussion of the strength of links between the changing climate and human activity, it is logical and from a certain perspective even strategic to implement measures in accordance with the precautionary principle even now.

2.1.2. Economic calculations

The recently presented study by Sir Nicholas Stern set the discussion of reasons why climate change should be solved as a priority issue into the necessary economic framework. Like the implementation of measures to reduce greenhouse gas emissions, the need to adapt to the ongoing changes is a cost from the economic perspective. The need to face potential consequences in the event that the changes cannot be prevented is also a cost. Moreover, the entire issue is framed in the long term, when a substantial reduction in greenhouse gas emissions will be apparent in the consistency of the climate system with a delay in the order of decades or centuries. Yet the numbers clearly indicate that the damages arising from inactivity greatly exceed the costs of actively battling greenhouse gas emissions.

2.1.3. European Union Emissions Trading Scheme (EU ETS)

One of the most active entities in this area is definitely the European Union, which has transferred part of the responsibility for greenhouse gas emissions directly to important producers by implementing a system for trading CO₂ emission allowances. Moreover, the area of greenhouse gas emissions reduction is an integral and crucial part of the energy policy. The EU is developing a whole series of additional activities in areas directly and indirectly linked to emissions. These include the support of education and awareness rising, research activities on energy conservation, support of renewable energy sources and a series of other specific steps and measures.

The ČEZ Group considers the use of an economic instrument (EU ETS) to reduce emissions a suitable solution, particularly when compared to the potential alternatives (administrative restrictions, instruments without flexibility). The ČEZ Group, as a company active on EU territory, will start from the framework adopted on the EU level in its strategic ventures.

2.2. ČEZ Group Motivation

2.2.1. The ČEZ Group declares its responsibility for greenhouse gas emissions

Solving the problem of climate change cannot remain the responsibility of governments alone; instead, solutions must be undertaken also by individual industrial companies that are aware of their responsibility to seek more effective ways of using natural resources, reducing environmental impact and finding means that will comply with the principles of sustainable development.

The ČEZ Group has openly admitted this responsibility in a public declaration, created on the basis of an appeal from the Ministry of the Environment, which launched the dialogue between industrial enterprises on cooperation in solving environmental protection, including the climate. The publicly declared undertaking of ČEZ is perceived as a long-term liability towards the public – ČEZ thus proves that it is aware of the environmental impact of its activities, and that as the largest greenhouse gas producer in the CR, it feels a fundamental responsibility particularly in the area of greenhouse gas emissions.

2.2.2. Public declaration and reinvestment of profits from saved emissions allowances³

Part of the public declaration was the ČEZ Group's undertaking to reinvest profits from saved allowances within the EU emission trading scheme into measures for the further reduction of greenhouse gas emissions, modernization and measures to improve the quality of the environment. Although neither European nor domestic legislation impose a similar obligation, ČEZ sees it as an integral part of its efforts to find a comprehensive solution to this problem, when emissions trading should serve mainly to motivate polluters through market principles to adopt measures to reduce greenhouse gas emissions. The public declaration offers the public, in an entirely transparent manner, information about the measures that will be implemented in the near future. At the same time, ČEZ thus expresses its readiness to lead a dialogue on this issue with the public as an integral part of the ČEZ Group's social responsibility.

2.2.3. Action Plan for measures

With regards to the fact that allowances trading – like the entire issue – has a long-term complex framework, the ČEZ Group has committed itself to prepare an **Action Plan**, in which the long-term and short-term measures alike will be specified. The Action Plan will be an integral part of the Report on Social Responsibility, which the ČEZ Group has undertaken to prepare every year.

The Action Plan is designed around 4 basic pillars: renewable energy sources, reducing the intensity of emissions at power plants operated by ČEZ, energy conservation, and foreign projects. The basic framework is long-term, with forecasts up to the year 2020, while the middle-term horizon is the year 2012, when the second EU ETS trading period (2008-2012) and the commitment period of the Kyoto Protocol both end. Despite the long-term reference framework of the Action Plan (2020) and the substantial degree of uncertainty in the possible development of parameters affecting implementation, all the measures are indicated with the maximal possible degree of implementation feasibility.

The portfolio of measures is also designed to be as balanced as possible, in order to provide an adequate rate of flexibility during implementation; individual measures can be combined and large investment measures are complemented by smaller events or measures of an operational character. An important factor is the possibility of combining various financial resources, including European funds for specific types of measures.

At present, the ČEZ Group is processing an independent strategy for development of the issue of RES and energy conservation, which following approval (expected in the first half of 2007) will be projected into the ventures of this Action Plan within the framework of its next update.

³ The calculation of profits is enclosed in the annex to the Action Plan. Given the fact that the ČEZ Group launched activities in Poland and Bulgaria in the production segment only in the year 2006, the specification of measures will be extended to Poland and Bulgaria within the framework of the next update of the Action Plan (the calculation of profits from the sale of allowances will be made for Poland in consolidated form for the years 2005-2006; for Bulgaria, it is relevant only in the year 2008 due to EU accession on 1 January 2007). This version of the Action Plan is focussed primarily on activities within the framework of the CR; nevertheless, the objectives and overall endeavours of the Action Plan will be applied within the entire ČEZ Group's scope of activity.

3. Objectives until the year 2020

The general objective of the Action Plan is to specify the social responsibility of the ČEZ Group through implementation of measures to reduce emissions, which will be in compliance with the national and international obligations and policies of the CR. With regards to the importance of the ČEZ Group, social responsibility is perceived in the context of Central and Eastern Europe. Its general endeavor is to become a regional leader in this area and maintain this position in the long term, which given the upcoming *Carbon-constrained Economy* will be a crucial step in preserving a long-term leading position on energy markets in this part of Europe.

The objectives of the ČEZ Group until 2020 with regards to 2005 are as follows:

- 1. Triple the share of energy production from renewable sources by the ČEZ Group: increase production from 1.7 TWh per year to 5.1 TWh per year.**
- 2. Reduce the intensity of greenhouse gas emissions by the ČEZ Group within the CR by 15%: reduce the total emission factor from 0.55 t/MWh to 0.47 t/MWh⁴.**
- 3. Contribute to fulfilling the national objective of the CR in reducing energy demand by 23 TWh per year⁵.**
- 4. Contribute to the implementation of projects for the reduction of greenhouse gas emissions outside of the CR in the form of “carbon financing” in a total cumulated volume of minimally 30 million tones of CO₂ equivalents of emission reductions.**

4. Specification of planned measures and concrete projects until 2012

4.1. Renewable energy sources

4.1.1. Introduction

Renewable energy sources (RES) are one of the key measures to reduce greenhouse gas emissions and fossil fuel consumption while simultaneously supporting the diversification of energy resources. Their main disadvantages include the risks related to the stability of supplies for certain kinds of RES. At the same time, it is necessary to take into account regional conditions, where not every country has suitable conditions for a specific type of RES. Nevertheless, RES are perceived as an important and integral part of the ČEZ Group's strategy and naturally form a substantial part of the solution to the company's social responsibility.

⁴ The objective is defined for the CR; after consolidation of data from abroad, the objective for these facilities will be stipulated within the framework of updating the Action Plan.

⁵ CR Energy Policy.

The current development of RES in the CR – like in other European countries – indicates that fulfillment of the relatively ambitious obligations is not going as it should for their problem-free achievement; therefore, RES are one of the most important areas on which the measures are focused.

In terms of potential, the most prospective renewable sources in the CR are biomass and wind energy. In the case of wind energy, this is a technology that has already been mastered in the present day, and projects are in the phase of practical implementation. In the case of biomass, emphasis is clearly placed on purposefully cultivated energy crops, which alone have the potential to become a source for combustion on an industrial scale. The ČEZ Group is ready to cooperate with the respective state authorities to create a conceptual approach to the purposeful cultivation of energy crops, in order to create the best possible conditions for the creation of a functional market with purposefully cultivated biomass with the other accompanying benefits (support of farmers and regional use of land not used for food production).

From a regional perspective, the ČEZ Group is interested in supporting and developing projects not only in the CR, but also abroad with priority for the countries in which the ČEZ Group is actively engaged.

In describing specific measures, it is possible to refer to the following prerequisites for RES development:

- In the period until 2010, wind energy has the greatest growth potential, as it enables production even in the non-mountainous regions of the CR thanks to technological progress;
- In the long-term, the greatest production can be expected from biomass, but if the purposeful development of energy crop cultivation does not occur, there is a risk of insufficient biomass for combustion in the period until 2010 (see below);
- The expected developments in waste management create considerable potential for the energy-exploitation of biogas.

4.1.2. Wind energy

In terms of planned activities in the area of using wind energy, preparations are underway for modification of the existing development plan for wind power plants, with development only of projects of sensible economic value (maximal 15-year return on investments) and priority given to developing projects with extra added value (regional development, support of employment, etc.).

The ČEZ Group is planning partnerships or entry into wind power plant projects in the CR, and simultaneously it is preparing the development of its own wind parks with an indicative objective of achieving 100 MW of installed capacity by 2012.

Of its own projects, preparations are underway for the Dukovany Wind Park (78 MW) and Dlouhé Pole Wind Park near the Tušimice Power Plant (98 MW). For now, the projects expect a total installed output of 176 MW, while the conservative expected output that will actually be installed successfully is 100 MW. Also planned is the development of activities in the Czech-Moravian Highlands, where there is wind potential and regional interest and where another 100-200 MW may be achieved. Other opportunities indicating an objective of about 500 MW of installed output have been identified until the year 2020, with costs of about € 702 million.

4.1.3. Energy from biomass

In the area of biomass exploitation, there are plans to use co-firing at existing coal power plants with fluid boilers, i.e. the Hodonín, Poříčí, Tisová and Ledvice power plants, whereas from the ČEZ Group's perspective, co-firing is not the final objective, but a step on the way to energy production from pure biomass. Co-firing serves to stimulate development of the biomass market and create conditions for sufficient and stable production, which would ensure fuel for pure combustion projects, the preparation of which is currently burdened by a high degree of business risk due to the unreliability of fuel supplies.

In terms of pure combustion, ČEZ is currently preparing two projects: conversion of part of the Dvůr Králové heating plant facility into pure biomass combustion and construction of a new facility of about 5 MW_e at the Hodonín power plant.

An important element in the entire process of purposefully cultivated biomass is the establishment of stable and reliable relations with farmers. Given the fact that biomass cultivation is not a field with extensive tradition, and the introduction of certain strains of energy crops into practice is still in the pilot phase, it is a complex issue that is crucial for the start-up of the entire process of biomass energy exploitation. From the ČEZ Group's perspective, the following measures can be identified as key steps:

- Preparation of an educational programme for farmers, including a description of the financial options and available technologies
- Offer of long-term contracts for supplies of purposefully cultivated biomass as a guarantee of a stable business environment
- Initiation of closer partnerships with selected agricultural enterprises with the objective of creating a market with solid bio fuels that guarantees fuel supplies of adequate quality.

From the specific perspective, ČEZ plans to increase biomass combustion from the current 200 Kt/year to about 500 kt/year by the year 2012. However, it must be noted that the development of biomass availability also depends on state support for farmers as an important support mechanism. The potential of purposefully cultivated crops in the CR can be estimated in the order of several millions of tonnes per year, but its exploitation is not possible without a revision of the agricultural policy, including a system of related subsidies, sufficient stimulants and development of the business environment both on the part of biomass suppliers and on the part of buyers. ČEZ is prepared to cooperate with all the involved parties in seeking an optimal solution.

4.1.4. Water energy

In the case of large hydroelectric plans, the improvement of efficiency of existing facilities in the range of about 3% is being planned, which will lead to an increase in electricity production on this level. Given conditions in the CR, the potential for construction of new waterworks is basically nil, and there are no expectations for the construction of a new large hydroelectric plant on any of the watercourses in the CR in the long term. For this reason, ČEZ is planning the following measures at existing facilities in the area of large hydroelectric plants (total costs until 2010 will be about € 3.5 million):

Power plant	Implementation year	Efficiency increase	Investment costs (mil. €)
Vrané TG2	2007	3%	0.35
Dalešice TG2	2007	3% + increase of installed output by 7.5 MW	2.11
Kamýk TG3	2008	3%	0.35
Mohelno TG5	2008	3.5%	0.21
Vrané TG1	2009	3%	0.35

In the case of small hydroelectric plants, there are plans for the increase of efficiency at existing facilities by an average of 5%, which is an increase in electricity production by the same percentage. Total investments until the year 2020 are expected to reach € 10.5 mil. For further development, it is evident that the market is saturated and the potential for new facilities, whether implemented directly by ČEZ or in the form of acquisitions of projects prepared by other entities, is very limited.

4.1.5. Other renewable sources

For other types of renewable sources, analyses of the possibilities for their development are underway. Both the available potential and the availability of technologies for their rational use are being analyzed. Although priority is given to activities in the area of wind and biomass energy exploitation, other types of renewable sources will remain the subject of further research and the potential definition of proposals will be the subject of further specification of the Action Plan. A possible example is the activities of the subsidiary company ČEZ Obnovitelné zdroje ("CEZ Renewable sources"), particularly in the area of using biogas for energy production, activities to identify opportunities in the area of small cogeneration units that use bioethanol as fuel, and in the area of solar energy use (photovoltaic sources).

4.1.6. Summary of activities in the area of RES development until 2012

Activity	Expected effect	Expected costs in the years 2007–12	Status
Conversion of the Dvůr Králové heating plant to clean biomass combustion - 5 MWe1	electricity production from clean biomass consumption with a volume of minimally 20 GWh/year	€ 3.5 million	approved
Preparation of construction of two wind parks with a total capacity of 100 MW	expected launch of operation: 2011; increase of production from RES 250 GWh/year	expected investment of about € 140 million until 2011	in preparation
Doubled energy production from biomass consumption	increase of production from RES through joint	investment into fuel route equipment and	in preparation

with respect to 2005	combustion by at least 200 GWh/year	other partial equipment, about € 17.5 mil.	
Preparation of construction of a 5 MWel facility for clean biomass combustion in the Hodonín power plant locality	increase of production from RES by 30 GWh/year	€ 10.5 million	in consideration
Small ČEZ RES projects for biogas and biomass combustion with a total capacity of up to 20 MWel	increase of production from RES by 120 GWh/year	€ 42.1 million.	in preparation
Programme for increasing the efficiency of hydroelectric plants	increased efficiency of existing facilities by an average of 3% (large hydroelectric plants) and 5% (small)	€ 3.5 million (large), € 10.5 million (small)	in preparation

4.2. Reducing emissions intensity

4.2.1. Introduction

The energy policy not only of the state, but also of a company with a portfolio like the ČEZ Group, must solve a number of complicated and controversial issues concerning the security of energy supplies. The CR does not have supplies of high-quality, environmentally-friendly raw materials – our domestic source on an industrial scale is coal of rather poor quality. Although it is generally obvious that fossil fuels will still be the dominant resource for production for some time yet, in the case of the CR the choice between less refined and refined primary resources is linked to the question of dependence on imports (which is a current topic even from the perspective of the EU as a whole) and burdening the state's balance of payments.

Although the issue of energy savings and use of regional resources with emphasis on RES is certainly a priority, it is necessary to solve the question of the interim period, when primary energy resources will have to be chosen so as to support environmental protection, pursue the objectives of security and stability of supplies, and not least the price level.

In the context of the above, it is evident that the use of coal must have its place in the composition of primary resources, at least temporarily, which is supported further by the development of electricity markets in Europe, where the stable growth of demand requires proven solutions that neither energy savings nor RES appear capable of ensuring in a reliable manner.

If the situation is such that coal will remain an important source for power plants in the ČEZ Group, it is suitable to accelerate maximally the transition to clean technologies during coal combustion in accordance with ČEZ's obligations to reduce environmental impact. This strategy has two timeframes:

- From the short-term perspective (within 10 years) to accelerate the renewal of power plants through the implementation of BAT⁶ technologies, with the objective of accelerating the implementation of this quality standard and not waiting for the lifetime of existing power plants to expire. Speeding up the renewal of facilities means additional emissions savings compared to the savings that would be achieved if renewal took place after the lifetime of existing power plants expires.
- From a long-term perspective, implement the Near-zero Emission Power pilot project using the most advanced technologies for CCS (Carbon Capture and Storage). Full commercial use of these technologies is expected after the year 2020.

From a long-term perspective in general, the ČEZ Group plans to intensify its research and development activities not only in the area of low-emission technologies, but also in other areas covered by this Action Plan. Intensive cooperation is also expected within the framework of European institutions and agencies, as well as participation in concrete bilateral or multilateral projects. The specification of these ventures will be the subject of updates of the Action Plan.

In this connection, it must be pointed out that the issue of renewing the current power plant park depends directly on the setting of the emission allowances trading scheme, in particular in connection to the prepared revision of the entire directive. The use of CCS technologies is only just being put into practice, and commercial implementation in Europe is expected around the year 2020, meaning beyond the timeframe of the measures specified by this Action Plan. However, ČEZ considers the development of these technologies a crucial source of experience and know-how, including the link to research and development in this area.

4.2.2. Power plant renewal programme

At present, ČEZ is preparing a comprehensive plan for the renewal of power plants as one of the most important investment decision of a long-term character, which will substantially determine the further direction of the company. ČEZ finds the existing incentives and signals of the upcoming “Carbon-constrained Economy” an important input into decision-making about these investments, where the emissions trading scheme in particular can be a fundamental element in accelerating investments or choosing more modern and economic technologies. In terms of this Action Plan, investments include only the acceleration of investments or selection of technologies beyond the framework of what would be used if the EU ETS system did not exist. Hence, ČEZ does not deny that renewal would occur even without this incentive, but the increased intensity of investments involves additional costs, while simultaneously being the source of additional savings.

In general, it may be said that in the case of large units (complex renewal of power plants), acceleration by 3-4 years occurs; nevertheless, one of the main parameters will be the form of the national allocation plan for the second trading period, and in the long term also the form of the scheme as such (in connection to the planned revision of the EU ETS). Both new investments and renewal are measures that greatly exceed the timeframe of the allocation plan, and are therefore very sensitive to

⁶ BAT = Best Available Technologies in the form of Clean Coal Technologies, currently the most effective, commercially available technologies.

any changes in this area. It must be emphasized that the ČEZ Group declares investments into improving ecological friendliness even in a situation when the current environment does not offer sufficient incentives for this behavior.

In terms of specific events, it is worth mentioning the acceleration of construction of new facilities by 4 years at the Ledvice power plant, and acceleration of the complex renewal of the Tušimice and Prunéřov power plants by 3 years. Apart from the renewal of large units, the maintenance programme is also being sped up, with the objective of sustaining the availability and efficacy of expiring facilities. However, it must be noted that the scope of power plant renewal can be largely influenced by the availability of fuel (brown coal) from domestic sources.

As a supplement to measures at existing facilities, we may mention the planned programmes for reducing the emission of classic pollutants (sulphur oxides, nitrogen oxides, dust particles), which are not directly linked to reducing carbon dioxide emissions. However, because they are an integral part of energy production, they are one of the factors both for optimizing investments and for operating the existing portfolio of power plants, and are therefore linked to measures for the comprehensive renewal of facilities, including their acceleration as described in this part of the material. Not least, the reduction of emissions of these substances has its place in terms of social responsibility.

4.2.3. Long-term measures: Near-zero Emission Power

The ČEZ Group has joined strategic initiatives and international technological platforms – particularly the European long-term technological platform ZEP (Zero Emission Fossil Fuel Power Plants). The subject is particularly cooperation in selected projects to fulfill the strategic objective of the ZEP, which is to build 10-12 complex demonstration units within the EU, so that the technologies are ready for extensive use by the year 2020.

The ČEZ Group continually evaluates the possible application of low-emission technologies in the context of the company's strategic objectives (particularly the renewal of power plants and construction of new facilities in the CR and in the countries of ČEZ's current and expected activity). In this context, the locality of the Hodonín power plant in particular is being analyzed.

The ČEZ Group is getting ready to participate in the relevant projects of the European Commission (7th Framework Project – DG RESEARCH, DG ENERGY projects) and to support certain projects and activities indirectly, in order to maximally exploit the synergies from all international activities. If suitable implementation options for emission-free technologies are identified in the CR, a project will be proposed as a possible demonstration unit (in the context of the ZEP proposal). At present, we are considering participation in two specific projects outside of the CR. However, their specification at this time would be premature.

4.2.4. Renewable sources

The contribution to reducing the emission intensity of the ČEZ Group includes the renewable sources described above.

4.2.5. Activities in the area of reducing emission intensity until the year 2012

Activity	Expected effect	Expected costs in the years 2007–12 *	Status
Acceleration of renewal of the Tušimice power plant by about 3 years	operation from 2011; conservation of 960 Kt/year (i.e. 2.88 Mt in 3 years)	about € 112.2 million cost increase due to acceleration	underway
Acceleration of renewal of the Ledvice power plant by about 4 years	preparation for implementation of energy conservation after 2012; from 2013 conservation of 1.14 Mt/year (i.e. 4.95 Mt in 4 years)	about € 126.3 million cost increase due to acceleration	approved
Acceleration of renewal of the Prunéřov II power plant by about 3 years	preparation for implementation of energy conservation after 2012; from 2013 conservation of 0.96 Mt/year (i.e. 2.88 Mt in 3 years)	about € 77.2 million cost increase due to acceleration	approved
Participation in the Near-zero emission power pilot project and participation in European R&D programmes	radical reduction of CO ₂ emissions at fossil fuel combustion facilities in commercial use after 2020	at least € 1.05 million for R&D expected	in preparation

* These are extra costs related to accelerating renewal (time value of money). The result of accelerating the investment is primarily the achievement of CO₂ emission reduction sooner and potentially to a greater extent compared to the scenario without acceleration. It is expected that these savings will again be the source of financial resources saved within the framework of the EU ETS, for use in the next round of measures to reduce emissions. The benefit of accelerating renewal is simultaneously security against the expected rise in CO₂ prices and the effort to maximize emissions reduction of classic pollutants (NO_x, SO₂, dust particles).

4.3. Energy conservation

4.3.1. Introduction

Energy conservation is one of the most important instruments for reducing emissions and energy demand. Despite a number of improvements, the Czech economy is still burdened by a high degree of energy demand, which has also been pointed out in the OECD comparative study and IEA. Although this is largely a legacy of the past and is related to the structure of industry and industrial production, it is problem whose solving should be one of the main priorities of the Czech Republic.

The development of energy conservation is supported on one side by the ambitions of the EU in the area of reducing greenhouse gas emissions, and on the other side by increasing intensive discussions on the need to solve the potential lack of energy from domestic sources (reducing reliance on imports) and a number of studies describing not only the interesting potential in many areas, but also its

economic sensibility under certain conditions. Hence it is evident that the area of energy conservation will be one of the key topics in the upcoming years or decades.

Energy conservation is already an integral part of the ČEZ Groups complex policy and sub-programmes, in particular the renewal of power plants. Apart from fulfilling the obligation of social responsibility and reducing emissions, this effort is supported by predictions of electricity market developments in upcoming years, which indicate that there may be a lack of electricity in the region – the support of energy conservation helps stabilize the electricity market by acting against potential energy crises. Thus conservation support is becoming a part of standard care for every customer.

The ČEZ Group is aware of the fact that the potential for energy conservation in Central and Eastern Europe is relatively higher than in the rest of the EU. In terms of the business model, however, it is a considerably more complicated area, because the potential of energy conservation is highly fragmented due to the large number of end customers.

4.3.2. Planned activities

The ČEZ Group will implement activities on three basic levels:

In the area of cooperation with the general public (area of public awareness), motivation is based on financial incentives in the form of savings on paid electricity (or other energies) realized through a change in consumer behavior. The following instruments in particular will be used within the framework of awareness rising:

- Promotion of an economic lifestyle and energy conservation as a part of this lifestyle in the media (popularization, contests, quizzes) and use of modern communication instruments including interactive instruments;
- Support of changes in consumer behavior in cooperation with the manufacturers of power-saving appliances and other power-saving devices;
- Communication of a comprehensive approach to conservation together with other utility suppliers (e.g. water, gas);
- Linking communication with other projects (e.g. CEZ project “Green Energy”).

Given ČEZ’s field of activity, there is a wide portfolio of services and instruments focused on consulting for customers. With regards to the fact that customers include both retail customers and large clients, communication is not only general, but also specific for the individual segments and sectors. The following instruments in particular are concerned:

- Basic consulting within the framework of the offer of power electricity products (basic consulting provided to all ČEZ Group customers within the framework of sales support for power electricity products, differentiated according to individual segments: consumers in the low-voltage network – households, retail; consumers in the high-voltage networks – wholesale); consulting is provided by customer centers and sales representatives alike within the framework of individual servicing).
- Consulting with segment and sector focus (information materials arranged specifically for individual segments or sectors – retail/wholesale, entrepreneurs/dealers, etc.)

- ČEZ Group Consulting Centre (specialized professional seminars organized together with the manufacturers of power-saving appliances or technologies or companies providing instructions to improve the efficiency of energy management in companies and households).

In the area of direct cooperation with customers, ČEZ focuses on the offer of products and services, which are directly linked to the actual sale of electricity and have various effects on potential conservation in the individual areas they concern. These products and services are provided using internal services, and in most cases we expect the use of cooperation with external entities as well. In this case, the ČEZ Group will always be the guarantor of quality and efficiency of the individual provided products. The following products and services in particular are concerned:

- Energy audit (performance of an energy audit, implementation of remedial measures)
- Conservation financing (guarantor of individual projects, identification of financing opportunities)
- Consumption optimization (direct implementation or outsourcing)
- Conservation project management (guarantee and project management)
- Verification of energy consumption of appliances (retail) – labeling (lending of measuring devices and evaluation of energy consumption).

In terms of further development of activities in the area of energy conservation, the ČEZ Group foresees not only the further development of the products and services listed above, including the periodical evaluation of their effects and potential updating, but in particular further development or participation in the implementation of specific investment projects. At present, several potential project ventures in this area are being discussed, which will be taken into account in the next update of the Action Plan depending on their implementation.

4.3.3. Costs of energy conservation activities for the years 2007-2012

Activities in the years 2007–12	Expected effect until 2012	Expected costs in the years 2007–12	Status
Active functioning of proposed projects within the framework of three proposed areas of conservation	The ČEZ Group will become the main initiator and promoter in the field of energy conservation	€ 21 million	selected activities for implementation, most will be launched

4.4. "Carbon financing" of projects to reduce greenhouse gas emissions outside the CR

4.4.1. Introduction

The existing framework of international cooperation (Kyoto Protocol) also enables the implementation of emission savings in a manner in which measures leading to the reduction of emissions are supported through a project implemented on a different entities' premises in a different country, and emissions reduction (or its part) is achieved in the form of emission reduction units credited to the

entity that participated financially in the investment. These approaches (called flexible mechanisms) increase the degree of flexibility by enabling the implementation of real savings on projects where costs are substantially lower than in the case of domestic measures. A crucial factor is the issue of assisting developing regions or the transfer of technologies and know-how as a part of the benefits achieved through project implementation.

These flexible mechanisms include JI and CDM⁷ projects, which can newly be connected to the EU ETS. Entry into these projects opens the door for the ČEZ Group to the possibility of more flexible structuring of the measures portfolio and particularly to the investment of financial resources in terms of emissions reduction more effectively than in the case of alternative measures. From a long-term perspective (after the year 2012), further development may occur in the mechanisms area, with the introduction of other forms of carbon financing into practice. Their potential will be analyzed in connection to preparation of the respective legislation.

For the ČEZ Group, neighboring countries, respectively Central and Eastern Europe are a priority for projects; nevertheless, investments into projects outside of Europe are also expected.

4.4.2. Planned activities

Since 2006, ČEZ has been developing the JI/CDM programme. The objective of this ČEZ programme is to invest into greenhouse gas emission reduction projects in countries outside of the Czech Republic. The target volume comprises the abatement of about 3 million tones of CO₂ equivalents by the year 2012, whereas the identification and contractual arrangement phases will take place in the years 2007 to 2008.

The ČEZ Group conducts investments into projects through carbon funds or using specialized development companies. Geographically, the JI/CDM programme concerns not only Central and Eastern Europe, but also anticipates participation in countries outside of Europe. Priority is given to procuring emission savings from energy conservation projects, fuel switch and renewable energy sources.

In December 2006, ČEZ joined the Multilateral Carbon Credit Fund (MCCF) administered by the European banks EBRD and EIB, with an obligation to invest 10 million euros into JI and CDM projects in countries covered by EBRD activities.

By the end of 2008, the ČEZ Group plans to conclude contractual relations for the implementation of emission savings from JI/CDM projects in the volume of minimally € 35 million.

The JI/CDM programme will be expanded or modified with respect to developments in international legislation on global emissions reduction after the year 2012. Should the JI/CDM mechanisms no longer be functional in their current form after the year 2012, the ČEZ Group expects to continue with investments into reducing emissions outside the CR even after this date.

4.4.3. Activities in the area of carbon project financing until the year 2012

Activities in the years 2007–12	Expected effect until	Expected costs	Status
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⁷ JI = Joint Implementation, CDM = Clean Development Mechanism

	2012	in the years 2007–12	
JI/CDM investments into 5 to 20 projects through specialized development companies and carbon funds	Expected greenhouse gas emission reductions of 600 thousand tones of CO _{2e} per year.	€ 35 million	underway

5. Summary of expected costs until the year 2012

The table below summarizes the expected costs for individual types of measures until the year 2012. These are approximate values, respectively their estimates; the specific value of costs will be the subject of regular updates in connection to their specification and timing of the individual concrete measures:

Renewable energy sources	€ 228 million
Reducing emissions intensity	€ 317 million
Energy conservation *	€ 21 million
Carbon financing of projects outside the CR	€ 35 million
TOTAL	€ 601 million

* Costs in the energy conservation area will be quantified in connection to the prepared projects (still in the phase of preliminary considerations).