



With Energy into the Future -

Chances through Climate Protection.

Energy and Climate Protection Strategy of the German
Federal State of North Rhine-Westphalia

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Executive summary

Fundamentals and foci

- At the World Climate Conference in Kyoto in 1997, the community of states realised that **climate protection** is a **century task**. According to the conference, climate change¹⁾ is posing a worldwide increasing risk to prosperity and growth. Technical, financial and political endeavours have to be taken in order to enable future generations to grow up in a world worth living.
- For the first time ever, the community of states agreed at the World Climate Conference in Kyoto in 1997 on the binding reduction of greenhouse gas emissions by 5.2 % until 2012 against the 1990 reference values and introduced emissions trading and project-oriented instruments.

Further detailed steps towards global climate protection were discussed at subsequent annual conferences.

In December 2007 the signatories of the World Climate Conference in Bali decided to introduce a binding climate protection regime - in 2009 at the latest - with concrete targets. The industrialised countries are to reduce their emissions by 25 to 40 % against 1990.

The Federal Government of Germany set an ambitious goal with the reduction of CO₂ emissions by at least 37 % until 2020 against the values of 1990.

- Today, the Government of the German Federal State of North Rhine-Westphalia (NRW) is presenting a strategy which **makes the pace in the energy and climate policy** in Germany. The key objective is the sustainable, i.e. permanently secure, economic and climate-friendly energy supply. This strategy will be jointly implemented by politics, citizens, companies, research institutions and all North Rhine-Westphalian groups of our society.
- The Federal State of North Rhine-Westphalia will make a considerable contribution towards climate protection. Among all German Federal States NRW is disposing of **the greatest potential for the reduction of CO₂ emissions**, because the largest German utilities are based in North Rhine-Westphalia, most of Germany's energy is converted and consumed in NRW and accordingly the largest amount of CO₂ is emitted in NRW. Nearly 30 % of the entire German electricity is generated in North Rhine-Westphalia. A large share of this power is supplied to other German Federal States for covering their demand.

¹⁾ In the paper at hand "climate change" means only that part of climate change that is due to greenhouse gas emissions caused by human action (anthropogenic).

- From 1990 to 2005 NRW has already decreased its CO₂ emissions by 16.6 million tonnes. This equals to a reduction of 6 % at a simultaneous - however inefficient from the viewpoint of the NRW Government - economic growth of only 15 %. Principally it is important to bear in mind that **economic growth and climate protection do not necessarily have to be opposites**. North Rhine-Westphalia clearly has to increase its economic growth and even more decouple CO₂ emissions.
- However, ambitious climate protection targets are a great challenge for North Rhine-Westphalia as a very densely populated area with more than 18 million inhabitants, as transit state with a high volume of traffic and as export-oriented industrial region, the economy of which is relying on competitive energy prices. Overstatements have to be avoided by all means when pursuing climate protection goals. Exaggerations and solo attempts, that are typical of the German energy sector and that have again and again isolated Germany within the international community of states, are not to be repeated. Energy and climate protection policy is calling for a sense of proportion more than any other policy. If we Europeans are the only ones who decrease emissions at high costs, whereas in other regions of the world greenhouse gases are emitted nearly unrestrictedly, we will jeopardise Europe as industrial site. European companies must be enabled in the future **to make increased use of the instruments Joint Implementation (JI) and Clean Development Mechanism (CDM)** in order to export climate protection technology. **Climate protection, competitiveness of the economy and supply security are equally important objectives for the Government of the Federal State of North Rhine-Westphalia.**
- Actions are realised according to the principle "**Absolute priority is attached to efficient and thus economically feasible climate protection measures**, i.e. such measures that will return benefit in the near future" in order to maintain the competitiveness of the North Rhine-Westphalian economy and to avoid any extra burden to the private sector.
- Further CO₂ avoidance costs that are required to achieve the planned reduction target are to be made up by **additional industrial value added yielded by innovative energy technologies** in order to decrease the burden to the economy. In 2020, environmental technologies produced in Germany can generate a higher turnover than the German automobile industry. Thus, the development of environmentally-friendly technologies aiming at increasing final efficiencies, utilisation of renewable sources of energy and modernisation of conventional energy conversion systems is not only an absolute must from the viewpoint of climate protection and energy savings, but also an intelligent strategy from the viewpoint of industrial policy. Especially for NRW, climate protection is offering an **extraordinary chance for the industrial policy** of our state. The Government of the Federal State of NRW is expecting for the renewable sector alone

an increase in turnover of € 15 billion and an increase in the number of staff employed in this sector by 40,000 people until 2020. Individual branches of the renewable energy business have very good export chances. In the wind energy sector the export share amounts to more than 60 %.

- The Government of the Federal State of NRW considers **supply security of the state with primary sources of energy** as important as the competitiveness of the North Rhine-Westphalian industry. The growing dependency on energy imports has to be stopped in order to secure our industrial basis, thus securing the welfare and prosperity of our State. Therefore, the share of renewable sources of energy in energy conversion has to be increased. However, there is another aspect to supply security: The Government of the Federal State of NRW will see that lignite will keep its position in the energy mix. All endeavours now aiming at the stigmatisation of coal – after nuclear power – as second main source of energy and to solely rely on imported natural gas are irresponsible.
- A future viable climate and energy policy must be **sustainable, holistic and global**. Such a policy may not be restricted to single states but can only be implemented and realised through the consensus of the international community of states. Individual national solo attempts, as well as isolated state-specific regulations are in the long-term as counterproductive as unrealistic scenarios of abandoning or the ideological adhering to taboos in connection with individual sources of energy.
- The peaceful and responsible utilisation of **nuclear power** has to remain possible also in future. This is important not only under the aspect of climate protection but also in the sense of future-oriented co-operation aiming at prosperous development of the international community of states. Affordable energy still is the key to improve conditions of living in threshold and developing countries. If Germany continues to stick to nuclear phaseout in connection with electricity generation, this will be price-raising for fossil fuels despite the multiple utilisation of renewable sources of energy and this in turn will restrict the growth potentials of threshold and developing countries.

Objectives

- The North Rhine-Westphalian climate protection strategy is aiming at sustainable, strong economic growth and at the simultaneous reduction of CO₂ emissions. For achieving these objectives, the Government of the Federal State of NRW intends to:
 - **Reduce the consumption of energy,**
 - **Increase the share of renewable sources of energy in energy supply,**
 - **Increase the efficiency especially of fossil-based electricity generation processes,**
 - **Research, develop and introduce on the market the necessary technologies and**
 - **Support international transfer of energy technology.**

- With these measures, North Rhine-Westphalia will reduce the CO₂ emissions until 2020 by 81 million tonnes against the values of 2005 . This decrease corresponds to about 44 % of the energy-related CO₂ emissions to be reduced until 2020 according to the German Federal Government.

- The reduction amounting to 81 million tonnes comprises of
 - The targets of the **Meseberger Decisions** (refers to an internal meeting of the German Federal Government held in Castle Meseberg on 23rd/24th August 2007, where a climate policy programme was concluded) will result in North Rhine-Westphalia in a reduction of CO₂ emissions of some **36 million tonnes** against 2005.

 - Apart from the Meseberger measures, the Government of the Federal State of North Rhine-Westphalia will further reduce CO₂ emissions by another **15 million tonnes** within the scope of an **NRW-specific package of measures**.

 - **The most important NRW-specific contribution to climate protection is the renewal of the coal-fired power plant portfolio.** The successive replacement of outdated power plants by new, highly efficient power plants is to result in the Federal State of North Rhine-Westphalia in CO₂ reductions amounting to some **30 million tonnes** against 2005.

2) The concept at hand only considers those CO₂ emissions resulting from energy conversion and utilisation that amount to roughly 85 % of the entire CO₂ emissions.

Assumptions

- The energy and climate policy of the Federal State of North Rhine-Westphalia is mainly depending on general **pre-requisites that have to be created on the highest Government level**. But also **within the State itself, partners have to be found and convinced to co-operate and jointly implement such a strategy**. This involves companies and research institutions as well as chambers, associations, initiatives and regional authorities.
- **The rapid renewal of the conventional power plant park is the most important requirement for achieving the climate protection goal in North Rhine-Westphalia.** The Government of the Federal State of NRW is standing up against the German Federal Government and the European Commission for the replacement of outdated power plants through suitable general conditions.
- The proposals of the EU Commission planning complete auctioning of the emission certificates as of 2013 are no proper measure. Therefore, the Government of the Federal State of NRW is asking the EU Commission to give up their plans and not to extend auctioning against existing law, because this would result in reduced efficiency of new power plants and consequentially may lead to a lack of investments in new power plant constructions. **Only the free-of-charge allocation on the basis of a fuel-related benchmarking system for energy conversion can guarantee a broad energy mix with most modern, highly efficient technology causing low environmental impact. The Government of the Federal State of NRW stands up forcefully for its position against the German Federal Government and the EU Commission. Now the course is set on European level, therefore, routes should be followed in Brussels that will avoid unnecessary increases in electricity prices due to emissions trading.**
- On the other hand the Government of the Federal State of North Rhine-Westphalia expects that power plant operators assume their responsibility and shut down outdated, CO₂ intensive power plants, because power plant renewal in North Rhine-Westphalia is the most effective and sustainable measure in the combat against CO₂ emissions. The Government of the Federal State of NRW will enter into negotiations with the electricity industry **in order to agree on binding CO₂ reduction targets within the scope of the renewal of the power plant park and the shutdown of outdated power plants.**
- Besides, it is also important that the **German Federal Government will implement the Meseberger Programme** as described and intended.

Actions

- The strategy at hand contains **a large number of NRW-specific measures** that have to be verified regularly and adjusted to technical progress. The most important plans and projects are listed in the following:
 - **Increase of energy efficiency on the demand side** is mainly achieved through the initiative "**NRW saves energy**". This initiative is aiming at energy savings in the areas of industry, business, trade and services, local authorities and private households by 20 % in 2020 against the 2006 consumption.
 - **A support programme for the energetic retrofit of existing social housing** and a "**climate bonus**" for **subsidised commonhold real estate** in order to clearly increase energy efficiency for new and existing buildings.
 - **Utilisation of allocated areas according to zoning plan and the so-called repowering of wind power plant**, i.e. replacement of smaller and older plants by improved systems. Especially in legally binding concentration zones, the number of wind power plants and thus immissions can be reduced while at the same time increasing efficiency and degree of utilisation. Thus, sensible repowering is also taking account of the protection of residents. The planning authority of the local authorities (e.g. concerning the height of wind power plants), which was introduced through the wind power decree, remains untouched.
 - North Rhine-Westphalia supports the highly efficient application of **biomass**. This also applies to the further development of "cascade utilisation". However, generally it must be ensured that the utilisation of biomass may not result in extreme price increases or shortage of worldwide food supply. Besides, biomass has to be produced sustainably.
 - North Rhine-Westphalia will continue with the **mine gas initiative NRW** that was founded in 2001. North Rhine-Westphalia is on the cutting edge concerning the design and construction of mine gas utilisation. A lot of NRW companies can profit from this position. Since 2001 about 26 million tonnes of CO₂ have been reduced through mine gas utilisation. An annual CO₂ equivalent of more than 4.6 billion tonnes is expected until 2020.
 - In order to better **exploit combined heat and power generation (CHP)** in North Rhine-Westphalia, the Government of the Federal State of NRW started an initiative which is to lead to increased application of CHP technology, especially in the industrial area.

- The North Rhine-Westphalian **hydrogen and fuel cell** research and -development is aiming at the quick commercial application. Therefore, the State will invest more than € 100 million. As of 2010 the "NRW-HydrogenHyWay" will be constructed from the Aachen/Düren region via Cologne, Düsseldorf and Essen up to the Northern parts of the Ruhr Area. A national hydrogen centre is to be realised in Jülich that is going to bundle fundamental research together with industrial partners.
- Climate protection technology "made in NRW" is an export hit. As first European region, North Rhine-Westphalia set up **an international climate protection project** according to the rules of the Kyoto Protocol within its own state borders. The project, JIM.NRW, is to save CO₂ through efficiency increases jointly with foreign partners and thus to obtain commercially attractive, tradable CO₂ certificates. North Rhine-Westphalia also signed the "**Montreal Declaration**" that was elaborated by the **Climate Group** of the Climate Conference in Montreal in 2005. Co-operation in this group is of great interest to the Federal State Government of NRW because the establishment of a global greenhouse gas trading scheme and the close relationship with the American and Asian market are of growing importance for NRW-based companies.
- About 20 % of the CO₂ emissions in Germany are caused by **mobile energy consumption**, therefore, the transport sector has to make its contribution to climate protection. Actions have to be taken in connection with fuels, vehicles and transport systems.
- North Rhine-Westphalia will use the innovation competition and cluster - especially the energy cluster and the automotive cluster - in order to directly support the best projects and to open up such important innovative tracks like **automobile technology** including the increased application of information technology for optimising traffic systems (among others telematics = integrated use of telecommunications and informatics).
- In order to increase supply security it is necessary to decrease the dependency from crude oil-based fuel. This can be achieved through the **diversification of the fuel mix** or other fuels based on fossil and renewable sources of energy. North Rhine-Westphalian engine and vehicle research institutions are also dealing with hybrid technology, fuel cells and high-capacity batteries.
- **Nuclear energy** is indispensable as bridging technology for climate protection. Its application is an efficient possibility to avoid CO₂ emissions. Therefore, the Government of the Federal State of NRW is backing Germany's membership in the Generation IV International Forum in order to keep up with the leading research in nuclear energy. The Government also asks for the prolongation of the operating

periods of existing nuclear power plants. This would help to avoid annually another 150 million tonnes of CO₂ as of 2020.

- With its **research strategy**, the Government of the Federal State of North Rhine-Westphalia will contribute clearly to the extension of energy research in North Rhine-Westphalia and thus to accelerate innovations for climate protection. The major topics orient at the NRW-specific potentials in the different areas of technology and are mainly aiming at increased energy efficiency and decrease of energy consumption.
- Research will focus on innovative, low-CO₂ power plant engineering (fossil and nuclear), intelligent networks, storage technologies, biomass as well as fuels and drives of the future, fuel cells and low-CO₂ hydrogen production, solar energy as well as climate-relevant gases from the atmosphere. This also encompasses the further development of reduction technologies of new, renewables-based energy technologies, especially in the buildings' sector. Energy research in NRW also means maintaining competencies in safety relevant fields of nuclear reactor technology.
- The Government of the Federal State of NRW pushes the transfer of technology for the benefit of climate and environment through **export activities** and partnerships with other countries and regions. Besides, export chances of NRW companies are improved.
- The Government of the Federal State of NRW will accompany the implementation and realisation of its climate and energy policy through a **monitoring scheme** that will be evaluated on a regular basis and adjusted if required. The results will be presented in a report, for the first time in 2010.
- A North Rhine-Westphalian **Energy and Climate Council**, comprising of key personalities from economy, sciences and institutions, will be set up as advisory board in 2008.

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