



# Promoting Eco-efficient Technology

– The Road to a Better Environment

June 2006

The Danish Government

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Production and Design:  
Operate A/S

Front page photo: Mikkel Østergaard  
*By replacing ordinary light bulbs with diodes the electricity use in traffic  
lights can be reduced by 1/3.*

The publication can be downloaded from the website of the Danish  
Environment Ministry: [www.mim.dk](http://www.mim.dk) or from [www.ecoinnovation.dk](http://www.ecoinnovation.dk)

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# Foreword

One of the main challenges for future environmental policy is to create a basis for economic growth, which does not burden environment and nature. We must be better at "doing more with less".

Globalisation means that our environmental impact is geographically diffused. In Denmark the environment is constantly being improved, but our consumption of products from countries such as China and India put an increased pressure on the environment in these countries, and similarly much of the air pollution in Denmark comes from abroad.

We have made great efforts in Denmark, but we still face unsolved environmental problems. Globally, environmental problems only seem to be growing in line with strong economic growth in a number of the world's most populated countries.

This poses new challenges and calls for new solutions. One of these solutions is a stronger focus on eco-efficient technologies.

The world market for eco-efficient technologies is worth more than EUR 500 billion and it is growing dramatically. In many fields, Danish companies are leading the way internationally and there is great potential for Danish exports. At the same time, in Denmark we have demonstrated that a combination of environmental regulation and technology development provides environmental solutions which also meet a demand from abroad.

This is a good launch pad for further focus on promoting the development of eco-efficient technology. Primarily for the benefit of the environment – in Denmark and abroad – but also for Danish exports and Denmark's "brand" as a creative, innovative and technologically highly developed country.

This report is about enhanced efforts that can promote eco-efficient technology. The report is also an invitation to dialogue with the Danish parliament, enterprises, researchers, investors etc. on how Denmark can accelerate eco-innovation, how we can achieve better cohesion between different policies, and how we can be better at marketing our environmental knowledge and expertise.

In the autumn the Government will present a more detailed and specific action plan for promoting eco-innovation and eco-efficient technology.

Connie Hedegaard  
Minister for the Environment

# Promoting Eco-innovation

Chemicals are a great help in our lives, but some also present health problems. Environmental impacts from increasingly more intensive industrial livestock production are a problem which the industry, researchers and the authorities are working hard to solve. Anthropogenic climate change is an environmental challenge Denmark is making every effort to combat.

Chemicals, manure and climate change. Three examples of major environmental challenges for people, enterprises and decision-makers the world over. Three examples of challenges where the development and use of eco-efficient technologies will play a decisive role. Three examples of Danish eco-innovation with a global potential.

The world market for pollution abatement technologies amounts to more than EUR 500 billion, with an annual growth of 5 per cent. Demand that pull research and innovation with it. A strategic effort from Danish business, research and the Government could make eco-efficient technologies one of the keys to new, rapidly growing markets, and make up a Danish contribution to solving global environmental challenges.

There is a clear opportunity for win-win-win situations protecting the environment in Denmark, ensuring economic growth, and contributing to solving global environmental problems.

The Danish Government will encourage research and business to develop more eco-efficient technologies and more environmentally friendly products which can relieve the world's environmental and resource problems and at the same time create growth and exports. The Government will ensure that Denmark is one of the best in the world at innovation of eco-efficient technologies and environmentally friendly products, and that Denmark takes a lead in exploiting its strong positions to export eco-efficient technology.

Our efforts will contribute to tackling the challenges of globalisation, including securing the Danish welfare society for the future by making Denmark one of the world's most innovative and advanced hi-tech societies.

## **What is eco-efficient technology?**

Eco-efficient technology means all technologies which directly or indirectly improve the environment. It includes technologies to limit pollution through decontamination, more environmentally friendly products and production processes, more effective resource management, and technological systems to reduce environmental impacts. Reduced environmental impacts must not necessarily be the primary objective of an eco-efficient technology. This interpretation is in accordance with the EU and OECD definition of "environmental technology".

Eco-efficient technology may, for example, be wind turbines, flue gas cleaning, water treatment, enzymes in animal feed and washing powder, biofuels technology, energy-saving pumps, environmentally friendly substitutes for phthalates, LED traffic lights, efficient ship engines, environmentally friendly salmon farming plant, and precision pesticide spraying machines for agriculture.

## **The market for eco-efficient technology**

According to European Commission reports, the EU accounts for one-third of the more than EUR 500 billion world market for eco-efficient technology. The USA accounts for slightly more, and Japan accounts for one-half of the EU fraction. Growth in countries such as China and India will, however, change this picture.

The International Energy Agency estimates that the global economic growth requires investment in energy of more than EUR 460 billion per year from 2001 to 2010. In the following decade this figure is expected to rise to about EUR 600 billion per year.

Wind turbines have a large growth potential, and Denmark has a global market share of 35-40 per cent. Global wind power capacity is expected to grow by many times in the period up to 2030.

The market for eco-efficient technology for the water area is also growing. The aquatic environment is under pressure globally from over-consumption and pollution. Annual global investment in the water sector is expected to grow from EUR 65 billion in 1995 to more than EUR 130 billion in 2025, with the largest investments in Asia.

In agriculture, annual growth in livestock production is expected to be 0.5 per cent in industrialised countries and 2.6 per cent in developing countries, with corresponding increases in demand for technologies which can reduce losses of nutrients by agriculture. Global potential is estimated at about EUR 10 billion.

Similar trends can be seen within more or less all types of technology and systems reducing environmental impacts.

## **Work in progress**

The current Danish leading position in environmental technology is partly the result of public support for research, development and innovation and initiatives over many years to improve the environment and health.

Public R&D funding was about EUR 1.4 billion in 2005, while private funding was about EUR 3 billion. It is estimated that the environment is a significant element in 5-10 per cent of public R&D funding. This picture generally repeats itself in private R&D funds. The process from idea to market has been well developed in Denmark with knowledge-dissemination activities, technology centres, research centres, advanced-technology networks, and technology platforms. The Danish National Advanced Technology Foundation is an important new player in promoting innovation and new technology.

Environmental policy in Denmark and the EU is an important locomotive for the development of new eco-efficient technology. Equally important are policies in other sectors where environmental protection is being integrated with other economic and societal interests..

## **Further initiatives to promote Danish eco-efficient technology**

In this strategy, the Danish Government presents nine specific initiatives for promoting eco-innovation. These build on ongoing and new initiatives across sectors. The

umbrella of initiatives will also be continuously developed in close interplay with Danish, European and international regulation in the individual areas.

Not all possibilities for promoting eco-efficient technology are covered with this report. This autumn the Government will present a more detailed and specific action plan for promoting eco-efficient technologies. This will also summarise the public and parliamentary debate which will be prompted by this report.

# Nine Initiatives for Eco-innovation

## 1. Partnerships for innovation

### Background:

Silicon Valley in California and Medicon Valley in the Øresund region are two prominent examples of how good growth conditions are offered to innovation from close interplay between enterprises and between enterprises and public institutions. A good understanding of the market and identification of customer needs are essential preconditions for innovation. This innovation creates the basis for differentiated products that can be sold, even at relatively high prices.

Analyses indicate a number of eco-efficient technologies where Denmark has a stronghold and where the global market is growing. In a number of areas environmental problems can be solved more efficiently, cheaply and quickly, if technological innovation is targeted within these areas.

The individual players, however, cannot do things alone; they have varying degrees of dependence on others. In the environment area today, there are a number of projects and networks in which enterprises and researchers exchange experience. Advanced technology networks, regional technology centres and innovation consortia promote the development of new technology and knowledge, not just for the benefit of individual enterprises, but for entire economic sectors. Global competition necessitate targeted efforts on strategic and binding cooperation between the players in the innovation processes. Therefore it is relevant to try continuously to expand binding cooperation between enterprises, research institutions and the state.

### Decision:

The Government will enhance public-private cooperation between the state, enterprises, research institutions, and venture capital. It will do so by initiating discussions with the relevant enterprises and institutions on establishing partnerships for innovation in which partners develop a common vision and implementation strategy for development, maturing markets, and exporting eco-efficient technology.

The aim is to accelerate technological innovation processes which help solve specific environmental problems. Participants in partnerships for innovation will identify opportunities and needs, set common goals, and agree on funding. Activities will be specific, mutually binding, and implementable. For example, these could be:

- Joint development of demonstration projects.
- Collaboration on strategic initiatives abroad.
- Focused education and training.
- Improvement of the regulatory framework conditions in the specific area.
- Coordination of knowledge building within existing research and service institutions.
- New types of information exchange between research institutions and private enterprises.

The partnerships will build on existing efforts, initiatives and networks, including those initiated by the Government, partly to avoid duplication, and partly to draw fully on work already in progress. Any secretariat functions for partnerships could be carried out by the relevant ministries.

Initially, it is proposed that partnerships for innovation are established within five areas: water, industrial biotechnology, mega wind turbines, biofuels and hydrogen/fuel cells. These are areas with great potential for technology to help solve environmental problems and where Danish enterprises already have a good stronghold. The proposed partnerships need not be exclusive. As experience is reaped, efforts can be expanded to other areas.

The efforts should also be viewed in the context of the Government's forthcoming programme for user-driven innovation, which sets the stage for research into user-driven innovation and implementation of specific projects. This programme will make new tools and competences available for small enterprises and public institutions to carry out projects on systematically identifying customer and user needs, market trends etc. The work could include areas in which Denmark has special commercial competences such as energy, eco-efficient technology, building, health, fashion, design and food.

#### On water partnership:

Denmark has great export potential, knowledge and resources to develop new and more efficient technologies to secure clean drinking water, manage and treat wastewater, and prevent causes of water pollution. However, targeted innovation and exports in the area require further research and development efforts in order to develop the most competitive new technology.

The Government has initiated three innovation consortia comprising enterprises and research institutions. Using their own funding, a number of enterprises have also taken the initiative to develop a consortium for water and sanitation solutions.

On the basis of this, it is proposed to establish a partnership between enterprises, research institutions, investors, and the state to accelerate technological innovation in the area.

#### On partnership for industrial biotechnology:

With its knowledge and resources, Denmark is in one of the foremost positions to develop new technologies or products which can carry out environmental tasks with far more energy efficiency than today and which can substitute harmful chemicals. Targeted research and development efforts are required, however, for successful exploitation of the potential in industrial biotechnology.

Public regulation and research are important for the development of industrial biotechnology and for the possibility to complete the necessary trials and tests. The strategic partnership should build on the innovation consortia involving enterprises and research institutions which were initiated by the Government.

#### On partnership for mega wind turbines:

There is fierce global competition in development of ever larger and more efficient wind turbines. The sector estimates that within the next year it will be possible to develop a new generation of even larger turbines with higher energy efficiency. It is also expected that over the next 10-20 years, offshore turbines could be so cost-effective that in Denmark and other countries they will become more important for energy supply than land-based turbines. But this requires targeted R&D efforts which build on private and public funding, in order to develop the most competitive mega wind turbines and offshore turbines.

Public regulation will be important in identifying areas to site new wind turbines and in Environmental Impact Assessment. Similarly, strong linkage between research and

education is regarded as important in maintaining and developing Denmark as a global competence centre for wind technology. There is a long tradition in the wind energy field for public-private sector cooperation for a partnership to build on, for example the Danish Research Consortium for Wind Energy.

**On partnership for biofuels:**

Denmark is well on the way to developing second-generation technology to manufacture biofuels from biological residues such as straw, waste etc. Demand for biofuels is expected to grow rapidly and in the long term supersede some of the use of fossil fuels by transport.

The Government wants to promote this development and therefore the Government will initially earmark EUR 27 million over a four-year period to demonstrate second-generation technology for the manufacture of bioethanol.

The Government has just launched a centre for bioenergy and environmental technology innovation under the scheme for regional technology centres. The centre is a network involving universities and research institutions.

The Government's efforts to promote the development of second-generation technologies will be based on a strategic partnership with industry which is expected to supplement state funding with considerable additional funds.

**On partnership for hydrogen/fuel cells:**

Today, there are high hopes for fuel cells. Both for mobile and stationary use. Development to large scale requires, however, further research results and better competitiveness. Development of hydrogen technology should be regarded in close cohesion with commercial development of fuel cells which will use hydrogen. So, hydrogen will only become important for energy supply once fuel-cell technology can be applied commercially.

A Danish platform has already been organised for the hydrogen and fuel-cell field, with a number of activities and an overall advisory monitoring group. The hub so far has been monitoring groups for the development of the two main leads for fuel cells in Denmark and for two demonstration and development environments which are being established. A transport collaboration will be established, and a secretariat has been set up under the Confederation of Danish Industries, and this is ready to start.

A strategic partnership should be able to continue on this basis for further promotion of development, maturing markets, and exports of technologies.

**Process:**

Discussions have been commenced with several players on the opportunities and perspectives for these partnerships for innovation. The next step will be for the Government to invite relevant players to discuss how the individual partnerships can be established.

As experience is gained and the market for eco-efficient technology develops, other partnerships can be established.

## 2. Targeted and enhanced export promotion

### Background:

A number of markets are experiencing a large and growing demand for eco-efficient technologies, in areas where Danish enterprises have a special stronghold. Denmark already has significant exports of eco-efficient energy technologies and increasing growth rates for a number of other eco-efficient technologies.

In particular, the growing markets of Brazil, Russia, India and China (the BRIC countries), are increasingly recognising the necessity of better environmental protection parallel to economic growth. A number of investments in, for example, energy saving and efficiency also have a financially advantageous pay-back period, which ensures financial returns on investments within a few years.

Eco-efficient technologies are thus a growth area in which Denmark has good preconditions for enhanced strongholds and increased economic growth and revenues..

Danish success in combining economic growth and wealth with significant environmental improvements is a persuasive sales argument when Danish enterprises market themselves in the large growth markets. It is important that specific technological solutions are presented in a context (system, administration, legislation, regulation, etc.) which documents that they work and that they can make a cost-effective contribution to overall environment efforts. In parallel to this, it is important to increase awareness on export-markets of Danish solutions.

### Decision:

The Government will enhance the efforts for Danish exports of eco-efficient technology. This will be in close collaboration between the Trade Council of Denmark under the Ministry of Foreign Affairs, the Danish Energy Authority, the Ministry of the Environment and enterprises. The overall goal is to improve the synergy between Danish national activities, participation in the global political scene, and exports of eco-efficient technologies.

Focus for enhanced efforts will be:

- Analyses of market opportunities in priority countries.
- Conferences and promotion in these countries and visits to Denmark.
- Analyses of Danish solution strategies for use by foreign decision makers as showcases for Danish products.
- Analyses of future environmental challenges for use by export enterprises.
- Establishment of networks and sector experts in promotion of exports.
- Closer cooperation and coordination between the three ministries.

It is intended that all relevant commercial promotion shall ensure that marketing of eco-efficient technologies is closely linked to efforts to promote technological innovation in Denmark, the international negotiation processes and contact in the environment and energy fields. In response to the demand of enterprises it is the intention to strengthen the consultancy function within eco-efficient technology in the most important export markets, partly through bridge-building between national/ international environmental

policies, environmental technological innovation, entrepreneurship, and growth markets.

Initially, efforts will target markets in the US, Brazil, Russia, India, and China, and in particular they will focus on energy efficiency, wind energy, biomass and waste, as well as the aquatic environment.

### **3. Research and technology development in the interests of the environment**

#### **Background:**

If Danish enterprises are to cope with the competition in the global market for eco-efficient technology, targeted, research-based initiatives are important. Many Danish enterprises supplying eco-efficient technology are amongst the most research-intensive Danish enterprises. At the same time, the market for eco-efficient technology is characterised by new enterprises starting on the basis of new groundbreaking research at universities.

Enterprises' own research efforts are vital. The rule is to create practical, commercial solutions. Solutions which can be patented so that enterprises can benefit from their investments. However, research work by enterprises is entirely dependent on good cooperation with universities, because eco-efficient solutions from enterprises are often based on the new technological discoveries made and tested at universities.

And for researchers and students at technical universities, developing the eco-efficient technology of the future is a good and inspirational foundation for work on concrete challenges.

#### **Decision:**

The Government will make special efforts to promote eco-efficient technology at universities and technological institutes. A basis will be developed for research projects in close cooperation between researchers and enterprises, and therefore the Government will:

- Put priority on establishing a research programme on eco-efficient technology under the Danish Council for Strategic Research.
- Put priority on more common research activities in the EU with special focus on climate change, the increasing pressure on the world's water resources and the spread of toxic chemicals.
- Work to improve Danish enterprises' and research institutions' access and qualification for the increased R&D funding under the EU 7th Research Framework Programme with priority on areas relevant to development of eco-efficient technology.

The initiatives mentioned above will be implemented in accordance with the Government's goal to improve the quality of Danish research by ensuring greater competition for the funding available.

An active contribution to the Danish National Advanced Technology Foundation will also have priority, e.g. in work with partnerships for innovation.

#### **4. Strengthened efforts to promote eco-efficient technology at the Ministry of the Environment**

##### **Background:**

In many fields, the public sector promotes eco-efficient technology. Research, development and innovation are supported by, amongst others, the Ministry of Science, Technology, and Innovation. The Ministry of Economic and Business Affairs focuses of conditions for growth that are adapted to the future. Danish enterprises' trade and investment activities are promoted by the Trade Council of Denmark. Ministries and public institutions contribute with different approaches to promoting eco-efficient technologies and to ensuring beneficial framework conditions.

There is a need to enhance the interplay between the environmental policy laid down nationally and in the EU, and the development in eco-efficient technology.

##### **Decision:**

The Ministry of the Environment will cooperate closely with other ministries and the private sector to strengthen the efforts to promote eco-efficient technology. The Ministry will allocate resources for more systematic work with eco-efficient technology to bridge the gaps between environmental authorities, the private sector, research and various users and buyers of eco-efficient technology.

The Ministry of the Environment will enhance initiatives in the following areas:

- Communication on Danish knowledge environments for eco-efficient technological innovation, including access to trials, tests and verification.
- Communication on access to Denmark's and the EU's research and development resources on eco-efficient technological innovation.
- Ensuring simple and effective communication of advice from and information about the Danish National Advanced Technology Foundation.
- Facilitating effective use of the existing business service system by more entrepreneurs.
- Assistance of the formation of innovation partnerships within environment.
- Dialogue with eco-efficient technology enterprises.
- Contributing to making environmental regulation in Denmark, the EU and in global export markets build on the best available knowledge about technological solutions.
- Preparing communication-oriented analyses of Danish strongholds and future needs for eco-efficient technology and innovation.
- Cooperation with the Trade Council of Denmark and the Danish Energy Authority on enhanced initiatives for promoting exports of eco-efficient and energy-efficient technologies.
- Maintenance of the website [www.ecoinnovation.dk](http://www.ecoinnovation.dk).

## **5. Targeted promotion of eco-efficient technology in the EU**

### **Background:**

The EU is a major market for eco-efficient technology, but the EU also lays down a large number of the sector policies that can help drive innovation forward. The EU is also a central source of funds for research, development and demonstration.

The internal market, exposure to competition and greater market penetration are important arguments for a targeted approach to promote eco-efficient technology in the EU as well as globally.

With ETAP (Environmental Technologies Action Plan) and the revised Lisbon Strategy, the EU has a sharp focus on promoting eco-efficient technology as a mean to achieve cost-effective environmental protection while at the same time contributing to growth and employment. The EU's 7th Research Framework Programme has significantly increased the EU's funds for research and development. Denmark generally has a good position to be able to promote an agenda on increased funding for development of eco-efficient technologies and to strengthen incentives to use eco-efficient technology in EU legislation.

### **Decision:**

The Government will systematically pursue that EU increases its support for development and use of eco-efficient technologies and products.

The Government emphasises effective implementation of ETAP in the EU. Not just in the Member States, but also in Community policy. In future EU legislative work, particularly within the environment area, the Government will work to ensure that effective incentives for use and development of eco-efficient technologies will be laid down to help solve environmental problems.

It is the Government's aim to achieve the best possible use of the EU's research and innovation programmes to promote eco-efficient technologies that will benefit Danish research environments and enterprises.

## **6. Climate and energy technology**

### **Background:**

The UN climate conference in Montréal in December 2005 gave new impetus to the process which is to lead to agreement on new global climate objectives for the period after the expiry of the Kyoto Protocol in 2012. The EU has succeeded in creating support amongst the Kyoto signatories to commence specific negotiations about extending the Kyoto Protocol after 2012. The EU's starting point for the global negotiations is that global emissions of greenhouse gases are to peak within the next two decades and subsequently be reduced significantly; in the order of 15-50 per cent in 2050 (compared to 1990 levels), and that the industrial countries should, in this context, consider ways to reduce emissions in the order of 15-30 per cent by 2020 and 60-80 per cent by 2050.

This year, the EU Member States are required to prepare national CO<sub>2</sub> allocation plans to document how the countries intend to meet their climate commitments in the period 2008-2012. Denmark has a demanding commitment of a 21 per cent reduction of emissions in 2008-2012 compared with 1990. The use of a market-based quota system will, in itself, promote incentives to use ever more eco-efficient technologies.

Countries like China, the US and India are moving fast. The US wishes to make itself independent of the oil-producing countries. China's economic growth makes soaring demands on the energy supply, and China has made it an objective that 10 per cent of energy consumption in 2010 is to come from renewable energy and 120,000 MW are to come from renewable energy sources in 2020.

The increased efforts to live up to the Kyoto Protocol; new commitments; and climate-sceptical countries sending new signals about initiatives within energy efficiency and renewable energy, all mean that the market for efficient and environmentally friendly energy technology will grow rapidly in the coming years. This will be a good starting point for Danish enterprises that produce eco-efficient energy technology.

#### **Decision:**

The Government will support the promotion of Danish strongholds within energy technology. A new energy-technology development and demonstration programme will help meet the three central energy-policy challenges in the Government's Energy Strategy 2025 regarding security of supply, global climate challenges as well as growth and economic development.

*The new programme for energy-technology development and demonstration will focus on:*

- Tendering long-term technology initiatives for consortia.
- Special initiatives aimed at demonstration of new technologies.
- Maturing and commercialisation of technologies for the market.

For example, the programme is to support projects that contribute to:

- Cost-effective development and system integration of renewable energy.
- More efficient energy use.
- Energy efficiency and fuel conversion in the transport sector.

A board of directors or a council for the programme be appointed with representatives from industry, research institutions, interest organisations and authorities.

#### *Strengthened initiatives for export promotion*

Exports of energy technologies and energy solutions that can contribute to reducing climate effects constitute a central element of the strengthened export promotion initiatives that the Government has commenced and which focus particularly on the US, Brazil, Russia, India and China.

## 7. Environmental impacts from livestock farms

### Background:

Two global trends mean that, in the future, there will be increased focus on environmental impacts caused by livestock farms; increased need for food production, and increased concentration in livestock farming. In the future, the demand for eco-efficient farming technologies will be significant.

Environmentally friendly livestock farming is a Danish stronghold. The Danish farming sector is characterised by efficiency and readiness for change. This is remarkable - also in an international context. This means that Denmark has good chances of solving the well-known environment problems caused by the large Danish livestock production through developing and introducing knowledge-based solutions. In this way, it will be possible to create a foothold for exports of new eco-efficient farming technologies.

A precondition for utilisation of the Danish stronghold is that there is effective focus on knowledge sharing and networks in the innovation systems through, for example, clear environment requirements and support for the introduction of new technologies. Finally, there is a need for a more extensive, impartial certification scheme to make it easier for agriculture to identify the efficient technologies.

There will be a special focus on technologies to reduce nutrient emissions from manure, to reduce odour nuisances and ammonia evaporation, to contribute to effective utilisation of manure as a fertilizer and energy source - including manure separation and biogasification - and to improve the methods for manure spreading. The Government is currently supporting a vast range of activities within the framework of the Danish Institute of Agricultural Sciences that focus on eco-efficient technologies.

### Decision:

The Government will implement the following initiatives:

- A research programme with special focus on environment and biotechnology research will be prepared by the Advisory Committee for Food Research.
- Involvement in EU network structures will be increased with a view to making eco-efficient agricultural and livestock production a central theme for European research cooperation within agriculture.
- The Innovation Committee of the Ministry of Food, Agriculture and Fisheries will be encouraged to identify focus areas with a view to possibly making eco-efficient technology for livestock farming a special focus area.
- Promotion of practical use of eco-efficient technologies in livestock production through demonstration projects and a technology investment scheme under the rural-districts programme.
- Facilitation of cooperation between the public and private sectors for a documentation system for the environmental benefits of eco-efficient technologies and their operating conditions with a view to achieving an improved and transparent decision-making basis for investments in eco-efficient technology.

At the same time, the Government will establish a new environmental approval scheme for livestock farms, which will simplify and harmonise the approvals system and require use of new eco-efficient technology.

## **8. A clean and unspoiled aquatic environment**

### **Background:**

Water is an important natural resource in all parts of the world. The main challenge for Denmark is to re-establish a clean and rich aquatic environment. In many parts of the world, the challenge is a chronic lack of water. Contaminated water is one of the most important anthropogenic causes of illness and death in the poorest countries, and drought and flooding are central causes of many humanitarian catastrophes. Better systems for controlling and monitoring water systems is an area with increased demand.

The EU Water Framework Directive and the UN 2015 objective to halve the number of people without access to clean drinking water and sanitation are central to the joint efforts.

Competition helps create innovation and efficiency. Therefore, it is important that environmental regulation for water is designed to help strengthen competition between the providers of eco-efficient technology. It is also important that those who demand eco-efficient technology have a clear incentive to demand competitive and innovative solutions. Lack of competition will lead to lack of incentives for innovation.

### **Decision:**

The Government will increase its focus on the development of eco-efficient technology that can help meet the environment objectives for water. This will require that the Danish water sector become more oriented towards innovation, and that Danish knowledge be utilised commercially.

The Government has presented a proposal for modernisation of regulation and organisation within the water sector. The aim of this idea is to strengthen the supply of clean and healthy drinking water and effective wastewater drainage in an effective and economic manner. It is also vital that the sector comply with the environment and health requirements and continue to focus clearly on the environmental problems and the challenges ahead.

The specific proposals for initiatives which will help ensure increased innovation and efficiency in the sector are being negotiated with the Danish Parliament.

Moreover, subsidies are already granted to the innovation-accelerating research platform for water under the Danish Council for Strategic Research.

## **9. A healthy environment**

### **Background:**

Air pollution in cities constitutes a significant health risk. A number of the chemicals we use increase the risk of cancer and allergies. Our knowledge about the environment's importance for health has become much more solid in recent years.

The European Commission has estimated the number of premature deaths in the EU as a consequence of particle pollution at more than 300,000 per year. In the many "mega-cities" in Asia, Africa and Latin America, air pollution from industry, energy and transport is much more extensive. Air pollution increases the occurrence of e.g. asthma, lung cancer and circulatory diseases. The possibility of tightening emission requirements is greatly dependent upon new technological solutions.

As regards chemicals, REACH is expected to create a basis for phasing out a number of the most harmful chemicals and to increase the incentives for development of alternative products and substances that are less harmful to the environment and health.

**Decision:**

The Government will work to promote eco-efficient technology that reduces harmful pollution:

- A detailed study of Danish strongholds within technologies that reduce air pollution as well as technologies that substitute harmful chemicals will be carried out.
- Projects will be initiated for substitution of unwanted chemicals.
- Special initiatives will be carried out to promote technologies to remove NOx from diesel vehicles.
- Denmark will contribute to making the EU carry out an analysis of the technological potentials that can contribute to tightened emission requirements for cars and lorries after 2010 when Euronorm 5 enters into force.
- The Government will present a bill at the beginning of the next Parliament session that will make it possible to create environment zones with filter requirements for heavy vehicles.
- Denmark will support the innovation-accelerating research platform to promote biologically based production in connection with the Danish Council for Strategic Research.

# Public Funding

A number of the proposed initiatives will have to be funded within the existing budgets, since the Government already supports a range of initiatives to promote eco-efficient technologies, innovation and export promotion through research and development funds as well as innovation and demonstration funds.

In order to further enhance the efforts, EUR 16 million will initially be appropriated in 2007-2009 to promote eco-efficient technology.

Moreover, there is possible funding from ongoing initiatives and appropriations for a number of areas that help support Danish efforts within development and use of eco-efficient technology, including through the Danish Council for Strategic Research, the Danish Council for Technology and Innovation, follow-up to the 3rd Action Plan for the Aquatic Environment, as well as possible funding from the Danish National Advanced Technology Foundation, enterprises' research funds, venture capital, and not least the EU's R&D and innovation funds from the 7th Framework Programme for Community Research and the Competitiveness and Innovation Framework Programme (CIP).

Strengthened efforts for development and use of eco-efficient technology will be included in the Government's priority for the expanding funds for research and development, entrepreneurship and innovation as described in the Government's Globalisation Strategy ("Progress, Innovation and Cohesion - Strategy for Denmark in the Global Economy"). The final priority for the pool of funding for handling globalisation in Denmark is to be agreed upon with the political parties to in this autumn.

