CLIMATE POLICY IN THE PEOPLE'S REPUBLIC OF CHINA – GROUNDWORK FOR SUSTAINABLE GROWTH?

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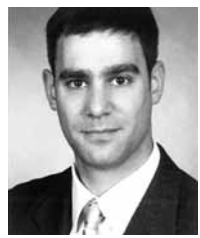

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China is often characterised in the media as being the "spoilers" during international climate talks. Western politicians are often trying to blame Beijing for the lack of progress on climate change. It's true that China is the biggest producer of greenhouse gases and up to now has not been prepared to accept binding targets for reducing emissions. But it is not always sufficiently recognised in the international debate that China is actually pursuing an ambitious climate policy on a domestic level. China has invested billions in the promotion of alternative energy sources and in increasing energy efficiency and it has already seen some significant results. Instead of using China as its scapegoat, the West should rather offer more support in terms of advice and technology transfers in order to help China shift its economy towards a model which is more sustainable and resource-efficient.

FACTS AND FORECASTS

China is one of the countries which is most affected by climate change. According to estimates, the average temperature rise by 2020 compared to the period 1961 to 1990 could be 1.1 to 2 degrees. Serious consequences of this include droughts and reduced rainfall in Northern China, while Southern China will suffer more flooding due to increased rainfall. This in turn could lead to a serious decline in food production. A decline of five to ten per cent is forecast for the period to 2030, with the second half of the century seeing an estimated 37 per cent drop in the

production of rice, maize and wheat unless something is done to prevent it.[1] Every year the lives of 200 to 400 million Chinese people are already affected by extreme weather events, and around ten million farmers are falling below the poverty line as a result.[2]

The glaciers on the Qinghai plateau are continuing to melt and the permafrost in Tibet is becoming ever-thinner. Glaciers in China have already retreated by 21 per cent and the permafrost has become four or five metres thinner over the last 50 years. This has the short-term effect of increasing the likelihood of flooding and in the long-term could lead to a shortage of water resources. Rising sea levels mean coastal regions in China, including Shanghai and the Yangtse Delta, are threatened by flooding. And it is feared that several species of animals and plants will become extinct, to the detriment of biodiversity.[3]

China bears an increasingly high responsibility for global climate change because of its rapid economic growth which has until now been largely based on energy-intensive production methods. It is estimated that China has been the biggest producer of CO_2 emissions since 2007 and is responsible for 48.5 per cent of the worldwide increase in emissions between 1990 and 2007.[4] It is particularly difficult for China to reduce its greenhouse gas emissions because of its reliance on coal as its primary energy source (over 70 per cent). In 2008 China was responsible for 19 per cent of global CO_2 emissions, and this share is expected to reach 27 per cent by 2030. So it is crucial that Beijing plays an active role if the global temperature rise is to be limited to less than two degrees compared

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1 | Cf. Lin Erda et al., *Synopsis of China National Climate Change Assessment Report (II) – Climate Change Impacts and Adaptation*, 2007, 4, http://law.berkeley.edu/centers/envirolaw/capandtrade/Lin%20Erda%202-5-07.pdf (accessed January 4, 2010).

2 | Cf. Thomas Heberer and Anja D. Senz, *Regionalexpertise – Destabilisierungs- und Konfliktpotential prognostizierter Umweltveränderungen in China bis 2020/2050*, 2007, 3-4.

3 | Cf. NDRC, *China's National Climate Change Programme*, 2007, 17.

4 | Cf. Andreas Oberheitmann and Eva Sternfeld, "Climate Change in China – The Development of China's Climate Policy and its Integration into a new Post-Kyoto Climate Regime," *Journal of Current Chinese Affairs*, 3/2009, 137.

to the pre-industrial era. The International Panel on Climate Change (IPCC) has calculated this figure as being necessary to keep the consequences of climate change at a manageable level.[5]

As far as per-capita emissions levels are concerned, China is still well behind the USA and Europe, which is why Beijing has spoken out at international climate talks against absolute and binding reduction targets. China's argument is that the developed countries have to bear a historic responsibility for the greenhouse effect and so should be obliged to set ambitious reduction targets. Beijing has invoked the principle of "common but different responsibility" which was stipulated in the United Nations Framework Convention on Climate Change (UNFCCC). China signed the Kyoto Protocol in 1998 and ratified it in 2002 but belongs to the Annex II countries which are not obliged to reduce their emissions. China was in fact able to benefit from the Kyoto Protocol, as it gave Annex I countries the opportunity to improve their own carbon footprint through CO_2 reduction projects in Annex II countries in the framework of Clean Development Mechanisms (CDM). By 2008 more than 1,500 CDM actions had been approved in China, and with a share of 34 per cent it is by far the most important location for these kinds of projects.[6] During negotiations on a successor agreement to Kyoto, which expires in 2012, Beijing has been keen to extend the Protocol without any change to the system which differentiates between Annex I countries which have to abide by binding targets and emerging and developing countries that can at most – if they wish – set voluntary goals. In China's position papers sent to the UNFCCC Secretariat in February and May 2009 it requested the industrialised countries to reduce their carbon emissions by 40 per cent by 2020 as compared to 1990 levels and suggested they should contribute 0.5 to one per cent of their GDP to help developing countries adapt to climate change.[7]

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5 | Cf. Cheng Qian, *Ein Portrait der Klimapolitik Chinas*, Germanwatch Positionspapier, 2009, 4.
6 | Cf. Oberheitmann and Sternfeld, n. 4, 139-140.
7 | Cf. Gudrun Wacker, "Caught in the Middle: China's Crucial but Ambivalent Role in the International Climate Negotiations," in: Susanna Dröge, *International Climate Policy – Priorities of Key Negotiating Partners*, SWP, 2010, 60.

China has already sets its own targets for the reduction of CO_2 emissions. In November 2009 its government announced that it would reduce CO_2 levels by 40 to 45 per cent by 2020 compared to 1990. This target was also recorded in the Copenhagen Accord of January 2010. At the climate conference in Cancún in December 2010, China even hinted that it might allow international monitoring of its carbon emissions.[8] These are the first signs that China is ready to play a more active role in international climate protection. Other positive signs are the growing numbers of delegates sent to take part in international climate talks and the fact that in October 2010 China hosted its first UN climate conference in Tianjin.

In general, China is still reluctant to play a more active role in international climate talks, but on a domestic level it has long been aware of the need to reduce energy consumption and CO_2 levels in order to achieve important development goals in the areas of the environment and energy security. The long-term effects of climate change have less bearing on political decisions than more immediate environmental problems such as air and water pollution. And in face of the growing reliance on imports of primary energy sources there is a growing sense that increased energy efficiency and the use of new energies could make a critical contribution to China's energy security. Beijing is also aware that promoting alternative energy sources and green technologies can help Chinese businesses to gain a footing in these markets of the future and become an important pillar in China's future economic development and the structural change that will be necessary. So reducing greenhouse gases is seen more as a side-effect of protecting the environment, improving energy efficiency and achieving domestic development goals.

Beijing is also aware that promoting alternative energy sources and green technologies can help Chinese businesses to gain a footing in these markets of the future.

8 | Cf. Shi Jiangtao, "China's Bid to Break Climate Deadlock," *South China Morning Post*, December 8, 2010, http://topics.scmp.com/news/china-news-watch/article/China-bid-to-break-climate-deadlock1 (accessed February 15, 2010).

THE MAIN INSTITUTIONS INVOLVED IN CHINA'S POLICIES ON CLIMATE, ENERGY AND THE ENVIRONMENT

High levels of coordination are required to deal with climate policy in a multi-faceted way which integrates governmental, private, domestic and international interests. Formulating a coherent climate policy seems to be particularly difficult in China, because responsibilities are still in a state of flux. Energy policy in particular is very fragmented and weak on an institutional level.

The major players in Chinese climate policy can be found in the Foreign Ministry and the National Development and Reform Commission (NDRC). Under the chairmanship of the NDRC, the National Coordination Committee on Climate Change (NCCCC) has already been in existence since 1988. This is the most important institution in the area of Chinese climate policy. It comprises 17 ministries and bodies and is responsible for formulating a cohesive climate policy in China and leading provincial and local governments in the fight against climate change. The NDRC is the most influential body within the NCCCC and is China's main representative at international climate conferences. In 2005 the National Leading Group on Climate Change was created, headed by Prime Minister Wen Jiabao, with the goal of further integrating climate policy. This Group includes all ministers who are involved in the areas of energy and environmental policy.[9]

In 2005 the National Leading Group on Climate Change was created, headed up by Prime Minister Wen Jiabao, with the goal of integrating climate policy still further.

The NDRC also plays a prominent role in energy policy. The NDRC's environment department is responsible for energy consumption and energy efficiency. In 2005 the National Leading Group for Energy was created, which was also headed up by the prime minister. This group is responsible for coordinating the work of the main ministries and governmental bodies in the area of energy. In accordance with the restructuring plans of the eleventh National Peoples' Congress (NPC) in March 2008, a National Energy Commission is also to be set up to develop energy

9 | Cf. Dirk Rommeney, *Climate and Energy Policy in the People's Republic of China* (Heinrich Böll Stiftung China, 2008), 15.

strategies, along with the State Energy Bureau under the auspices of the NDRC. The State Energy Bureau should then be responsible for the administration and supervision of the energy sector. The Centre for Renewable Energy Development is in charge of research into new technologies and political concepts in the area of renewable energy sources. This centre reports to the Energy Research Institute, which is also part of the NDRC. The Ministry of Environmental Protection is in favour of pro-active climate policies on both a domestic and international level but has little influence on climate policy. Its responsibilities are restricted to planning green projects and drawing up and monitoring environmental specifications.[10]

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GOALS AND ACTIONS OF CHINA'S CLIMATE POLICY

Since the end of the 1990s, the Chinese government has ramped up its efforts in the areas of environmental protection and climate action. This has manifested itself in the passing of a multitude of laws and resolutions and the publication of plans, guidelines and reports. Of particular note are the Energy Conservation Law of 1998, the China Medium and Long-Term Energy Conservation Plan of 2004, the Renewable Energy Law (REL) of 2005 and China's National Climate Change Programme (CNCCP) of June 2007, which listed the effects of climate change in China, and concrete actions which have already been taken or are to be taken in the future to fight climate change. The programme has made these plans more specific by setting concrete targets for the reduction of carbon emissions. The Medium and Long-Term Development Plan for Renewable Energy initiated in 2007 is also important in this context. In this plan the NDRC has laid out guidelines, targets and the political actions which need to be taken in order to expand renewable energies in China in the period to 2020. The eleventh Five Year Plan (2005 to 2010) stipulated a reduction in energy consumption by 20 per cent in relation to GDP, which proved to be an extremely ambitious and difficult target. For the first time, this last Five Year Plan also made the goal of reducing energy consumption a top priority.[11]

10 | Cf. ibid., 11-15.
11 | Cf. ibid., 10.

RENEWABLE ENERGIES

The promotion of renewable energy sources deserves special attention. In 2005 they made up around 7.5 per cent of China's primary energy consumption. According to the Medium and Long-Term Development Plan for Renewable Energy in China should increase this share to ten per cent by 2010 and to 15 per cent by 2020. The share of renewables of electricity production shall be 20 per cent by then.[12]

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Hydropower is by far the most important alternative energy source for electricity production in China. By 2007 hydropower projects were already providing 16 per cent of the energy supply. These projects, though, include mega-projects such as the Three Gorges Dam which has been heavily criticised for its detrimental effect on the environment and the fact that it forced millions of people from their homes. However, smaller, more environmentally-friendly hydropower projects[13] are providing five per cent of the electricity supply, making them the second-largest renewable source for electricity production. In comparison, other renewable energy carriers have so far played a minor role, with photovoltaics still being very marginal.[14]

China's Renewable Energy Law which came into force on January 1, 2006 forms the main legal foundation in this area. It is very similar to Germany's Renewable Energy Law. The Law obliges grid operators to buy all available electricity from renewable sources and to provide electricity producers using renewable energies with a connection to the grid. It also guarantees feed-in subsidies for electricity from renewable energies which are individually set by the State Council pricing authorities, depending on the type of renewable energy, the region or even the particular project. The higher costs are borne by all end consumers across the whole country. Prices are regularly adjusted in line with advances in technology. At the moment there

12 | Cf. ibid., 18.
13 | The definition of a small hydro project varies around the world. In the EU it means hydro plants with a capacity up to 10 MW, whereas in China it includes plants up to 30 MW.
14 | Cf. Rommeney, n. 9, 43.

is only one fixed, national subsidy – for electricity from biomass, which is set at 0.25 Renminbi (RMB) (0.03 Euro) per kilowatt hour and is available for the first 15 years of a biomass power plant's operating period. Subsidies for other renewable energy carriers are set on an individual project basis.[15]

In the event that grid operators refuse to connect renewable sources of electricity to the grid, the REL stipulates that compensation has to be paid to the electricity producer for loss of income. If the connection is not set up within a certain period of time, the law stipulates a fine. It also provides for preferential loans and tax relief for renewable energy projects, for example, the normal VAT rate of 17 per cent has been reduced to 6 per cent for small hydro projects and to 13 per cent for biogas plants. The REL also requires the establishment of a renewable energy fund to finance investments in renewable energies, tax relief and guaranteed subsidies.[16] As a result of these actions, by 2009 China was already the world's biggest investor in renewable energies, with investments totalling 34.6 billion U.S. dollars (25.3 billion Euro).[17]

WIND POWER

China has significant wind resources which can be used to produce electricity. However, it faces some major challenges when it comes to distributing these resources via the grid. The electricity grid on the east coast is well-developed as this is where there is the greatest demand for energy, but the only suitable areas to build wind farms are in the north west of the country and offshore. Despite these challenges, wind power has huge potential, something which the NDRC massively underestimated in the EER in 2005 when it set an installed capacity target of just five gigawatts (GW) of power by 2010. This target was already reached by 2007, and the 30 GW goal set for 2020 is likely to be hit by 2012 at the latest, which

On the east coast, there is the greatest demand for energy. But the only suitable areas to build wind farms are in the north west of the country and offshore.

15 | Cf. ibid., 41-42.
16 | Cf. ibid., 41.
17 | Cf. Xinhua, "Cancun Delegates praise China's Green Energy Push," *China Daily Online*, http://chinadaily.com.cn/china/2010cancunclimate/2010-12/02/content_11645342.htm (December 4, 2010).

is why the NDRC is considering raising it to 100 GW.[18] Over the past four years installed capacity in the wind sector has doubled each year and in 2009 it had already reached 25.8 GW. In that same year China overtook Germany in terms of cumulative capacity, lying second only to the USA. In terms of newly-installed capacity, China came out at the top of the pile. Up to now wind farms have mainly been built on the mainland and the development of offshore wind farms is a recent phenomenon. The first offshore project was completed off the coast of Shanghai in 2010, with a capacity of 100 MW. Chinese coastal provinces are now planning a major drive in the area of offshore wind farms and are aiming for a total installed capacity of 33 GW by 2020.

In order to promote wind power the NDRC regularly announces major projects with a capacity of at least 100 MW which are awarded to the contractors with the lowest feed-in fees and the highest proportion of locally-manufactured components. Until 2010, local content for major public projects was set at a minimum of 70 per cent in order to boost the growth of Chinese manufacturers.[19] But now that three of the world's seven largest manufacturers come from China and have increasingly started to focus on the export trade, the government has stopped this practice in order to avoid other countries in turn restricting market access for Chinese producers. This strong support for domestic manufacturers allowed the three largest wind power companies, Sinovel, Xinjiang Goldwind and Dongfang Electric, to increase their share of the Chinese market from 40 to 60 per cent between 2006 and 2009. During the same period the number of international contractors fell from 53 per cent to 11 per cent.[20] During the first phase of these wind power projects the government guarantees a fixed subsidy, then after 30,000 hours of operation the normal electricity price is applied. Local grid operators are obliged to buy all the electricity produced and to provide the necessary connections to the grid. [21]

18 | Cf. *The China Greentech Report 2009*, 2009, 6, http://china-greentech.com/sites/default/files/CGTR2009-REIndividual.pdf (accessed January 11, 2011).
19 | Cf. Li Junfeng et al., *China Wind Power Outlook 2010*, 2010, 3-6.
20 | Cf. "Wind in China sails for Clean Energy Race," *South China Morning Post*, October 1, 2010.
21 | Cf. *The China Green Tech Report 2009*, n. 18, 11.

Even a target of 100 GW by 2020 may prove to be too low. Various estimates suggest that total installed capacity will reach up to 250 GW by 2020 and 680 GW by 2030, on condition that by then the problems of grid integration, forecasting and the storage of wind power have been resolved. This would mean that by 2020 ten per cent of China's total energy needs could be supplied by wind power, with the figure rising to 16.7 per cent by 2030.[22]

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China still faces challenges in expanding its wind power sector. The grid infrastructure is insufficiently developed, making it difficult to connect wind turbines to it. Feed-in fees are often too low to guarantee wind farm operators a reasonable profit. And the government's goals are all focused on installed capacity, despite the fact that targets for actual electricity production would make much more sense.[23] On top of this, state-owned companies tend to offer ridiculously low prices at tender, meaning that private and international contractors who would probably carry out the projects in a more sustainable way are often driven out of the market.[24]

SOLAR POWER

In view of the fact that two thirds of China's total surface area enjoys more than 2,200 hours of sunshine per year, the country has huge potential for the use of solar power. Up to now the use of solar energy in the form of solar thermal or photovoltaic installations remains under-developed and is mainly decentralised. By 2005 the total capacity of all PV installations was 70 MW whereas only three MW were connected to the grid. However, photovoltaics already play an important role in connecting remote regions to the grid. One example is the Township Electrification Programme 2002-2004, which provided PV installations with a capacity of 19 MW, bringing electricity to 700 villages and around

22 | Cf. Junfeng et al., n. 19, 83.

23 | In China many wind farms have already been built but cannot supply electricity because they are not connected to the grid. Often grid operators just buy shares in wind farms in order to pay lip-service to government regulations but do not follow up on their obligation to actually integrate the wind farms into the grid. Cf. The China Greentech Report 2009, n. 18, 7.

24 | Cf. The China Greentech Report 2009, n. 18, 7.

a million people in the western regions of China.[25] Solar power is also used intensively for producing hot water: more than 60 per cent of all rooftop solar collectors to provide hot water worldwide can be found in China. The total surface area of these panels is due to be expanded from 80 million m² today to 300 million m² by 2020.[26]

With a market share of around 40 per cent, China is already the worldwide market leader in the manufacture of photovoltaic installations. However, most of these installations are produced for the export market: In 2009 more than 90 per cent of the produced solar cells with a total capacity of 3.6 GW were exported. An incentive was needed to encourage greater domestic use of photovoltaic technology, so in June 2009, as part of the Golden Sun project, it was decided to provide subsidies for the installation of solar panels. 50 per cent of the costs would be subsidised for open-space installations connected to the grid and 70 per cent for installations not connected to the grid. The Solar Roofs Programme is also subsidising building-integrated systems in the amount of 15 RMB (1.66 Euro) per watt and roof systems with a minimum capacity of 50 KW by 20 RMB (2.22 Euro) per watt.[27] Further subsidies are also being made available on an individual project basis. So for example a PV power plant in Dunhuang has a tariff rate of 1.09 yuan (0.12 Euro), more than three times higher than coal-fired power stations. However this rate is still considered to be too low to guarantee a profitable operation.[28]

The Solar Roofs Programme is subsidising building-integrated systems and roof systems. Further subsidies are also being made available.

Beijing is pressurising local governments to set up their own initiatives to encourage solar installations, but so far these have been slow to materialise. Shanghai kicked off its 100,000 Solar PV Roof Plan whereby 10,000 three KW solar

25 | Cf. Rommeney, n. 9, 46-47.
26 | Cf. Xing Xiaowen, "Xin nengyuan yuanchanye de caizheng butie zi lu" (The development of subsidies for manufacturers in new energies sector), *Nanfengchuang* (South wind window) 02/2011, 79.
27 | Cf. Claudia Wittwer, "Erste Sonnenstrahlen durchbrechen Wolkendecke," *China Kontakt* 01/2011, 22.
28 | Cf. Zhang Qi, "China hikes 2011 solar power target," *China Daily Online*, July 3, 2009, http://chinadaily.com.cn/bizchina/2009-07/03/content_8350947.htm (accessed January 17, 2011).

panels were to be installed on Shanghai's roofs between 2006 and 2010, with another 90,000 to follow in the years between 2011 and 2015.[29] But in light of the fact that up to 2009 the city council did not provide any financial incentives to install small, private PV systems, by July 2009 there was just one private roof-mounted solar installation in the whole of Shanghai. For the period 2009 to 2012 Shanghai has still only planned to provide financial assistance for larger solar roof installations.[30]

By 2019 China is planning to build the world's largest solar power station in the Qaidam basin in Qinghai province in north-western China, with a projected initial capacity of one gigawatt. By 2020 this capacity should rise to 20 GW and the government is aiming to increase solar power's contribution to total energy consumption to five per cent by 2050. It will require a massive effort to achieve these targets, but at the same time they present domestic and international solar technology manufacturers with huge opportunities for growth. However, international companies are faced with the question of whether they will be largely excluded from public contracts as happened in the wind sector.[31]

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REDUCTION CO_2 EMISSIONS FROM VEHICLES

In 2009 China overtook the USA as the world's largest car market.[32] The transport sector's energy consumption is still relatively low in global terms, at just 9 per cent, but this will increase rapidly in the next few years due to rapid growth in private car use. Vehicle CO_2 emissions are on course to more than triple by 2055. China is making efforts

29 | Cf. NDRC, Shanghai shiwan ge taiyangneng wuding jihua (Shanghai's 100,000 Solar Roofs Plan), December 28, 2005, http://www.sdpc.gov.cn/nyjt/dcyyj/t20051228_55008.htm (accessed January 25, 2011).

30 | Cf. Deng Li, "Taiyangneng de wuding minyong zhi lu" (The development of the private use of solar roofs), *21 Shiji Jingji Baodao* (Business China), July 16, 2009, http://news.163.com/09/0716/08/5EB38VFG000125LI.html (accessed January 25, 2011).

31 | Cf. Henrique Schneider, "Vorbereitung auf grünes Zeitalter," *China Kontakt* 01/2011, 18.

32 | In 2009 a total of 13.6 million vehicles were sold in China. Cf. "Beijing hints further subsidies for alternative-fuel vehicles", *South China Morning Post*, September 10, 2010.

to limit emissions and so far is the only emerging country that has introduced fuel consumption standards. These standards for new cars are being progressively tightened: In 2008 the limit was at the EU-3 level and by the end of 2010 a standard in line with EU-4 is to be implemented. This standard is 40 per cent more strict than the one used in the USA. An additional tax will also be levied on particularly large cars.[33]

China is also trying to encourage the use of alternative drivetrains in vehicles. Beijing is planning to invest up to 300 billion RMB (33.3 billion Euro) in order to become global market leaders in the production of electric and hybrid cars. The NDRC estimates that by 2015 there will already be 3 million hybrids and 1.5 million purely electric cars on China's roads.[34]

In 2010 five cities were chosen to run pilot projects encouraging private households to buy electric cars. Beijing granted a subsidy of 60,000 RMB (6,600 Euro) on every electric vehicle purchased, and this amount could be even higher in future. The first of these pilot projects has been running in Shenzhen since May 2010, using 50 electric taxis to show what future mobility could look like. Alongside the assistance provided by the central government, the city council is also subsidising the purchase of electric taxis and taxi drivers are exempted from paying their annual license fees. It is still expensive to buy an electric taxi, costing 80,000 RMB (8,800 Euro) more than a conventional taxi with a combustion engine, but this extra cost is supposed to be offset within five years through fuel savings. In order to massively expand the use of electric vehicles, Shenzhen is planning to build 25 large charging stations and equip 10,000 public car parks with chargers by 2012. By then, it is expected the city will already have 35,000 electric and hybrid cars in use.[35]

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33 | Cf. Rommeney, n. 9, 29-30.
34 | Cf. "300b yuan earmarked to develop green cars," *South China Morning Post*, January 13, 2010.
35 | Cf. "Electric-car dreams short-circuited by hype," *South China Morning Post*, January 10, 2011; "So who is winning the electric car race?", *South China Morning Post*, November 12, 2010.

INCREASING ENERGY EFFICIENCY

Beijing is trying to increase energy efficiency by enforcing stricter regulations and offering energy-saving incentives. These efforts are based on the Energy Conservation Law which came into force in 1998 and the Medium and Long-Term Energy Conservation Plan of 2004. The Energy Conservation Law is aimed at improving industry regulation, promoting structural changes in industry, reducing the economy's energy consumption and encouraging technological advances in energy conservation. It stipulates that obsolete plant and products must be phased out and sets specific industry standards for energy conservation.[36]

The Top 1,000 Energy-Consuming Enterprises Programme sets concrete consumption reduction targets for the country's 1,000 biggest energy consumers. These companies are responsible for 33 per cent of China's total energy consumption and for 47 per cent of all industrial energy consumption. It was planned to reduce consumption from 673 million tonnes of coal equivalent (TCE) by 100 million TCE between 2005 and 2010. In order to hit this target, information and training workshops were run, and the companies taking part were obliged to regularly report back on their energy consumption. Targets for improving their energy efficiency were also set for certain industries which require large amounts of energy such as the cement and steel industries and the construction sector.[37]

Energy-efficient construction is an important area for energy conservation. Experts estimate that buildings in northern China require three times as much energy for heating compared to buildings in similar climate conditions in Europe. The eleventh Five Year Plan has pointed out that 120 million TCE could be saved in buildings. To this end, the Ministry of Construction introduced energy efficiency standards for buildings and is currently working on restructuring heating costs. The central government was also expected to set a good example by reducing energy consumption in government buildings by ten per cent in the period 2002 to 2010.

36 | Cf. "Energiespargesetz," in: Robert Heuser and Jan De Graaf, *Umweltschutzrecht der VR China – Gesetze und Analysen*, 519.
37 | Cf. Rommeney, n. 9, 23-24.

Alongside the implementation of new energy conservation standards, small, inefficient factories are being shut down. This also applies to coal-fired power stations, which have undergone a massive programme of closures. By 2010 all power stations with a capacity of less than 50 MW were to be closed, along with all power stations with a capacity of less than 100 MW which were more than 20 years old and all other plants which were too far from meeting national or regional standards.[38] This resulted in around 7,500 coal-fired power stations being shut down between 2006 and 2009 alone.[39] These enforced closures were met with strong resistance from both operators and local governments as they feared cuts in revenues and job losses.

FUTURE CHALLENGES AND PERSPECTIVES FOR CHINA'S CLIMATE POLICY

China is faced with the difficult task of uncoupling economic growth from greenhouse gas emissions. Despite all the efforts mentioned here, in the medium-term China's CO_2 emissions will continue to grow. The Director-General of the NDRC's Department of Climate Change, Su Wei, believes that realistically an absolute reduction in CO_2 emissions will only be achieved in 2050. By 2030 China will probably have reached European levels in terms of per-capita CO_2 emissions[40], which will lead to ever-stronger demands for the country to reduce its emissions. But if China is to be motivated to accept binding and absolute CO_2 reduction targets through reduced energy consumption, western countries will have to step up their own efforts and the USA will have to set reduction targets in line with those of European countries. The west will also need to support China in its efforts to build a low-carbon economy by assisting with advice and technology transfers. In the future technologies for carbon capture and storage (CCS)[41] could be particularly important. In the medium-term China will continue to be

Despite all the efforts, in the medium-term China's CO_2 emissions will continue to grow. By 2030 China will probably have reached European levels in terms of per-capita CO_2 emissions.

38 | Cf. ibid., 28 and 34.
39 | Cf. Deborah Seligsohn et al., *Fact Sheet: Energy and Climate Policy Action in China*, 2009, 2.
40 | Cf. Wacker, n. 7, 60.
41 | CCS refers to the capture of carbon dioxide from fossil fuel emissions and its injection and permanent storage in deep geological formations.

highly dependent on coal-fired power stations for electricity production and to date has hardly made any moves in the area of CCS. This support would also take into account that around one fifth of Chinese greenhouse gases are produced by companies manufacturing for the export market.

The People's Republic must also make investment and technology transfer more attractive. In particular it needs to guarantee that intellectual property rights will be protected and stop giving domestic manufacturers such high levels of preferential treatment.

In order to drive forward the growth of renewable energies, the government should set national, fixed subsidies in order to allow operators to run their businesses in a profitable way. This would give investors a more reliable basis for planning and increase the incentive to build power plants using alternative forms of energy. In adapting its legal framework a cooperation with Germany is conceivable, as China has already worked out its Renewable Energy Law on the basis of the German one as an example. Existing regulations such as the requirement for grid integration must also be implemented more effectively. Financial incentives or fines need to be used in order to encourage grid operators to connect power stations which use wind power, solar power or other new energies to the grid.

There also need to be other incentives to encourage energy conservation such as further increases in electricity, gas and fuel prices or state subsidies for conversion to green technologies. The implementation of national climate policies seems to be particularly difficult at provincial and at the local level. Here, concerns about the environment and energy efficiency generally come well behind short-term considerations such as economic growth and jobs. In an attempt to counter this, the central government has announced that promotion opportunities for government officials will be linked to the results they achieve in the areas of environmental protection and energy efficiency.[42]

At provincial and local level, concerns about the environment and energy efficiency generally come well behind short-term considerations such as economic growth and jobs.

42 | Cf. Rommeney, n. 9, 52-54.

Civil society also has a significant role to play. The growing environmental problems in the country have served to mobilise large numbers of people to get involved in protecting the environment. The number of green NGOs is growing by the day, and these organisations help to raise awareness of the environment and energy conservation and encourage people to join the fight against climate change. The environment and climate change now have a much higher profile in the Chinese media, making these topics much more mainstream within Chinese society. The Ministry of Environmental Protection is now increasingly pursuing its goals by working with the media and NGOs. It is to be hoped that in future civil society will have a louder voice in the national climate policy debate.[43]

Despite all these challenges, China is on the right path when it comes to climate change. The country has moved with the times and set itself ambitious goals, some of which are even stricter than those set by certain industrialised countries. The twelth Five Year Plan will probably provide for the establishment of local pilot schemes for a national step in combating climate change.[44] Even if we cannot expect to see a radical change in China's position at the climate conference in Durban at the end of the year, it will continue to move forward on a domestic level. The People's Republic success will have to be measured upon whether it will manage to achieve the self set goals.

43 | Cf. ibid., 16.

44 | Cf. *Xinhua*, "Shouquan fabu: Zhonggong zhongyang guanyu zhiding guomin jingji he shehui fazhan di shier ge wuniangui-hua de jianyi" (Authorised publication: Central government proposals for a twelfth Five Year Plan for the development of the nation's economy and society), http://news.xinhuanet.com/politics/2010-10/27/c_12708501_6.htm (accessed January 20, 2010).