



The new climate agenda

LO's climate and energy strategy

By the Danish Confederation of Trade Unions, LO



The new climate agenda

LO's climate and energy strategy

By the Danish Confederation of Trade Unions, LO

Contents

Introduction 3

Global problem – Global solutions 4

LO's aims 5

LO's recommendations 6

The efforts to combat climate change 8

International, regional and national regulation 8

Renewable energy 10

Emission trading scheme 10

Flexible mechanisms 11

Storage of CO₂ gases 11

Bio energy 12

Transportation 13

The construction industry 14

Challenges and opportunities 16

The broad framework 16

Global issues – global solutions – What can a small country do? 17

Economics – possibilities and risks 18

A new industrial revolution – a new export adventure for Denmark? 19

Research, development and innovation 20

Employment – local losses, global gains 22

Environmental technology with job potential 23

Employment development and requirements for education 24

Reduction of emissions versus ensuring energy supplies 25

Alternative sources of energy 26

Energy efficiency 27

Solidarity with the developing countries 28

Environmental aid 28

Workers in developing countries 28

Adaptation fund and technology transfer 28

We can do it – but we must be determined to succeed 30

Introduction

Climate change constitutes a major challenge for the world's population. It is a challenge which requires immediate action at the global but also at the national level. Regardless of whether the increasing emission of greenhouse gases comes from China, the US or Denmark, it will affect and influence the entire globe and it will influence the environment and our living standards.

The pressure on the world's energy resources will increase as a consequence of a greater demand for energy. The developing countries and a number of middle-income countries such as China, India and Brazil will increase demand for more energy as a precondition for continued economic growth.

Denmark is not among the countries that will be affected most seriously if climate change is not acted upon. However, the global consequences will affect Denmark both at the individual, environmental and economic level.

The solutions for combating climate change are complex even though their aim is very simple:

To reduce the emission of greenhouse gases without reducing the population's living standards. The climate solutions will impact all sectors of society and will become an integrated part of the political decisions. The LO-led trade union movement must therefore become involved in the future climate policy with a view to establishing broad solutions for society.

We now have an extensive scientific foundation documenting that the rising emission of CO₂ and other greenhouse gases has a negative influence on the climate. We are now getting to a point where it is no longer possible to repair the damages cau-

sed by CO₂ emissions. When the UN's Panel on Climate Change (IPCC) published its fourth assessment report in 2007, there was abroad international recognition of the fact that the world's climate changes primarily are man-made.

The increasing emission of greenhouse gases - amongst others from energy supply, transportation and companies - have had the effect that the global temperature has gradually increased. If no efforts are made to stop this development, the IPCC predicts a considerable temperature rise during the next century. The changes will be so important that they may lead to a rise in the sea water levels and increase the temperatures globally causing droughts and natural disasters.

However, it is possible to curb the development of climate change. This preconditions immediate action and initiatives to reduce the emission of greenhouse gases. The IPCC recommends a 25-40% reduction by 2020 and a 50-80% reduction by the second half of the 21st century.

The future climate policy is also linked to the question of access to energy resources. By far, the majority of the world's energy supplies come from fossil fuels such as oil, coal and gas and it is presumed that this will also be the case in a 100-year perspective. However, it is inevitable that the current fossil fuels will gradually be depleted. These facts should be considered together with the fact that the biggest sources of energy are found in currently politically unstable regions.

The future energy- and climate policies should therefore not just aim to reduce the emission of greenhouse gases but also deal with the security of supply. Security of

supply is an important element in the planning of future climate and energy policies. Denmark should therefore have a climate and energy policy that emphasizes the further development of alternative energy sources.

The ultimate aim should be for Denmark to become independent of fossil fuels and that short term goals are also defined so that we can approach the ultimate goal.

Global problem – global solutions

The present scientific evidence showing the harmful effects of CO₂ emissions has had the effect that climatic and energy issues have obtained a higher priority on the political agenda – nationally as well as internationally. And there are weighty reasons for immediate action. Seen from an economic perspective, the costs will only increase the longer we wait to launch efforts. This is demonstrated by the economic calculations of the so-called Stern report prepared by economist, Nicholas Stern. The conclusion of the report is, that if no efforts to combat climate change are carried out, this will cost 5% of the GNP (gross national product) every year – and, according to the worst case scenario, as much as 20%. However, if action is taken now, the costs can be limited to 1% of the GNP. The effects and consequences of the climate change will strike regions differently depending on the global region. The industrialised countries – including Denmark – will find it easier to deal with the negative consequences, whereas a number of developing countries will suffer severe consequences. This distribution unevenly contrasts how little CO₂ emissions the poorest parts of the world discharge. Solidarity with the developing countries

must therefore be a part of a global solution for stopping climate change.

Consideration and possibilities for sustainable growth in the poorest countries must be included. This will, among others, ensure increased environmental aid and greater technology transfer. A global solution must also be based on the principle that the most polluting countries take on the greatest obligations in terms of reducing CO₂ emissions. Efforts to obtain international agreements are to take place on several levels. Within the UN, the aim is a non-binding process through the UN's Climate Convention and through a binding agreement – the so-called Kyoto protocol.

The Kyoto protocol runs until 2012 and then lapses, and there are negotiations going on now on a protocol to replace it. Denmark will host the UN's Climate Change Conference in 2009 where a new binding agreement will hopefully be concluded. At the EU-level, The EU-Commission has presented a proposal for a European energy policy which combines climate and energy policy aims. The EU has an objective to keep down the temperature increase at 2 degrees which is assessed to be manageable in terms of human, social, environmental and economic consequences. The EU's proposal sets up goals for a reduction in CO₂ emission by 20% before 2020 compared to 1990. And if an international agreement is concluded in Copenhagen in 2009, the EU's target will be raised to 30%.

Furthermore, the EU's goal will be to increase the use of renewable energy to 20% of the total energy consumption while the share of bio fuel is intended to be increased to 10% by 2020. When it comes to renewable energy, Denmark's contribution to the EU-goal is an increase to 30% of the energy consumption.

LO's aims

A new climate agenda has been established by which climate change will create major changes in society. Being a central player in society, LO should participate in and contribute to finding solutions to manage climate change for the benefit of society as a whole but also for the benefit of the trade union movement's members. Today, climate and energy are not isolated issues that only interest a limited share of the Danish population. An opinion poll has been carried out by Capacent Epinion for Natur Energi (a Danish company with the aim of providing renewable energy). The poll shows that 35% of the Danish population believes that climate change is the most important global problem and that the politicians should address it. This is underlined by the fact that 81% believe that action must be taken here and now to prevent climate change by reducing CO₂ emissions. At the same time, there is a widespread conviction that we should spend resources for reducing the emissions from Danish companies and households.

In the time to come, the climate and energy situation will be placed high on the political agenda. The politicians will be forced to take a stand on climate change when making political decisions. Climate and energy issues are already included as interdisciplinary themes in a number of political debates. Energy, environmental and climate perspectives will therefore constitute important elements of the political process with a view to assessing whether the government can contribute to reducing Denmark's emission of CO₂. We also ascertain that the climate agenda is incorporated into company strategies to a higher extent - not just when it comes to reducing energy

consumption but also with a view to marketing themselves as climate friendly. More and more companies and institutions aim to be CO₂ neutral. According to a survey prepared by Berlingske Nyhedsmagasinet among 1700 corporate leaders in April 2008, 90% of them expect that efforts to reduce climate change will have a positive effect on their image.

The biggest challenge will be to get society to adapt to consuming less energy in a much more efficient manner than is the case today. In a 20-30 year perspective, the reduction of energy consumption plays the most important role in terms of reaching the aim of a reduction and it will affect the emission of CO₂. In future, climate change will affect every aspect of society, and it will influence the trade union's members as consumers, employees and citizens in general.

It is crucial for the LO-led trade union movement that the adaptation to climate change takes place on the basis of continued growth in society which will ensure both high employment and a positive development of welfare in general.

LO believes that Denmark and the trade union movement are well equipped for handling the changes that will take place in society as a consequence of climate change. However, this preconditions long term political decisions in three important areas: To promote and strengthen research on the new sources of energy, to establish a sensible investment basis for industry and, at the same time, to ensure a qualified workforce. The current Danish energy agreement, which will be in force until 2011, should therefore be replaced by a long term political agreement.

It is only now that the technological development within the climate and energy sectors is picking up. In future, billions will be invested into the development of alternative solutions to reduce CO₂ emission. Denmark has great potential for developing renewable energy, particularly wind energy, and to improve energy efficiency. We are already one of the most energy efficient societies in the world and are characterized by widespread employee innovation and an important ability to adapt production which creates new jobs. LO therefore sees great potential for employment possibilities through a new climate agenda with the emphasis on developing new alternative energy forms, thereby contributing to the Danish flexible labour market through an adaptation to climate friendly workplaces.

At the global level, there is no exact way of predicting the consequences for employment in a society with lower CO₂ emission. But in an analysis prepared by the UN environment programme in connection with the ILO and the ITUC, it is estimated that the 2.2m workplaces that now exist in the field of alternative energy can be increased to approx. 20m workplaces in 2030. This can be compared to the 13 million workers employed in the oil and mining (coal) sector today. However, it is important to be aware of the fact that, even though there will be adaptations, this does not mean that people in this sector who lose their jobs will automatically find work in the alternative energy industry.

LO finds it likely that a major part of the reduction in CO₂ emission could take place by developing new technologies. However, if the emission of greenhouse gases is to be reduced to a controllable level within a reasonable period of time, this will also require

a reduction in energy consumption. Among other things, it will increase the pressure on known energy taxes and give rise to new taxes and duties.

LO believes that climate change should be combated by means of an all-round approach which takes into account the state in which we wish to leave the earth for the next generation. It is also necessary to ensure that the decisions made to reduce the emission of greenhouse gases take place on a solidary and sustainable foundation. LO's climate and energy policy is based on the necessity of a major reduction in CO₂ emission and to ensure a high level of security of energy supplies as well as international solidarity with the peoples that do not have the same high living standards as we do.

LO's recommendations:

In cooperation with the international trade union movement, LO will attempt to influence the national policies to include binding international agreements on a reduction of the emission of greenhouse gases.

■ At the national level, LO will work to ensure the continued growth and development in society as a precondition for a high employment rate. However, future policies should include both the social, economic and environmental aspects on a sustainable foundation. At the national level, LO proposes the adoption of a long term Danish energy and climate agreement to establish Denmark's policy on energy consumption, security of supply and alternative energy. LO will shape its research policy in a way which takes into account the new climate agenda.

■ LO will strive to ensure the allocation of more funds for research into the environment and energy sectors so that sufficient funds can be provided for the development of alternative energy and for improved energy efficiency and a reduction of greenhouse gases.

■ LO believes that the necessary change in industry necessitates environment technology which requires a greater commitment to ensure continuous training of the workforce.

■ LO will strive for the planning of future training and an employment policy to include a climate perspective.

■ LO sees it as a goal in itself that Denmark becomes independent of fossil fuels and that an action plan on how to reach this goal be prepared.

■ LO believes in a certification of renewable energy that ensures optimum exploitation and cost effectiveness of alternative energy supplies.

■ LO believes in research into the development of 2nd generation biomass fuel on a sustainable foundation.

■ LO will work for research into the further development and modernisation of public transport which is to pave the way for a transition to electrically powered transportation - including electrically powered high-speed trains. In addition to this, LO will make efforts to bring about a significant price reduction in public transport prices as an encouragement for a transition from individual to public transportation.

■ LO will launch in-house initiatives that are to lead to the fulfillment of the aim to become CO₂ neutral before 2011.

At the international level:

■ In cooperation with the international trade union movement, LO will seek to obtain an increase in environmental aid for the developing countries in the coming years and to ensure that there will be a transfer of new technologies to contribute to increased growth on a sustainable foundation.

■ LO supports the IPCC's recommendations on a reduction of CO₂ emissions of 25-40% by 2020 and 50-80% by 2050.

■ LO suggests that Denmark establishes a pool amounting to 0.5% of the GNP for climate aid.

■ In cooperation with the international trade union movement, LO will seek to obtain a fair transition for a production with a lower emission of greenhouse gases. It is therefore suggested that an international fund for education and social initiatives be established in accordance with the UN's climate convention.

The efforts to combat climate change

8

International regional and national regulation

Since the actors on the climate scene act at an international level, to a very high extent, it is obvious that efficient initiatives will emerge by means of an international agreement and are to be monitored at the international level. The replacement of the Kyoto protocol must be in place at the Climate Summit in Copenhagen in December 2009. There must be an international framework to ensure efficient efforts in an area that involves international players and cross-border pollution. An international agreement could help reduce the negative effects on competitiveness just as the introduction of reduction aims, taxes and duties will be reduced in the individual countries.

To the EU member states, agreements and regulations under the auspices of the EU will definitely have the greatest effect since the EU has great influence on all policy areas. This is particularly the case for energy policies including the liberalisation of the European electricity market and the trade with CO₂ quotas.

On 23 January 2008, the EU-Commission presented a proposal for a climate and energy policy. It contains a number of proposals for joint EU legislation. These common rules are to ensure that the EU member states reach the aim to reduce the emission of greenhouse gases by 20% compared to 1990 by 2020. At the same time, 20% of the EU's total energy consumption must come from sustainable energy. This is a new way of distributing the task because CO₂ quotas will be distributed to industrial sectors instead of countries. This is to provide fair and equal competition conditions among the EU member states. This legislation package

will move the CO₂ control of the EU member states' electricity and heat production plants as well as the energy-intensive industries to the EU-Commission which will define the individual company quotas until 2020. 380 Danish companies are covered by the EU's emission trading scheme. The areas that are not covered by the scheme must follow national targets stipulated by the EU. As for Denmark, the aim is to reach a reduction of 20% in comparison to 2005. This means that half of the Danish energy consumption will be regulated by the EU and the other half at the national level.

Action is also needed at the national level. The Danish energy agreement from 2008 is an example of this.

However, it is necessary to have a more long term and ambitious Danish climate strategy. Denmark should be a pioneer country when it comes to climate policy and it should set an example of how economic growth and social development to protect the climate and the environment can go hand in hand. As earlier mentioned, approx. half of the Danish energy consumption will be controlled by the EU. However, areas such as agriculture and transportation are not covered by the emission trading scheme or legislation and the administration of these areas remain the Danish politicians' responsibility.

In order to obtain a considerable reduction in greenhouse gas emission, there are a long line of initiatives that can be put into use. This can be done both in the form of a further development of public transportation, investments and support for renewable energy methods, support for energy reduction schemes as well as taxes and duties. It is necessary to analyse the actions that have the best effect in the different

areas. In every case, it is necessary to take into consideration the social consequences in order to ensure a fair transition to a society with lower CO₂ emission. The emphasis should be placed on a broad range of initiatives and incentives and ensure that the different initiatives complement one another in order to avoid inconvenient overlapping. It is important that taxes and duties that are intended to regulate behaviour in connection with the emission of greenhouse gases do not bring about unintentional distributive consequences. Environmental, energy taxes and duties generally have negative social consequences and tax reform by which energy taxes and duties are financed by a reduction in income taxes should be organised so that the distributive effects are taken into consideration.

Means such as emission trading schemes and duties are to be combined with investments into research and development of the transport sector, renewable energy and energy friendly housing.

The UN track

Climate change, greenhouse gases and global warming is no new agenda. As early as in the 1970s, the international society became aware of climate change. However, it was only in 1988 that the UN set up a specific climate panel, the IPCC. The panel issued its first report in 1990. This report established that the earth's temperature was on the rise and that CO₂ was the main cause of this development. In 1992, 189 UN member countries adopted and ratified the UN's climate convention (UNFCCC) to reduce the emission of greenhouse gases. However, it lacked any binding aims. The climate convention was

a predecessor to the Kyoto agreement. The IPCC's latest report from 2007 maintains that the globe's climate change is man-made and that the latest 12 years (1995-2006) have been the warmest since 1850. However, the development of increasing temperatures can be turned around after 2015 if immediate action is taken. The aim is now to reduce greenhouse gases with 80% by 2050.

The Kyoto track

With the negotiation of the Kyoto agreement in 1997, an international legally binding supplement to the UN's climate convention called the Kyoto protocol was set up. 144 countries adopted this protocol, including Denmark. It stipulates specified upper limits on the industrial countries' CO₂ emissions as well as limits on five other greenhouse gases. The Kyoto track is therefore characterised by binding obligations to reduce the emission of CO₂ whereas the UN track is a convention-based approach without binding obligations. In accordance with the Kyoto protocol, the industrialised countries – including Russia and a number of other Central and Eastern European countries – are under an obligation to reduce their total emissions of greenhouse gases from 2008-2012 by at least 5% compared to the level in 1990. Denmark has acceded to the Kyoto protocol and is, together with the other EU member states, under an obligation to reduce the EU's total emissions of greenhouse gases by 8% compared to the level in 1990. The EU member states have agreed on an internal distribution scale called "the distribution of burdens" according to which Denmark is to reduce its emissions with 21%. The Danish reduction target is one of the highest in the world.

Renewable energy

As part of the EU-Commission's proposal, national targets for renewable energy have been set. This means that, according to the EU, the Danish government is under the obligation to see to it that the Danish energy consumption is based on 30% renewable energy by 2020. Renewable energy is therefore an important element of the Danish energy agreement of 2008. Financial support for the development of new renewable energy forms should be provided until they are commercially sustainable. This is to ensure the necessary supply which may correspond to the demand that will presumably follow by making the use of fossil fuels more expensive. In order to ensure investments into renewable energy, it is important to have a stable framework and long-term political targets following political decisions.

Support schemes for renewable energy are also necessary in order to ensure new renewable energy forms' survival and ensure continued research and technological development. Finally, the regard for security of supply is an argument for supporting renewable energy. If you spread the energy on different sources such as solar power, water and wind, you become less vulnerable to lacking security of supply and politically unstable suppliers.

In order to ensure the same cost effectiveness in the area of renewable energy as in connection with emission trading schemes, LO supports the introduction of a certification scheme for renewable energy under the auspices of the EU. In addition to this, LO supports the building of a European market for trade with these certificates in order to ensure that the most efficient technologies for renewable energy are being

further developed and that the wind mills are placed where the effects and not the funding are highest, for example.

Emission trading scheme

The most important element of the EU's efforts to reach its reduction goals is a joint quota scheme for CO₂ emission permits. The Commission's proposal leans towards a more extensive emission trading scheme according to which the CO₂ emission permits are sold at auctions and are not awarded for free. LO agrees that the allocation of emission permits should eventually be transferred to auctioning and that it should take place so that energy effective companies are rewarded. It is, however, important to avoid losing climatic advances if the energy intensive industries are moved from one place to another without CO₂ regulation or with targets that are too low. The energy intensive industries must therefore be able to adapt to the situation, and therefore, LO believes that, in the short term, it will continue to be necessary and expedient to have the possibility to allocate emission permits for free. The permits allocated to the companies can be traded so that a company that cannot keep its emissions within the quota can buy extra permits from other companies that have not used their quotas. The idea underlying the emission trading scheme is that a scarcity of CO₂ permits in the EU will ensure that the price of the permits is so high that the companies will choose to invest in energy saving sources and renewable energy in order to keep the emissions low. Thereby, the CO₂ reduction will be implemented where it is cheapest. Another effective way of reducing the CO₂ emissions is to buy permits for destruction. Hereby, there will be a real reduction of the

total energy consumption within the EU. LO believes that the emission trading scheme should be monitored and regularly adjusted to ensure that it functions as intended.

Flexible mechanisms

According to the Kyoto protocol, it is possible for a country to live up to part of its national reduction obligations by supporting projects that result in a reduced CO₂ emission abroad. This can be done through the so-called “flexible mechanisms”. One of them is the Joint Implementation by which the countries that have committed to reducing their emission, invest in emission reduction projects in other countries with obligations in, for instance, the new EU member states. The other mechanism is the Clean Development Mechanism by which the investments are to take place in the countries without emission obligations – typically in the developing countries.

In Denmark, it is estimated that 3.5m tonnes, by which the CO₂-emission is to be reduced by every year, can be reached through the use of the flexible mechanisms. The flexible mechanisms are based on the idea that the essential aim is to reduce the CO₂ emissions and that it is not that important where on the globe this happens. At the same time, the flexible mechanisms contribute to transferring technology to the developing countries and that the largest developing countries become very dedicated to taking on their obligations. A ceiling on the extent of these projects has been set in the final Kyoto account and all projects are to be assessed by a UN body in order to be approved. The flexible mechanisms are a supplement to the efforts that are to be

implemented in the individual countries. The actual effects on the environment within the flexible mechanisms must be ensured. Furthermore, the observance of workers’ rights must be a requirement for the projects that are approved, and the social partners should be involved in the monitoring mechanisms.

Storage of CO₂ gases

Even though emission trade and subsidy schemes makes the share of renewable energy grow, coal will continue to be an essential source of energy for many years to come. Meanwhile, coal is the most polluting source of energy used. Research into possibilities of using clean coal technologies is necessary. In this connection, it is possible to reduce the emission of CO₂ in connection with the production and the use of energy. This may be done through the so-called CSS-technology (CCS stands for Carbon Capture and Storage) which makes it possible to segregate and carry out underground storage of CO₂. It is assessed that a power station using the CCS technology can reduce its CO₂ emission by 80-90%. At the same time, however, it is assessed that the CCS technology uses 25% more energy for the production of the final energy product and that the technology may increase the ultimate energy prices considerably.

The UN’s climate panel estimates that there is a technically realisable storage capacity corresponding to approximately 75 years of global emission at the present level. Many energy companies in the EU and the US have started testing and developing this technology. If it turns out to be applicable, the use of CCS must be a requirement for all new power stations based on coal and natural gas.

LO finds it necessary in order to reach the goal of reducing the CO₂ emissions, that research into clean coal technology be carried out. Among other things, clean coal technology may contribute to helping the developing countries reduce their CO₂ emission without affecting economic growth.

Bio energy

The use of biomass fuel for combined electric and heat production is not generally competitive on ordinary market terms. However, there has been a political wish to use bio resources – i.e. waste products such as straw, wood and manure (biogas) with a view to increasing security of supply, environment protection and employment. Biomass has gained a considerable place in energy supply. This has taken place through aid schemes in the form of exemption from taxes on commodities, higher settling prices, etc. At the same time, the high oil and gas prices mean that the burning of biomass for electricity and heat production contribute to better profitability.

The use of biomass for combined heat and power will, to a greater extent, contribute to the reduction of greenhouse gases if it is used for transportation. The economics of incineration and gasification of biomass is partly conditioned by the fuel prices, initial expenditure and turnover efficiency and partly by the efficient span of operation. Research into and development of the bio energy field is being carried out, in particular the incineration and gasification of biomass for combined electricity and heat production, the manufacture of biogas and the manufacture of liquid bio fuels such as biopetrol and biodiesel. As for biogas, the manufacture ought to take place on the basis

of manure from domestic animals as it provides the greatest reduction in the emission of greenhouse gases. The advantage of this form of energy is that it also edges out fossil fuels, contributes to reducing methane emissions from liquid manure warehouses, reduces laughing gas discharge when delivering liquid manure and, furthermore, gives better nitrogen exploitation. In addition to this, the manufacture of biogas from manure from domestic animals does not have a negative effect on the use of farm land or crops.

Several different analyses of the exploitation of farm lands and crops for energy production show that biogas produced on maize, as well as heat and power produced on the basis of willow not only provides the greatest reduction of greenhouse gases but also the greatest cost-saving on fossil fuels which is why this type of use has an environmentally positive effect. Denmark must contribute to the EU's binding aims to base 10% of its energy consumption on biofuels by 2020. LO agrees that bioenergy must be included as an initiative that must be used in the efforts against climate change and that biomass used for energy production must be part of this goal.

LO is aware of the negative influence on food prices and food production which the increased demand for biofuel has contributed to. It is necessary to ensure that biofuel is not produced at the expense of food production. LO therefore believes that biofuel must be manufactured on the basis of biomass waste and that the sustainability of the entire production chain must be ensured.

Efforts should be made to establish an international certification of bio fuels which, in addition to environmental regards, also includes health and safety at work and wor-

kers' rights. On this basis, in future, considerably more research into the development of 2nd generation bio fuels on a sustainable basis must be carried out. Examples of these bio fuels could be the extraction of bio fuels from manure, dead animals, fat and other waste products.

Denmark's climate and energy history

Denmark's first energy strategy was launched in 1976 as a consequence of the oil crisis and the next major energy plan was made in 1981. The aim was that, in addition to the security of supply, greater emphasis should be put on social economic and environmental concerns. "Energy 2000 – Action plan for sustainable development" was launched in 1990 as a follow-up to the Brundtland Commission's report, "Our common future", which was published by the UN in 1987. Here, environmental concerns had the same status as the security of supply and socio economics. A novelty was that targets were set for the emission of CO₂. In 2005, the emissions were to be reduced by 20% compared to 1988. However, the emissions were only reduced by 15%. At the same time, gross energy consumption was only reduced by 4%. Energy 21 was introduced in 1996 as a continuation of the targets of the preceding energy plan.

In February 2000, the Danish government published its climate strategy which sets the framework for the Danish climate efforts until 2012. The strategy emphasizes that Denmark must live up to the international climate goals in accordance with the Kyoto protocol as well as the following EU agreement on the distribution of burdens. The government has recently, in cooperation with all the parties of the

Danish Parliament, with the exception of **Enhedslisten (The redgreen Alliance)**, concluded a new energy agreement on **21 February 2008**. This agreement ensures better conditions for increasing the production of wind mills and sustainable energy such as biomass and biogas. In 2011, sustainable energy must constitute 20% of Denmark's energy production and by 2020, energy consumption must have been reduced by 4% compared to 2006. In accordance with the EU-Commission's climate and energy strategy as of 10 January 2007, Denmark has obligated itself for a 20% reduction of CO₂ emissions before 2020 (compared to the level in 1990). The strategy also states that 20% of the EU's energy consumption must come from sustainable energy by 2020.

Transportation

Transportation is a major source of pollution resulting in global warming, and the emissions from the transport sector are rising considerably. If major contributions are to be carried out to reverse climate change, we need to find efficient ways of reducing CO₂ emission in the transport sector. According to the UN's Climate Panel, it is especially in road transport and air transport energy consumption is expected to rise until 2050. The greatest increase in emissions within the transport sector is expected to come from the US, China and India. This means that, in order to obtain major effects, it is necessary to aim for the conclusion of international agreements, the development of electrically powered transport etc. However, even though the increase in emissions from other countries means that the European share of the total energy consumption for transport will drop, it is

still so extensive that action must be taken at the international level.

The transport sector is not included by an international quota system. Measures applying to road transport and railroad transport must therefore be carried out at the national level. The reduction commitments of the Kyoto protocol do not include air traffic and sea carriage. A way to include emissions from international aviation and sea carriage should be included in the successor to the Kyoto protocol. The alternative will be that these lines of business choose to set up binding rules on the reduction of their CO₂ emissions. Agreements on rules and limitations for emissions in international sea carriage must necessarily be global in order to avoid problems with reflagging. It is difficult to change practices in the transport sector if there are no sufficiently motivating alternatives making it attractive to change from using individual means of transportation into collective ones. LO finds that the crucial efforts to be made in connection with traffic are to be introduced by means of the further development and modernisation of public transport combined with a considerable reduction in ticket prices. In addition to this, it is necessary to strengthen research which will pave the way for a transition to electrically powered transportation - including electrically powered high-speed trains. System solutions should also be considered in connection with the reduction of traffic on the road network.

LO also believes that initiatives in transportation must be implemented in a way which maintains mobility and flexibility in the labour market.

Fuel taxes do not cause distribution problems since the biggest and most fuel con-

suming cars will be taxed more than others. Taxes are an efficient tool for limiting the rise that would otherwise be the consequence of increased economic prosperity. When people get wealthier, they will travel by car more often. Heavy demands should be made for the policies that are led if energy consumption is to remain at the same level as today. In connection with the efforts to reduce the transport sector's CO₂ emissions, it will be necessary to assess all instruments available. It will therefore be natural to analyse the effects of an introduction of roadpricing and congestion charging.

Furthermore, initiatives such as higher fuel prices, environmentally friendly and efficient public transportation, electrically powered transportation and road pricing can be combined with a fixed registration tax on the various car models so that it depends on the environmental resources that are used to produce the model, etc. Under the auspices of the EU, there are debates on the production of less polluting cars. The motor industries of the individual countries have failed to live up to the voluntary agreements that have been concluded, and seemingly, binding aims and regulations are the only ways to increase the production of more environmentally friendly cars.

The Construction Industry

The construction industry is responsible for 40% of the total energy consumption. The energy consumption that stems from new constructions can be divided into three areas. The first and mostly unexplored area is the building process in itself. The second area is operations - and this is where the main part of the energy consumption is

found. The third area is building materials and energy supply. Today, there is already great focus on the development of new building materials and many players on the market are interested in and carry out research into energy efficient building materials.

The operation of construction projects is very centred on consumer behaviour, and at the moment, there is a special focus on electricity consumption in households. It is therefore necessary to inform the users – whether they be individuals or companies – on how to use energy efficient technology. When using technology such as energy efficient windows, solar cells, rain water tanks etc, we can come a long way in terms of energy efficiency. In future, we might see wind turbines that turn with the sun on the roofs of high-rise buildings. Such high-tech solutions are exciting and innovative and will reduce energy consumption considerably.

The technological development is exemplified with the experiment with a new, intelligent development house which can be ready for the climate summit in Copenhagen in December 2009. It is the Technological Institute which has initiated the setting up of a multiflexible development and demonstration building project which is to be ready before the climate summit. The high tech construction is intended to place Denmark at the forefront when it comes to innovative and energy-efficient solutions for households. At the same time, company sales prospects on the growing national and international markets should be based on both energy efficient products and constructions. Until these solutions have been tested and commercialised, the low tech possibilities that already exist, and which may be cost-free, could also be used.

There are possibilities in considering weather conditions and locations of the constructions from the outset of the project. There is thus great focus on energy efficient building materials and organisation of new development projects. The outlook is different when it comes to energy efficient renovation of the existing buildings. Since a great number of buildings are owned by the public sector, the state and the local authorities ought to lead the way with a good example when it comes to energy efficient renovation initiatives.

Energy conservation is also profitable for companies. In addition to this, companies would be advantaged by having a company profile that includes a good indoor climate and a green profile in order to attract and retain qualified labour. Companies are starting to brand themselves in this way.

Challenges and opportunities

16

The new climate agenda has started a political process and launched a technological development. However, there is still a need for LO and its affiliated unions to create an eco-friendly society. However, this chapter attempts to describe the potential challenges and opportunities for the trade union movement in the climate efforts.

The broad framework

The environment, energy and the society's economy - all of them are intertwined. However, the main issue is whether action is ensured and what to prioritise. The current climate change will provoke a more unstable environment in the form of more extreme weather conditions, droughts, flooding, rising sea water levels, melting glaciers, changes in bio-diversity and increased spreading of life threatening diseases.

The temperatures have already increased by almost one degree during the past ten years and the water level has increased dramatically. This has been particularly on the rise during the past ten years. The water level has increased by 1 centimetre a year during the past three years. This is nothing, however, compared to the rise that will follow if this development is not stopped. If this is not the case, temperatures will rise by five degrees and the water level will rise by five metres during the next 100 years. These conditions will change nature as we know it, and they will have an impact on the way we live. Many areas will become uninhabitable, thereby making population groups flee from their homes. Other areas which previously consisted of fertile farm land will no longer be usable for the future production of foodstuffs. At the same time,

other areas will be ravaged by storms, hurricanes, cyclones and other natural disasters to a never before seen extent.

Climate change in itself will therefore - if no action is taken - create increased poverty and political instability which will result in lower economic growth worldwide than would otherwise have taken place. A separation of purely environmental consequences, on the one hand, and economic and social consequences, on the other hand, would therefore, to some extent, be artificial. These factors are intertwined and both have an influence on each other. It is necessary to structure society and the economy in a way that limits climate change. This will also be to the advantage of the environment. And, fortunately, as mentioned in the introduction, it may initially be an advantage to carry out. From a socioeconomic point of view, it would be more costly not to act than to react quickly and in a targeted way.

Furthermore, there is also a connection between the world's different opportunities for ensuring future energy resources and what is needed to fight climate change. The use of fossil fuels - such as oil, coal and natural gas - constitute the primary source of the emission of the CO₂ which leads to climate change. However, these fossil fuels are also resources which will eventually be depleted globally. In the long term, we have a mutual interest in reducing CO₂ emissions, finding alternative sources of energy and to reduce worldwide energy consumption.

LO finds that there are no incompatibilities between the environmental, energy and socioeconomic priorities in connection with the struggle to stop climate change.

Even though things are interconnected, and even though there are fairly similar mer-

ging interests between countries globally, however, this is not in itself a guarantee for the solutions to occur automatically. Far from it. This is due to the fact that, in the short term, there are great differences between most countries and regions. This is not least the case if you look at the so-called sharing of burdens - i.e. who are to adapt the most and who are to be the first to do so. In the long term, however, different interests will continue to exist - both within and across borders.

Global issues – global solutions – What can a small country do?

Climate change constitutes a global problem with various local consequences. In some areas, these consequences will not be insurmountable, but in other areas, they will be much more difficult to handle. Every country should try to adapt to these consequences in the best possible way. However, the problem can only be solved if all countries join in cooperating on global solutions. Climate changes know no boundaries - not even if considerable reductions in greenhouse gases have been carried out, at the local or national level. One of the central challenges is therefore that no single or smaller group of countries can change climate change significantly. Actual changes will only be possible to implement if everyone cooperates to reach them. The world's richest countries are the ones that are responsible for the highest emissions of greenhouse gases per person and, all other things being equal, are also the ones that have the best opportunities for reducing their emissions. But even though they halved their emissions, it wouldn't do much good if the world's poorest countries just kept increasing their emissions. Even if

Europe completely eliminates its emissions, this would have no effect if the US doubled its emissions in future. This is why the UN's climate convention and the Kyoto protocol are global agreements and why efforts are made to make all countries accede to them. This is also why the two agreements are the most important instruments in the fight against climate change.

But what does it mean for a small country such as Denmark that is only responsible for a very small percentage of the total global emission of CO₂? Of course, Denmark has a responsibility for reducing its own emissions just as all other countries. However, the question is whether Denmark's most important contribution for the fight against climate change is to reduce our own emissions or to contribute to other countries that have much higher CO₂ emissions by helping them to reduce their emissions. This raises the next question - what importance could a Danish climate strategy have on the global climate issues? The solution of almost all collective problems require that someone takes the lead by showing how to contribute to solving the problem in question - more than what would be expected of them. When it comes to solving the problem of climate change, Denmark has unseen potential for setting exactly this good example.

Denmark is one of the leading countries in this field, both in terms of sustainable energy and energy efficiency. In addition to this, we are generally good at cooperating on the solution of social issues and, in future, we may therefore be expected to develop new solutions to the climate crisis and what may follow in its wake. Finally, Denmark has a tradition for showing solidarity with the world's poorest countries and we have a

well-developed system of development aid for these countries. Danish experiences may therefore be used to ensuring that the countries that have least resources for fighting climate change also make active efforts to reduce them.

LO finds that Denmark can participate far more actively in the struggle against climate change than our size and our share of the global emissions of greenhouse gases obligate us to do.

Economics – possibilities and risks

It is a fact that the advantages of a strong, early effort against climate change by far exceed the costs of not taking any action. If action is not taken now, the costs and the risks of climate change will correspond to a global loss of 5% of the total GNP (gross national product) every year -not just at this time, but for always. These risks and costs might even rise to 20% of the global GNP or more. Inversely, if action is taken, the costs - and a reduction of the emission of greenhouse gases - can be limited to approx. 1% of the world's annual GNP according to the Stern report.

LO believes that, in the long term, it would be cheaper and more optimal, seen from a socioeconomic point of view, to react to climate change now instead of letting matters take their own course or waiting to do something about it.

If no action is taken to combat climate change, the long term result will be a downturn in the total global economy, thus reducing the potential for creating good jobs and ensuring real wage rises and higher living standards. There are also a number of economic risks connected to the

struggle against climate change which are necessary to keep in mind. Not because these risks necessarily mean that we shall not act but because the economy must be considered in the preparation of the solutions with which we are to confront the climate change.

A sudden reduction in energy consumption may lead to considerably lower growth, than would otherwise have been the case unless it is also combined with energy efficiency. The introduction of high taxes or other measures which, in the long term, lead to a rise in the price of energy, may lead to rising inflation. If certain countries implement initiatives that are intended to reduce emissions of greenhouse gases, but not result in similar initiatives in other countries, this may lead to a loss of competitiveness for the ones that take the lead.

During the first six months of 2008, the world has experienced a so-called food crisis during which the prices of basic foodstuffs have exploded. There are a number of reasons for this crisis. One of them, which many believe to be the main reason, is also one of the tools that were intended to play a crucial role in the battle against climate change; the development of bio fuels. The past years' increase in the production of bio fuels in Europe and the US have contributed to increased food prices and have led to higher inflation, which has in turn led to problems for many population groups, especially in poor foodstuffs importing countries. This has also lessened many national banks' possibilities for lowering interest rates, which would otherwise be a normal reaction to the current financial crisis. These current examples show that even though certain measures have a positive effect on climate change, they can also

create disadvantages in a number of other areas – to such an extent that they are difficult to justify.

In addition to this, most solutions to climate change are accompanied by a number of distribution challenges. The fight against climate change may, amongst other things, lead to increased inequality – both in Denmark, in other countries and between rich and poor countries, respectively. Among other things, this is due to the way in which green taxes on important goods affect different population- and income groups. The reason for this is that the industries expected to decrease as a consequence of the fight against climate change – such as coal mining and other strongly polluting industries – are typically located in certain countries and regions. Finally, another issue is that not all countries have equal opportunities of skipping the traditional polluting and energy intensive industrialisation in their production. There is thus a marked risk of climate change leading to greater inequality.

LO believes that climate policy must be organized in a way which minimises the distributive consequences and does not lead to greater inequality in Denmark or in the rest of the world.

A new industrial revolution – a new export adventure for Denmark?

Climate change will lead to a change in paradigm for the economic and industrial development in the world. The globalisation of the economy already leads to a number of new phenomena such as global production, increased trade, financial integration, faster communication and new migration patterns. Together with these dif-

ferent kinds of globalisation, climate change will set the framework for the development of the economy, trade and production of the individual countries. The climate will change the preconditions of the international competition and it will change the established power balances and create new trade patterns. At the same time, demand or cleaner energy technology and energy efficient technologies will increase explosively. Some countries stand to win due to this while other will lose. Denmark is one of the countries that stand to win from it. So far, Denmark has created one of the world's most eco-friendly societies. We have succeeded in ensuring strong economic growth without increasing energy consumption. And as one of the first countries in the world, we have managed to create a real export success in renewable energy. We are the greatest exporter in the world in terms of wind energy – with a market share of 38.5% in 2005. In other words, Denmark has knowledge, experience, technology and innovation capacity which will be increasingly in demand and which might be one of the driving forces for the Danish economy in future.

Danish energy and eco-export include consultancy services, components, complete systems and services. Since 1996, the export growth rate within this field has been twice as high as the total share of Danish exports. The global challenges for the energy- and environment sector first and foremost consist of the development of better solutions in the area of sustainable energy supply and quality control of global water supplies. It has been assessed that Denmark continues to have good opportunities of contributing to this. In 2007, Danish exports of energy and eco-technology reached DKK 50bn. The demand for

new supply stable and eco-friendly energy technologies is quickly on the rise. There are therefore good opportunities for Danish companies to increase the export of energy- and eco-technology even more in the years to come. The International Energy Agency expects that, at the global level, almost DKK 4.000bn must be invested annually in the energy sector before 2030. Global investments into environment friendly energy technology alone are expected to rise by 75% during the next ten years so that they will reach approx. DKK 3,000bn a year.

LO finds that climate change will lead to changes in industrial structures and increased demand for alternative energy technologies from which Denmark will probably benefit.

However, Denmark cannot expect to reach further successes in the market for energy and eco-technology automatically. It is no longer a niche market on which small players can act without major competition. With the increased importance of this market, new competitors have already entered the market – and many of them have caught up with the technological head start enjoyed by Denmark and other countries. Competition has already increased and is expected to increase much more in future. This means that Denmark's leading position will be limited in time if we do not aim for ongoing further development. This requires whole hearted efforts to carry out more research, development and innovation. At the same time, it also requires thinking in the long term as well as ambitiously and persistently taking risks. However, it is also important that these efforts are carried out in the public and the private markets and that it succeeds in involving all relevant

resources – not least employees at the workplaces in question.

LO does not believe that Denmark could expect to maintain its leading position in energy and eco-technology if efforts are not made to aim for a total strategy with a high priority.

Research, development and innovation

Specific efforts in the fields of research and development have strongly contributed to ensure Denmark's position within energy and eco-technology. Had it not been for these efforts which have, to a high extent, been publicly financed, Danish companies would not have had as favourable opportunities as they've actually had. In 1990, when the Danish wind mill industry was going through a crisis, the development of bigger windmills and increased energy production, but at a lower price saved the industry. Today, it is assessed that equally strong networks of research and training universities cooperating on the development of wind power are only found in Denmark.

These networks coordinate the efforts of the research institutions, but also work to improve the cooperation between the research institutions and the industries. Furthermore, there are also specific research programmes and funds for research into wind power that are all assessed to play an important role in Danish research in this area. The main share of public research into wind power is distributed to ten different institutions at the universities in the country.

Danish wind power is an example of how public means can help ensure the development within specific industries. However, it is also clear that, in the long term, the

government cannot predict which technologies to focus on. It is therefore crucial to maintain a certain diversity in research policies so that there are opportunities in terms of the development of a number of different industries and technologies – which also leaves room for mistakes.

LO believes that publicly financed research should contribute to ensuring the development of the technologies that are part of the solution to stop climate change. Society will also have an economic interest in developing these industries in order for them to contribute to Danish exports, growth and employment.

The Danish fields of research within energy and eco-technology, which are mainly targeted at the current are bio fuels for transportation, the development of hydrogen and fuel cells, the development of wave energy, low energy constructions and wind power.

LO finds that if Denmark is to maintain its leading position within one or more energy and eco-technologies in future, adequate resources must be available for investments into research within a broad selection of technologies in these main areas.

The development of new technologies, however, is not only about research. It is just as much a question of innovation but also by using and testing the new technologies and developing the final, sellable products. Normally, far more players are involved in the innovation process compared to the traditional research process, and this is where the employees play an important role. Denmark has an obvious opportunity for taking a major innovation leap in finding future climate solutions. The world needs new coherent solutions just as much

as it needs new technologies for fighting climate change and Denmark might become the very epicentre for the development of the most advanced technologies in order to create new overall solutions. This is due to the fact that we possess a social capital which is rooted in our deep and institutionalised trust which means that we are good at establishing new cooperation partners in an attempt to involve all potential resources.

When it comes to the energy and eco-technology field, it has even turned out that there is great potential for employee-driven innovation. Here, different employee groups are involved actively in the innovation processes – including skilled and unskilled workers. These workers are often the ones to come up with new, groundbreaking innovative measures. There are many good examples of this at Vestas and at the Danish affiliates of Siemens Wind Power.

Promoting general energy efficiency is another important area in which the employees can make a difference in the innovation process. The development of tenable, energy efficient solutions involves all levels of a company's organisation. In this way, the employees can contribute with important knowledge on and proposals for how to develop energy and eco-friendly processes in a company. Experience also shows that the involvement of ordinary employees in the innovation efforts in the field of energy efficiency has shown good results. This has, among others, taken place in companies such as Carlsberg and the Copenhagen Zoo.

LO finds that Denmark has great potential for innovation. It is particularly by means of employee involvement that Denmark can strengthen its position and become a

leading force in the development and use of new climate technologies.

However, in order for employee-driven innovation to take place, the right framework conditions are essential. In this connection, two factors are particularly important: One is the management's efforts to create the right innovation culture and the other is the skills upgrading of the employees. The knowledge with which the employees are equipped must be used and this requires that the skills profile of the individual employee is strengthened so that the day-to-day work is centred around innovation.

LO finds that Danish companies are still stuck in a fairly traditional view on innovation. They therefore do not make full use of all resources - including their employees - in the innovation process. This can be a handicap, both when it comes to innovation in climate technologies as well as when it comes to reducing energy consumption at company level.

Employment – local losses, global gains

Climate change holds both challenges and potential for global employment. Millions of jobs will disappear as a consequence of climate change and what we do to limit it. This is a huge challenge for persons who hold these jobs today, as well as the countries and industries that are hit the hardest. Conversely, the global efforts to limit climate change will also create new business opportunities on the market for CO₂ neutral energy, alternative energy and environmental technologies. In addition to this, a new market for goods and services produced with a minimum consumption of energy

and thus a minimum emission of greenhouse gases will emerge. All in all, there is potential for creating millions of new jobs.

Most of the jobs that will emerge, however, will not be created in the same fields as the old jobs. Certain fields, countries and regions will not be very severely hit by these consequences. However, the Polish charcoal miner who loses his job as a consequence of climate change does not benefit much from the rise in employment in the Danish windmill industry. At the same time, there will be a tendency for new skills to be required in the emerging new jobs. This all means that there is a need to ensure a "fair transition period" so that the affected employees, countries and regions suffer as little as possible as a consequence of the changes that will take place. Such a transition period is intended to help the affected parties to readjust to a more sustainable future with a lower emission of greenhouse gases. If the most severe negative consequences are to be avoided, this will require different support programmes to ensure the acquirement of new skills among workers and new business opportunities in the local societies.

However, at the global level, it is assessed that a number of new so-called "green jobs" can emerge due to climate changes. This job creation will exceed the number of jobs that will be shed as a consequence of the changes that will take place. The UNFCC has assessed that, by 2030, an annual amount of DKK 1,000bn will be spent on the reduction of greenhouse gas emissions. In addition to this, the UNFCC assesses that, with an annual interval, approximately DKK 3,000bn will be spent on energy infrastructure. And finally, the UNFCC believes that the market for eco-products and servi-

ces might constitute DKK 10,000bn by 2020. Investments and demand of this calibre are very likely to increase the number of new jobs that emerge around the world.

The new environment organisation, UNEP, has estimated that, by 2030, 2.1m workplaces will be created in wind energy; 6.3m workplaces in solar energy and 1.2m workplaces in the fields of agriculture and industries related to bio fuels. This means a total of 20bn new jobs in the field of sustainable energy production. In addition to this, UNEP estimates that the work to develop more energy efficient constructions and housing units in the most exposed areas to become more robust when it comes to resisting negative effects of climate change will create millions of new jobs in the building & construction industry. Finally, the UNEP assesses that the changeover of the transport sector – for example the adjustment of private cars to public transport such as trains and busses – will also have a positive net effect on employment. This is due to the fact that the production of eco-friendly means of transportation is often more work intensive than the traditional ones.

LO believes that the adjustment to and the fight against climate change may create millions of new green jobs. They will certainly exceed the number of jobs that will be shed because of the climate policies.

Environmental technology with job potential

Naturally, the efforts to create a cleaner environment will cost society resources which will thus cause a loss of workplaces. However, the efforts will also bring about greater opportunities for developing new technology and new production, thereby

creating new workplaces. During the past decades, Denmark has enjoyed an important expansion of the windmill industry (cf. the figure on facts on the Danish wind adventure). This is an unequivocal example of how the development of new technologies can create new workplaces. (UNEP, “Background Paper on Green Jobs”, 2008)

The Danish wind power adventure

The Danish windmill industry has experienced explosive growth. Turnover has increased in spite of the fact that no new windmill systems have been set up in Denmark during the past few years. While this development in Denmark has come to a standstill, there has been considerable growth in the global development. This constitutes part of the explanation why the Danish windmill industry has not been hit so severely by the government's lower prioritisation of wind energy in Denmark. When more windmills are not being set up in Denmark, this has the effect that the total share of wind energy is reduced – compared to the total energy consumption. At the global level, the total windmill capacity, however, has risen markedly from 1997 to 2007. In spite of the fact that jobs in the industrial sector in Denmark have decreased by 16%, employment in the energy sector has increased by 21% in total in 2006 – approximately 39,500 persons. However, this number is not quite as high as when it peaked in 2002. That year, approximately 42,400 persons were employed in the energy industry. Approximately 10% of Danish employees are currently employed in the energy industry. And within this industry, approximately 19% are employed in the windmill industry. Before 2003, employment in windmill production com-

panies was on the rise, but in the years to follow, this development came to a halt as the setting up of new windmills was stopped.

Even though the expression “eco-technology” is used in many contexts, there is no precise definition of this concept. In this paper, we use this term which is applied by the Danish Energy Agency. It distinguishes between equipment used in the energy industry (windmills for example) and the energy equipment of its users (such as insulation). Eco-technology is defined as both production technology and equipment for the energy industry on the one hand, and energy efficient technology and equipment for households on the other hand. This distinction applies regardless on whether it is eco-technology used in the windmill industry or the manufacture of engines, generators etc. In 2006, approximately 40,000 persons were employed in industries producing eco-technology. This sector employed 1.4% of the total workforce and 10% of the workers in this industry.

The industries producing eco-technology are characterized by considerable job growth - contrary to the rest of the industry in which more and more jobs are being shed. From 1994 and until 2005, employment rose in industries that produced eco-technology by 21% - 6,900 persons - compared to employment in the total industrial sector which fell by 16%. By aiming for eco-friendly energy production, it has been possible to avoid some of the negative effects on the Danish industrial production as a consequence of globalisation and outsourcing. Skilled and unskilled workers are primarily the ones who are employed in the eco-technology industry. Almost half of these workers are skilled workers and more than one in four is unskilled. This means

that a relatively high number of the employees in these companies are unionised in one of LO's affiliated unions. Today, more than 60% of these employees are members of one of the unemployment funds of LO's affiliated unions. Aiming for eco-technology has therefore, to a high extent, benefitted both skilled and unskilled workers.

Employment development and requirements for education

It can be expected that the efforts to increase the production of eco-friendly technology will be intensified in the years to come. This will have the effect that the lines of business where production is targeted on eco-technology will have the opportunity to increase earnings and employment. It is difficult to calculate the potential of these industries when it comes to future employment. The below analysis takes its point of departure in the historical development and it examines its importance in terms of the demand for trained workers in future.

If we assume that, in future, employment increase with the same speed as the historical development, employment in lines of business producing eco-technology will grow by 7,100 persons during the next ten years. Historically, it can be ascertained that there has been less and less demand for unskilled workers in the affected industries, and at the same time, the demand for skilled workers has increased. If this tendency continues, the number of unskilled workers will drop by 1,300 persons while the demand for skilled workers will rise by 4,700 persons. If it is to be ensured that Denmark takes the lead in the development of sustainable energy technology etc, thus

maintaining high employment rate, it is important that investments into continuing training of employees are given a high priority. The development of this sector and the rest of the economy increasingly require workers that are well-trained. It is therefore particularly important that a greater share of the young generation receives professional training.

LO believes that industries' necessary changes to adapt to eco-technology production require more focus on training and continuing training.

Reduction of emissions versus ensuring energy supplies

Climate change can only be reduced if the world reduces its total emission of greenhouse gases - not least CO₂. This can generally be done in two ways: By reducing global consumption of energy and by ensuring that the energy used does not involve the emission of greenhouse gases. Most forms of sustainable energy do not increase CO₂ emissions. However, the reduction of energy consumption and aiming for energy consumption based on sustainable energy forms cannot be evaluated without also estimating whether we actually have the energy which is necessary for our societies and economies to function. Security of supply is therefore a factor that must be taken into consideration when discussing climate and energy.

By far the greatest share of the world's energy consumption still comes from fossil fuels such as oil, natural gas and coal. In the long term, they will be depleted and alternatives will be required. The limited amount of fossil fuels has already made prices explode during the past few years. Once

again, oil prices have been record high and it is no longer considered as unlikely that oil prices will rise to USD 200 a barrel. This could in itself provoke energy crises in different parts of the world but it would also increase the need for developing alternative sources of energy in countries like Denmark. In addition to this, the dependency on foreign oil and gas reserves will have the effect that many countries' energy supplies will need to be provided by unstable political regimes - from Russia and Venezuela to major regions in the Middle East. This, in itself, involves considerable risks.

The development of alternative, sustainable sources of energy is therefore a crucial instrument for reducing climate change. At the same time, the development of sustainable energy will contribute to reducing the dependence on oil, gas and coal as well as reducing the vulnerability of depending on unstable regimes, in particular. There is a close interconnection between these conditions.

And it is therefore a potential win-win situation from which we will all be able to gain something by aiming at alternative energy. The big issue, however, is whether it is possible to produce and find sufficient new sources of energy in time securing the supply of energy once fossil fuel reserves are depleted or whether the dependence on the current oil- and gas producing nations will entail unacceptable political decisions.

Today, 85% of Denmark's energy consumption depends on fossil fuels that are not renewable. The aim is that, in the long term, Denmark is to be completely independent of fossil fuels and, in stead, solely use sustainable energy. It is estimated that Denmark has a solid point of departure for

ensuring the future energy supply and for meeting the challenges in this connection. This is because we have much experience in developing and using new and efficient energy technologies. However, another independent aim is not to increase the total energy consumption. And Denmark has generally done so since the first oil crisis in 1973.

Our total energy consumption has not increased since the 1970s in spite of the fact that our economy has expanded by more than 100%. This is an achievement in itself which is only matched globally by Switzerland and Japan. This has had the effect that, today, the Danish economy is far less vulnerable than other countries when it comes to unstable energy prices. This is an achievement which indicates that Denmark is well-equipped, not just to avoid an increase in our energy consumption, but also to even reduce it.

LO finds that Denmark has good opportunities for ensuring its supply of energy and meanwhile also to reduce its emission of greenhouse gases by continuously increasing the share of sustainable energy production and by reducing the total energy consumption.

Alternative sources of energy

As earlier mentioned, sustainable energy already covers 15% of Denmark's total energy consumption. With the latest energy agreement, 20% of the energy consumption must come from sustainable energy by 2011. In addition to this, and as part of the EU-cooperation, Denmark has accepted and aim to base approximately 30% of its energy consumption on sustainable energy by 2020 (the final obligation in percent has,

however, not been set). Bio fuels are also included as part of Denmark's consumption of renewable energy. Here, Denmark follows the EU's targets and aims for bio fuels to constitute 5.75% of its fuel consumption in agriculture by 2010 and 10% by 2020.

LO finds that the Danish targets for alternative energy sources should be more ambitious. If a reduction of fossil fuels is not sped up, Denmark will only be independent of these fuels by approximately 2075.

The Danish sources of sustainable energy mainly come from wind energy and bio mass. In addition to this, we produce electricity and heating from waste – a resource that would otherwise be put to waste. Wind power technology is a very central element of the current supply of sustainable energy and this technology is still being developed further. Wind energy is estimated to constitute the most considerable source of energy in future. It is also estimated that all the technologies we know and implement in energy production today can be improved even more – and that new ones may also be developed. In connection with the research and development of sustainable energy, it is therefore not immediately sufficient just to aim for individual technologies as sources of energy.

Nevertheless, Danish experiences show that it takes public coordination to ensure adequate production of sustainable energy and that, in this way, the share of sustainable energy will be increased. Changing governments have also supported the production of sustainable energy, both in the shape of direct subsidies or by means of taxes on other energy sources.

Energy efficiency

At the global level, the challenge is obvious: Energy consumption is on the rise as a consequence of economic growth and development. The problem is that the type of energy which is primarily used is not renewable and that the increased energy consumption constitute the primary causes of climate change. Even though the developing countries increased their energy efficiency, they would probably still experience a rise in energy consumption – with all the downsides this entails.

As earlier mentioned, the situation is different in Denmark. We have even succeeded in stabilising our energy consumption and are expected to keep it at the same level – and perhaps even reduce it – also during the coming 20 years. With the new energy agreement, it was thus agreed that, from 2010-2020, annual implementations of specific energy reductions of the final energy consumption must constitute 1.5% of the final energy consumption by 2006. This corresponds to the energy consumption of approximately 110,000 households. Compared to the development that would take place without these energy saving efforts, it means a reduction of the total energy consumption in 2020 by approximately 15%.

A considerable share of the energy saved must come from an increase in the total energy saving obligations of the energy producing companies. In addition to this, it is necessary to aim for campaigns to save energy in households and companies. The underlying idea is that households and companies should be encouraged to invest in energy saving measures and that the expenses of doing so would be evened out by lower energy consumption. Denmark is

the least energy intensive country in the EU, and generally has a more ambitious goal for saving energy than the EU as such. However, the question is whether Denmark should aim for an even greater reduction in energy consumption than the country has so far committed to?

Solidarity with the developing countries

28

Environmental aid

According to the UN climate panel's fourth report, the developing countries will carry the heaviest burdens as a consequence of climate change. Africa is the continent that will suffer the greatest consequences in the form of drought and flooding in spite of the fact that this continent only accounts for 3% of the global emission of greenhouse gases. In cooperation with the international trade union movement, LO has a responsibility both to help the poorest countries that have major problems with securing adequate energy supplies and reduce their vulnerability and to assist the developing and middle-income countries that need to solve climate problems. Climatic considerations have been incorporated into development aid, and there are earmarked funds for "climate aid". These initiatives are positive but not sufficient to contribute effectively to solving the enormous problems ahead. The present development aid is not enough to cover the extra needs that arise as a consequence of climate issues, just as the current poverty criteria are not adequate in this context. Efforts should therefore be made to establish a special fund amounting to 0.5% of the GNP for climate/environmental aid in addition to the means that the developing countries are expected to spend in order to reach the UN's development goals (the Millennium Development Goals).

Workers in developing countries

The developing countries carry the heaviest burdens brought on by climate change – and workers in developing countries will carry greater burdens than workers in the industrialised countries. This is due to the direct climate change but also due to a grea-

ter vulnerability to readjustments of production and infrastructure. LO will make efforts to ensure that assessments of the consequences on employment are included on line with other social conditions when the necessary initiatives in support of readjustment are discussed. A fair adjustment which also takes into account the need for continuing education and skills upgrading of the workforce, for example, must be ensured in all aspects of a new climate agreement.

The countries that are in need of help in the form of development- and climate aid often experience problems with the observation of workers' rights. These countries are often states with weak public institutions and workers' rights is therefore an area which rarely receives much attention from anyone outside the trade union movement. In order to ensure social sustainability of the projects and initiatives that are launched in the developing countries to ensure a cleaner environment, this area should therefore be highlighted. Observation of the fundamental workers' rights must therefore constitute one of the criteria for the approval of a project for support as part of climate aid.

Adaptation funds and technology transfer

Denmark and other industrialized countries are well equipped to make the necessary adaptations to the climate change. The developing countries, however, are faced with the most severe consequences of climate change. It is therefore necessary to transfer means for adaptation as well as ensuring technology transfer. In 2004, at the climate conference in Marrakesh, an adaptation fund under the Kyoto protocol

was established. The aim of the fund is to support the adaptation of projects in particularly vulnerable developing countries. The fund is financed by a 2% duty on all CDM credits (see the section on flexible mechanisms, page 11). At the climate summit in Bali in 2007, agreement was finally reached on how to manage the funds which are important for the efforts to reach a global climate agreement.

Technology transfer is also a precondition for making the middle income countries take on the necessary reduction obligations. This is to take place in accordance with the principle that we have a joint responsibility and that everyone must contribute to solving the problems. However, the richest countries must take on the most extensive obligations since it is easiest for them to carry the heaviest burdens but they must also take the main responsibility for causing the climate problems.

A fund established by the World Bank provides loans for the development of new technologies and technology transfer to the developing countries as well establishing the framework for technology development and adaptation measures. The fund is financed by the US, Great Britain and the World Bank but is too recently established to assess its impact. It is crucial to remember that the funds are additional funds to the existing development aid and not just redeployed funds. It is indeed important that the developing countries' influence is ensured.

We can do it – but we must be determined to succeed

30

In the long term, there are not necessarily any incompatibilities between the environmental, energy and economic priorities in the fight against climate change – neither in Denmark nor the rest of the world. The right efforts to combat climate change will contribute to ensuring a rich environment, a healthy economy with quantitative and qualitative high employment rates as well as a stable, multilateral energy supply. It is therefore essential to work with the right and holistic policies that mutually support all three areas.

At the same time, and especially in the short term, however, there will also be specific costs incurred in all three areas. This is not least true for employment in certain sectors and regions. It is therefore crucial that the efforts to combat climate change are carried out in a way that limits the negative consequences as much as possible, particularly in the form of employment policies and support programmes that ensure a “fair transition” for the most vulnerable parties.

However, positive change seldom comes about automatically. This is also the case in connection with climate change. A whole-hearted effort is needed – both at the national and the global level. There is no time to rest on the laurels. Without the opportunities provided by the fight against climate change, they will quickly be overshadowed by the challenges that they also bring with them. It is not accidental that climate change is considered to be the greatest global challenge today. And handling it the right way will therefore require major global efforts.



LO, The Danish Confederation Of Trade Unions
Islands Brygge 32D
DK 2300 Copenhagen S
Phone +45 3524 6000
www.lo.dk

The new climate agenda
LO's climate and energy strategy
By the Danish Confederation of Trade Unions, LO

Print: LO
November 2008

LO-itemno. 4708
ISBN: 978-87-7735-910-1
ISBN-online: 978-87-7735-911-8