



**STAKEHOLDERS ON CLIMATE CHANGE  
North & South Perspectives**

**Atle Midttun (editor)**

With national case contributions from:

Atle Midttun and Hilde Nordbø; The Norwegian School of Management  
Jin Wang; Sun Yat-Sen University in Guangzhou, China  
Joseph Yaro; University of Ghana

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## **Foreword**

This report is a contribution to an emerging body of research literature on the societal perceptions of and reactions to climate change around the world. It is the fruit of a close collaboration between three core research teams from Ghana, Norway and China which in turn are part of the wider international group of scholars and senior researchers, Ceres 21, financed by the Research Council of Norway.

The Ceres 21 project – Creative Responses to Sustainability – advances a comparative, multidisciplinary approach based on dialogue between natural scientists and researchers in the social sciences and the humanities.

Ceres21 has embarked on a four-year quest to identify cultural, political and economic sources of the main problems preventing creative adaptation to the climate challenge in Norway, China and Ghana. An analysis of national variations in the stakeholder attitudes to climate change provides insights into the nature and quality of the cognitive framing and affected interests in the countries studied which then yields important information about the backgrounds of the different types of national policy that have been adopted.

This is not just an academic study. It was compiled during the time of global climate negotiations leading up to the UN conference in Copenhagen in December 2009 – at this time tensions and policy differences between countries are more apparent than agreement and international consensus regarding how to proceed.

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# Chapter 1: Introduction

Atle Midttun

Since May 1987 when “Our Common Future” – also known as the Brundtland report – was published, there has been an emerging recognition that the planet is facing a common climate challenge. Nonetheless, the effects of and strategies to meet this challenge remain contentious. Like its chairwoman - a previous Norwegian Prime Minister - the Brundtland report reflected a social democratic belief in political solutions, optimistic and enlightened action, and global redistribution of welfare. The underlying governance model was to be implemented by national governments collaborating through international treaties under the leadership of the UN. As Schmitter (2009) points out, the ensuing 20 years have, however, demonstrated that most countries have failed to sign major initiatives such as the Kyoto treaty. Almost all of those who have signed up have failed to live up to their commitments. Global summits and treaty negotiations continue to be held, but with limited expectations.

Against this background this report explores some of the factors that limit collective engagement and collaborative governance and discusses their implications for future climate strategies. Our approach is a comparative analysis of stakeholder attitudes across three continents. Through systematic dialogues with key societal stakeholders we have sought to elicit how interests, perceptions and values diverge across the eastern growth economies represented by China; the poorer south represented by Ghana, and the rich north represented by Norway.

We start out with a brief overview of the regional climate change forecasts, and their assumed implications on the lives of people in each of the three continents in focus. Then there is a short introduction to the stakeholder approach. The main part of the report is subsequently devoted to the stakeholder dialogues in Ghana, Norway and China. A final part sums up the main findings in a comparative analysis and presents some suggestions for strategies based on the findings.

## ***1.1 Climate change: Regional effects***

The diverse responses to and perceptions of climate change reflect the differences in exposure to natural challenges, and the socio-economic hurdles that follow. As a background for the stakeholder analysis we therefore present

some of the main conclusions from recent regional studies of climate change effects, represented by respectively the African Partnership Forum; China's National Climate Change Programme; and the European Environmental Agency.

### **1.1.1 Africa<sup>1</sup>**

In our sample, Africa is clearly the continent most vulnerable to climate change, with the areas of concern including water resources, agriculture, health, ecosystems and biodiversity, forestry and coastal zones. As argued by the Africa Partnership Forum (2007) the longer term impacts will include: changing rainfall patterns affecting agriculture and reducing food security; worsening water security and economic growth prospects; shifting temperature affecting vector diseases; and more challenges in reaching the Millennium Development Goals.

An African Partnership Forum briefing paper (2007) points out that three quarters of African countries are in zones where small reductions in rainfall could cause large declines in river water. Furthermore, Africa is already vulnerable to a number of climate-sensitive diseases and can expect major negative effects on public health.

Agricultural production in many African countries and sub-regions, including access to food, is projected to be severely compromised by climate variability and change. Climate change impacts and their interaction with other vulnerabilities and environmental exposures will likely lead to significant population migrations internally as well as across borders with severe humanitarian impacts further undermining peace and stability. In addition, a rise in the sea level resulting from global climate change threatens coastal areas, lagoons, and mangrove forests in both eastern and western Africa.

The IPCC points out that Africa is particularly vulnerable to the impacts of climate change because of factors such as widespread poverty, recurrent droughts, inequitable land distribution, and agriculture with a high level of dependence on rain. Although adaptation options, including traditional coping strategies, are available in theory, in practice the human, infrastructural, and economic response capacity to respond in a timely manner may well be beyond the economic means of some countries .

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<sup>1</sup> Africa Partnership Forum, support Unit: Briefing Paper no 1, sept 2007;  
<http://www.africapartnershipforum.org/dataoecd/57/7/38897900.pdf>

8<sup>th</sup> Meeting, Berlin 22-23 May

### 1.1.2 China<sup>2</sup>

China is also seriously affected by climate change, but in this case the effects are more varied. The national Development and Reform Commission (ref....) has pointed out that future climate change will give increased instability in agricultural production. The Commission foresees increased desertification, shrinking grassland area and reduced productivity that result from increased frequency and duration of drought. Such changes in agricultural production conditions may cause drastic increase in production costs and need for investments.

For forestry, the effects of climate change are expected to be very uneven. The geographical distribution of major types of forests will shift northward and the vertical spectrum of mountain forest belts will move upward and forest productivity and output is expected to increase. On the other hand, in the south the frequency and intensity of forest fires and insect and disease outbreaks are likely to increase as the drying of inland lakes and wetlands accelerates.

Climate change is expected to have a significant impact on water resources over most of China and with extremely different effects in the North and the South. The mean annual runoff is likely to decrease markedly in some northern provinces that are arid, such as the Ningxia Autonomous Region and Gansu Province, while it is expected to increase remarkably in some southern provinces that already have plenty of water, such as Hubei and Hunan provinces. Thus an increase of flood and drought events are expected due to climate change.

The Commission also argues that the sea level along the Chinese coast will continue to rise. The frequency of typhoons and storm surges will increase, aggravating the hazards induced by coastal erosion and some common marine ecosystems, including coastal wetlands, mangroves and coral reefs, will be further damaged. Furthermore, climate change may increase the frequency and intensity of heat waves, and hence increase deaths and serious diseases linked to extreme high temperature events.

All in all, China is apparently is less threatened by climate change than Africa, but expected nevertheless to be severely hit. Although being a rapidly growing economy with extensive technological and economic resources, these resources are unevenly distributed, with large segments of the population living at a minimal subsistence level. In spite of the impressive size of its total economy, the magnitude of the climate challenge in China is formidable and represents a daunting task.

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<sup>2</sup>China's National Climate Change Programme Prepared under the Auspices of National Development and Reform Commission People's Republic of China Printed in June 2007  
<http://www.ccchina.gov.cn/WebSite/CCChina/UpFile/File188.pdf>

### 1.1.3 Europe <sup>3</sup>

Like China, the effects of climate change in Europe will be very uneven. Mountain regions, coastal zones, wetlands, and the Mediterranean region are particularly vulnerable, and considerable adverse impacts are projected to occur on natural and human systems that are already under pressure. Northern and some western regions of Europe, on the other hand, may experience beneficial effects, particularly within agriculture, for some period of time.

The European Environmental Agency has pointed out that climate change could have profound impacts on coastal zones due to the rising sea level and changes in frequency and/or intensity of storms. Habitats and coastal ecosystems on the Baltic, Mediterranean and Black Seas in particular are at high risk. According to projections the Mediterranean and Baltic coasts will experience considerable loss of wetlands. The most vulnerable ecosystems are the European arctic and mountains, coastal wetlands and ecosystems in the Mediterranean region. Projected climate change is expected to lead to considerable losses of species and habitats throughout Europe. Water resources are expected to exacerbate the already acute water shortage problem in southern and south-eastern regions. Changes in frequency and intensity of droughts and floods are projected, which could cause the deaths of many humans and significant financial loss throughout Europe. In addition, southern Europe is expected to suffer from increased risks of fire.

On the other hand, the Agency points out that climate change and increased CO<sub>2</sub> concentration could have a beneficial impact on agriculture and livestock systems in northern Europe through longer growing seasons and increased plant productivity. Climate change will probably also result in yield increases in commercial forests in northern Europe. This contrasts with the Mediterranean and continental regions of Europe, which will experience decreases in crop yields due to more frequent droughts.

While seriously challenged in the South, Europe is clearly not the worst hit continent and it is also far better equipped, financially and materially, to meet the climate change. With many technologically-advanced welfare states, countries in northern and western Europe have ample resources to deal with the immediate effects of climate change. Eastern Europe, still trying to catch up to the standards of the west, may have more of a challenge, as will Southern Europe.

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<sup>3</sup>European Environmental Agency, Technical Report no 7/ 2005: Vulnerability and adaptation to climate change in Europe.



## **1.2 The stakeholder approach**

Against the backdrop of the regionally diverse climate challenge, our study engages with stakeholders across the three continents to explore their interests, perceptions and strategies. The systematic sampling of a broad set of stakeholders - representing government agencies, associations of the major industries, farming, fisheries, environmental and humanitarian NGOs and religious congregations - in each country allowed us to examine the variety of voices, attitudes and strategies related to climate change within and across nations. The stakeholder survey follows a previous press review as an entry point to the climate debate (Coulter & Midttun 2009<sup>4</sup>) which focused on the framing of the public debate in Ghana, China and Norway. The stakeholder dialogues allowed us to explore not only the conceptual tendencies in these areas, but also to look closer at evaluations, strategies and actions already being taken.

The stakeholder approach is widely used both in business and politics today. A corporate stakeholder is a party that affects or can be affected by the actions of the business as a whole. The theory was developed and championed by R. Edward Freeman in the 1980s<sup>5</sup>. Since then it has gained wide acceptance in business practice and in theories related to strategic management, corporate governance, business purpose and corporate social responsibility (CSR). In politics, the concept gained momentum with the European Multi-Stakeholder Forum on Corporate Social Responsibility, chaired by the Commission, which brings together European representative organisations of employers, business networks trade unions and NGOs to promote innovation, convergence, and transparency in existing CSR practices and tools. The idea of involving stakeholders in public policy has been used extensively through various consulting practices.

This study uses the stakeholder model as a research method to investigate compatibilities and conflicts of interest related to climate change. The sampling of stakeholders across various levels of development and political-economic contexts was consciously chosen for this reason. Stakeholder analysis is, in other words, a step towards socio-political exploration of climate change. Systematic dialogue with societal interests provides us with access to more nuanced views than those provided through the regular channels of intergovernmental negotiations. The latter may have exclusive focus on national

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<sup>4</sup> Coulter, P, and A. Midttun (2009), CERES21 report nr. 1: Escaping Climate Change, available at: <http://www.ceres21.org/submenu/publications.aspx>

<sup>5</sup> Freeman, R. E, (1984), "Stakeholder Management: Framework and Philosophy", in R.E Freeman (Ed), *Strategic Management - A Stakeholder Approach*, Pitman, Boston.

interests and national mandates because the protagonists are bargaining for national positions. In contrast, broader stakeholder analyses may help find more constructive solutions in a web of engagements by its focus on subtle details.

We have focused on stakeholders at the level of interest groups and interest organisations, local trade unions, and civic initiatives. Individual firms were not interviewed. We have chosen this delineation in order to limit the scope to a manageable sample while at the same time exploring a broad set of societal interests. We have approached more or less the same interest groups across the three countries, in order to compare these facets of society to each other.

The following three chapters on Ghana, Norway and China focus on interpretations of the climate debate primarily through dialogues with key national stakeholders. We seek to elicit how interests, perceptions and values shape different approaches to climate change under different natural, socio-political and cultural conditions across the world. Finally there is a comparative chapter which explores similarities and differences, followed by a discussion of strategic alternatives.

## **Chapter 2: Stakeholder Analysis of Climate Change in Norway**

Atle Midttun and Hilde Nordbø

### ***2.1 Introduction***

Norway is one of the countries that not expected to be severely harmed by the climate change and that may even have considerable positive effects. The projections from the research program RegClim (Cicero 2009) show that in the period from 2030 to 2050 we can expect around 20 percent more precipitation in the autumn compared to the period from 1980 to 2000. The average wind velocity is expected to increase a little in most regions during the winter. The frequency of storms causing great damage will probably rise somewhat, and occur mostly along the coast of Møre og Trøndelag county. However, there are a number of possible positive effects, such as a warmer climate which would increase crop yields – which is good for agriculture in Norway. Increased precipitation can lead to higher electricity production if the hydroelectric power stations have the capacity to utilize it. Recently, oil and gas extraction in the Arctic due to melting sea ice has been a growing income source for Norway (Cicero 2009).

Norway's fortunate position with respect to direct climate effects is reinforced by its wealth and socio-political resources. Norway's oil-fuelled economy put its GDP per person 65% above the OECD average. With the exception of Luxembourg, Norway has the highest GDP per capita of the 30 relatively rich countries in the OECD (the Economist 2007). The country also harbours abundant hydro power resources, and therefore has hardly any energy constraints. In addition Norway is consistent with the Scandinavian welfare model, providing universal healthcare, free higher education, and a comprehensive social security system. Norway has managed to combine growth with small differences in income, a compressed wage structure, low unemployment and high growth. This, in addition to being one of the best performing democracies (the Economist 2008) gives the country the social and political capital needed to support adaptation to climate change. Nevertheless Norway's strength in dealing with direct climate change may also translate into challenges when it comes to meeting indirect climate effects. With

its extensive wealth and advanced welfare services, the country is coming under strong pressure from war- and climate-induced migration.

This chapter approaches Norway's climate challenge from a stakeholder perspective, by reviewing perceptions, analyses and strategies of important societal groups and organisations. It thereby conveys some of the societal basis for the policy development and policy response from the wealthy, egalitarian and resource rich northern part of the world.

The analysis is built on interviews with core Norwegian stakeholders that are engaged in climate change. We have deliberately used a broad selection from economic, cultural and media domains, in order to sample the span of interests and opinions involved. The stakeholders interviewed were:

- The Ministry of Environment, with a core responsibility for Norwegian climate policy.
- The Norwegian Confederation of Enterprises, representing close to ½ million employees and 40% of the economic value creation in the private sector in Norway.
- The Norwegian Electricity Industry Association, representing about 260 generators, suppliers, distributors and contractors with a total yearly production of nearly 120 TWh.
- The Federation of Norwegian Industries (FNI), representing large energy consumers such as the Smelting industry and the Paper and Pulp industry, but also the supply industry, petroleum concerns, and the recycling and waste industry. Industry engaged in renewables, particularly photovoltaics, and CO2 sequestration is also part of the FNI.
- Norwegian Petroleum Industry.
- The Norwegian Farmers' Union, representing 62 000 members.
- Norwegian Association of Fishermen represents both boat and fishing equipment owners, as well as fishermen, and covers both smaller local and large ocean-going vessels.
- The Norwegian Confederation of Trade Unions (LO) representing 860 000 members and 25% of the work force.
- The World Wide Fund for Nature (WWF) Norway, one of the largest green NGOs worldwide and a major green voice in Norway, with 10 000 paying members.
- Amnesty Norway, one of the largest human rights NGOs in the world, with more than 50 000 members in Norway
- The Church of Norway, established when Norway got its constitution in 1814 and currently has a membership of 83% of the population

Each interview consisted of a loosely structured conversation over 1-1/2 hour, which was recorded and subsequently transcribed. The transcriptions were thereafter summarised into the brief overviews presented in this report. The conversations were focused on the stakeholders' views on opportunities and threats of climate change for his/her community, and on strategies to meet them. We also solicited the stakeholders' views on opportunities and threats of climate change for Norway as a nation.

Before exploring the Norwegian stakeholders' positions, a brief summary of Norwegian climate policy will serve as a point of departure:

## ***2.2 Norwegian climate policy***

Norwegian climate policy is ambitious, and the Norwegian government wants to make the country's environmental policy strong, both nationally and internationally. Yet Norway has over the last decades built up extensive oil and gas extraction, and positioned itself as one of the world's largest petroleum exporters. The role as a major petroleum producer is hard to combine with the country's ambitious environmental policy position, however, and can only be managed by extensive acquisition of international CO<sub>2</sub> allowances, and by engagement in carbon sequestration.

The present left-socialist government has presented its climate policy in a 2007 white paper (*Stortingmelding nr.34: Norwegian Climate Policy*), and reached a climate agreement in January 2008 between all political parties except the Progress party (*The Climate Settlement 17.01.2008*). The agreement has established a broad consensus on the core principles of Norwegian climate policy, which includes the following points:

- Commitment to exceed the Kyoto protocol requirements for the present period (2008-2012) by 10%;
- Commitment to cut the global emissions by an amount equivalent to 100 percent of its own emissions by 2030 in order to become a carbon neutral nation;
- Offsets for the air travel of government employees with extra CO<sub>2</sub> allowances; and
- Active engagement for a joint Swedish-Norwegian market for electricity certificates to strengthen Norwegian support for renewable energy.

Furthermore the Minister of Environment has argued that three topics are crucial in Norway's international climate policy.

- Inclusion of international aviation and maritime transport in a future global regime. Norway is here engaging actively to upgrade its shipping industry.
- Increased efforts to prevent deforestation in developing countries. At the UN Climate Change Conference in Bali Norway announced intentions to increase our support for efforts to prevent deforestation in developing countries to about three billion NOK (more than 500 million dollars) a year.
- Enhanced action on technology development and diffusion, including technology for carbon capture and storage (CCS). The government is therefore subjecting the emissions from two new gas power plants to CO2 sequestration. Norway already has extensive experience from the Sleipner field where CO2 has been stored in the ground offshore since 1996 after separating CO2 from the produced gas.

#### **The Buildup to today's position**

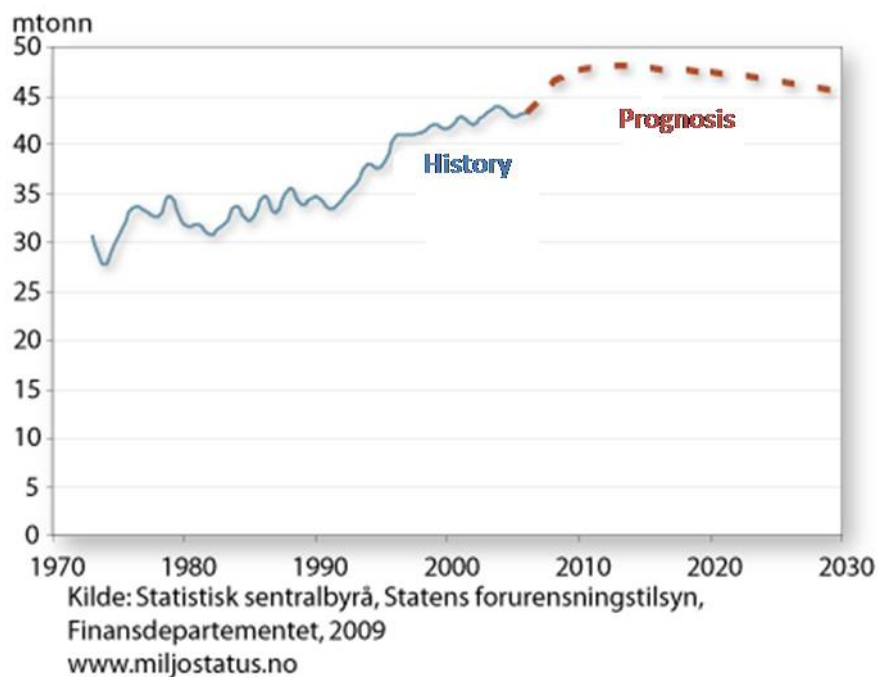
The current climate policy position builds on a long tradition of environmental engagement in Norway. Norway was one of the first countries to establish a ministry of the environment in May 1972, with a mission to "promote an optimal balance between the utilization of our resources for economic growth and the protection of natural resources for the benefit of the well-being and health of humans." Perhaps the most prominent minister was Gro Harlem Brundtland (1974-1979). She was later internationally acknowledged for her engagement in issues regarding sustainability and the environment. She also served as the leader of the UN World Commission for Environment and Development, also known as the Brundtland Commission. The final report in 1987, Our Common Future has not only influenced Norwegian environmental policy and thinking but also the global approach to environment and development.

Norway started taking global warming seriously at the national level quite early with the adoption of CO2 tax in 1991 and has also been an active promoter of the Kyoto protocol. Norway signed the protocol in 1998 and ratified in 2002. Norway has signalled its engagement in the cause by taking on more ambitious goals than initially agreed upon.

Furthermore, Norway has also published white papers on climate regularly since the late 1980s. Every two years the Ministry of Environment presents a white paper on the Government's Environmental Policy and the State of the Environment in Norway. The last one was the 2006-2007, Norwegian Climate Policy ("klimameldingen").

However, due to carbon emissions from fuelling the rapidly growing Norwegian petroleum industry, Norwegian CO<sub>2</sub> emissions have grown extensively. Two new gas power plants have also increased CO<sub>2</sub> emissions, which are expected to rise to 40% above the 1990 level in 2010 (table x). Thereafter, a gradual winding down of oil and gas activity is expected to take down CO<sub>2</sub> emissions gradually (figure 1).

Figure 1: Emissions from petroleum extraction in Norway



## 2.2 The Ministry of Environment

We have chosen to start the stakeholder interviews at the Ministry of Environment, which holds a central responsibility for Norwegian climate policy. More specifically, the Section for Climate and Energy (SCE) carries the Ministry's core engagement in this policy field. This department's responsibilities include development of environmental policies and strategies in the areas of climate and energy, including the Governments International Climate and Forest Initiative. The SCE is also strongly engaged in Norway's international responsibilities, including the UN Framework Convention on Climate Change and the Kyoto Protocol.

Some of the core challenges of the Ministry's climate engagement include implementing a fairly ambitious CO<sub>2</sub> policy, which has broad political support. Furthermore, the Ministry faces a challenging international balancing act when engaging as a climate-front runner against the backdrop of Norway's petroleum-based economy. We explored the Governments' climate policy further in an

interview with its Deputy Director General<sup>6</sup>. The following text is a summary of the interview.

### **The climate agreement**

Commenting further on the “climate agreement,” which constitutes Government’s official climate policy, the Deputy Director General points out that the agreement confirms Norway’s commitment to the Kyoto agreement until 2012, as well as an additional 10% CO<sub>2</sub> reduction to be achieved by buying quotas abroad. The Norwegian climate agreement also includes a 30% reduction of CO<sub>2</sub> emissions by 2020 and carbon neutrality by 2030, if other western countries take on the same goals.

### **Sectoral climate goals for high intensity sectors**

One approach to reaching the climate policy targets has been to develop specific climate policies for the four core sectors These are: oil and gas, industry, transport, and a miscellaneous group. Each of these sectors will have their own goals, which will be aligned with the national goals. The sector goals have not yet been aligned with the new and more ambitious national targets from the climate agreement.

### **New approach by the Pollution control authority**

Following the ambitious climate agreement, Norway has taken a unique approach by engaging the pollution control authority, together with other agencies and research communities, to come up with relevant regulatory approaches to achieve the targets.

### **Traffic to rail**

In the transport sector, government policy is to transfer as much as possible of transport, both goods and person transport to rail. There are two major tools to achieve this: the national transport plans, as well as the levy system. However the Deputy Director General admits that this is complicated, as transport policy is handled by several levels of government, including municipalities, counties, and the state.

### **Oil and transport: the major challenges to Norway’s CO<sub>2</sub> emissions reduction**

Norway has two major challenges to bring down CO<sub>2</sub> emissions. Firstly, the petroleum sector, with growing emissions, and secondly the transport sector,

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<sup>6</sup> Interview with Deputy Director Ingvild Andreassen Sæverud, Section for Climate and Energy in the Ministry of Environment, Oslo June 13th, 2009



which has been growing rapidly. Given the almost completely hydro-based electricity supply, Norway has no chance of cutting down on CO<sub>2</sub> emissions in its stationary energy supply, like other countries that have substantive coal-based electricity.

### **The gas power plants and CO<sub>2</sub> sequestration**

The establishment of two gas power plants with CO<sub>2</sub> sequestration is a core element in Norway's attempt to resolve this dilemma. By contributing to CO<sub>2</sub> sequestration technology, Norway can be seen to take its fair share of the cost of transition towards a cleaner energy system, building on the government's pioneering engagement in CO<sub>2</sub> storage in the North Sea.

Carbon sequestration from the Kårstø gas power plant will be fully state financed, as it already had an emission allowance. For the Mongstad plant, an agreement has been reached with Statoil, to share the costs, so that Statoil pays the equivalent of climate quotas and the government pays the rest.

### **A Dilemma in Norway's climate profiling abroad**

Norway is caught in a dilemma with respect to its international profile. On the one hand it wishes to appear to be a climate champion, drawing on its long tradition of spearheading sustainable development. On the other hand Norway has become a petro-economy, with more than 25% of its GNP coming from petroleum. The Deputy Director General admits that this is a challenge to Norwegian Government when participating in international forums, where she frequently meets expectations for Norway to in some way, compensate for this.

There is a clear connection between what Norway does at home and its influence on climate policy in international forums. Furthermore, as a small country, Norway has to specialise its contributions to international climate policy. The Norwegian focus is particularly on CCS, where Norway is contributing by helping develop CCS technology. Other important areas are engagement in "cleaner" shipping and forest conservation and new approaches to financing climate mitigation in development countries. For example, Norway has suggested auctioning some of the CO<sub>2</sub> quotas in industrial countries to finance adaptation projects in developing countries.

## ***2.3 The Norwegian Confederation of Enterprises***

The Confederation of Norwegian Enterprises (NHO) was formally established in 1989, as a merger of three confederations: Norwegian Handcraft Confederation (established 1886), Norwegian Employer's Association (1900) and Norwegian

Industry Confederation (1919). The NHO consists of nearly 20 000 businesses within craft, industry, service, and information and communication technology. This represents around 494 000 employees and 40% of the economic value creation in the private sector in Norway.

With the establishment of a climate forum, the Confederation has engaged actively in climate issues. Yet it remains strongly concerned with how Norwegian policy affects industrial competitiveness. Throughout the interview with their climate specialist<sup>7</sup> this dichotomy came up time and again. The following text is a summary of the interview

### **Climate policy forum and a climate declaration**

NHO's climate engagement comes across clearly in their climate declaration which includes the following commitments:

- Ensure that best available commercial technologies are being utilised;
- Make an offensive effort to strengthen energy efficiency;
- Strengthen long- term technology development within the area of energy efficiency, renewable energy, carbon capture and storage;
- Include climate assessments and climate costs in all investment decisions; and
- Increase corporate awareness as to how each individual enterprise can contribute to reducing climate change.

### **Policy Asymmetries**

NHO's concern with the relative competitiveness of Norwegian industry, however, is also strongly emphasised among other things in their concern with asymmetries in national allocation of emission rights. One of the problems for Norwegian industry is that the Norwegian national allocation plan (NAP)<sup>8</sup> is stricter than most other countries. Furthermore, the climate specialist argues, the "grandfathering system" allows an established firm to continue like before, while newly

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<sup>7</sup> Interview with Senior advisor Per Anker Nilsen, Oslo, August 7<sup>th</sup>, 2008

<sup>8</sup>In order to make sure that real trading emerges (and that CO<sub>2</sub> emissions are reduced), EU governments must make sure that the total amount of allowances issued to installations is less than the amount that would have been emitted under a business-as-usual scenario. For each Phase, the total quantity to be allocated by each Member State is defined in the Member State National Allocation Plan (NAP) (equivalent to its UNFCCC-defined carbon account.) The European Commission has oversight of the NAP process and decides if the NAP fulfills the 12 criteria set out in the Annex III of the Emission Trading Directive. The first criterion is that the proposed total quantity is in line with a Member State's Kyoto target (Wikipedia – European Emission Trading Scheme – 22-6-2009).

established firms have to take the burden. They have no quota reserves. There are no free quotas for newly established firms like in the rest of Europe.

NHO's climate panel consisting of 30 business leaders is therefore clear about the need for aligning Norwegian policy with that of other countries. There is a strong recognition that we need global solutions to global problems.

#### **More efficient regulation/ alternative to tax: The NOX fund**

The concern with competitiveness also comes across in the emphasis on efficiency in environmental policy. NHO is concerned with developing incentive systems that provide efficient, environmentally oriented transformation without excessively burdening Norwegian industry. Together with 13 other organisations, NHO has made an agreement with the Ministry of environment, where enterprises that join the agreement are relieved of NOX levies for three years, but will have to undertake extensive reductions in emissions. The fund is financed by payments from industry, undertaken as alternative to taxation. Both industry and society are served with this arrangement.

#### **EU less idealist after the enlargement, should Norway also go more pragmatic?**

With the enlargement of the European Union, the EU 27 has become more pragmatic and less idealistic than the EU 15, says the NHO climate specialist. They have recognised that the EU must see itself as a part of the global picture, and must have new industrialising countries on board in the climate policy. NHO argues that Norwegian policy should also have our international context in mind.

#### **Energy consuming- and energy producing industry**

Norwegian industrial interests are, however, not unequivocal. In the Norwegian energy debate, NHO, according to the climate specialist, sees very different consequences of climate policy for energy producing and energy consuming industry. The producers are getting great advantages. Based on hydro power in Norway, they can pocket the price increase due to CO2 pricing, as a net profit, passing the bill on to consumers. For energy consuming industry – and particularly energy intensive industry, increased energy prices lead to severe competitive disadvantages on the global market.

#### **Backlog in transport conditions**

As part of the broader picture of the competitiveness of Norwegian industry, NHO is also concerned with transport policy. The transport conditions for industry in Norway are deficient compared to other mature industrial nations. Environmental policy arguments have partly been used as a defence for neglecting investments

in road construction. However, in reality the bad road conditions are mainly due to the political decision-making process, which tends to develop roads piecemeal. At the same time, the need for transport has grown explosively with a growth of 30-40% over the last 5 years, and Norway has a backlog of 400-600 billion NOK investment in the sector.

#### **Difficulties with technology transfer**

Technology is generally seen as a central factor in coping with climate change – particularly technology transfer from mature industrial nations to developing countries. However, technology transfer also raises issues of intellectual property rights. The clean development mechanisms are a promising tool for technology transfer from North to South. However the certification of such projects is very complex and he fears that they will not be able to make the considerable contribution that they were designed for.

Technology is often taken over by international partners, who may put it into use before Norwegian developers. Norwegian industry may therefore be reluctant to engage. One solution may be for government to support development of technology clusters, where Norwegian firms participate together with international partners.

#### **Gas for domestic consumption**

Finally, bearing Norwegian process industry in mind, NHO is also concerned with the limited domestic use of gas in Norway. According to the climate specialist, Statoil prefers to sell gas abroad at high world market prices, while neglecting domestic industrial development. Several projects aiming to provide Norwegian gas to locations in southern Norway have been dumped, leaving energy intensive process industry with few alternatives to high priced hydro-based electricity, which again undermines the will to undertake investment in energy intensive industry

#### **Need to depoliticise technology choices**

Furthermore, the climate specialist is critical to Norwegian technology policy for the domestic energy market. With respect to support for renewable energy technologies, he points out that Norway has had a varying and rather unclear support regime which is also partially coloured by the technologies that are politically fashionable. Norway, as NHO sees it, has significant possibilities to come up with renewable energy which is not utilised under the present regime.

## **2.4 The Norwegian Electricity Industry Association**

The Norwegian Electricity Industry Association (EBL) is the trade organisation for about 260 generators, suppliers, distributors and contractors with a total yearly production of nearly 120 TWh. The electricity sector in Norway is largely publicly owned with state and local authorities owning 85% of the Norwegian power sector. Norway is a leader within clean electricity in Europe. 99 per cent of the country's power generation is based on renewable hydropower sources which do not emit CO<sub>2</sub>, with a large potential for new renewable energy sources.

Following early deregulation, the Nordic power market is the best in Europe. Compared with other countries, Norwegian end-users still pay relatively low electricity prices.

Given the hydroelectric basis of electricity production in Norway, the climate challenge is generally seen as an opportunity, rather than a threat. The interview with EBL's Director for Production and the Environment<sup>9</sup>, therefore largely focused on new possibilities and competitive advantage. The following text is a summary of the interviews.

### **Climate change as an opportunity**

Given its hydroelectric basis, climate change comes more as an opportunity than a threat to Norwegian electricity industry. Electricity trade to the continental European market has pushed up domestic prices in Norway, and strengthened the Norwegian electricity industry. Additional CO<sub>2</sub> pricing has given an additional price boost in a coal dominated European electricity industry, which has increased electricity prices even further.

### **Beyond electricity**

Norwegian electricity industry was well positioned to meet climate change before it was a major issue. Recognising political restrictions on further large scale hydropower projects, electricity industry has moved into the heating market, including district heating, as well as wind and some other renewables, including bio-fuels. The electricity industry has also engaged in energy saving and heat pumps. The climate challenge has stimulated this development even further, and the industry is now rebranding itself with a focus on energy and energy management.

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<sup>9</sup>Interview with Director Erik Skjelbred, EBL, Oslo July 8th, 2009

### **Engagement in transport**

Lately, electricity industry has also started preparing new green transport solutions. It sees a role in providing an infrastructure for battery driven vehicles, where the build-up of a system to facilitate battery charging is seen as an interesting business challenge. The industry association has been working closely with the Ministry of transport on the “green car concept”. Given the need to build up infrastructure, the association sees a need for extensive Government involvement in the early stages of green car development.

### **No immediate need for more renewables**

In spite of the vision of a future electrification of transport, the association of electricity industry does not see a need for extensive investments in renewables in Norway. From the short to medium term, there is not a strong need to introduce more renewables, with massive public support in Norway.

Norway has a great potential for providing renewable energy to continental Europe, but it is not the duty of Norwegian tax payers to foot this bill. Only with sufficient development of grid-infrastructure, and a reasonable payment from the recipients of green electricity would it be sensible to engage extensively in green electricity in Norway. If massive investment in renewables in Norway were made without extending export grid capacity, this would result in oversupply and a massive decrease of electricity prices.

### **Belief in the market principle**

Basically, EBL believes in a sober market-oriented approach to renewables. Norwegian industry may take supplier positions in particular niches, such as new composite materials and selective parts of the mechanical industry. But to believe in massive development of renewables industry in Norway without a massive demand from export markets seems impossible. Continental European markets, such as Germany, would obviously protect their domestic supplier interests before supporting industrial suppliers in Norway.

### **Long term basis for electricity-intensive industry in Norway**

Norway has a long tradition for electricity-intensive smelting industry and paper and pulp industry, based on cheap electricity. With the current export-opportunities to continental Europe for electricity, European prices are more and more spilling over to the Nordic countries. EI intensive smelting industry is also increasingly attracted to relocate abroad.

## **2.5 The Norwegian Oil Industry Association**

The oil and gas industry is Norway's most important industry and the country's largest source of revenue. The petroleum industry is a high-tech industry which functions as a driving force for other business and industrial development. The OLF, the Norwegian Oil Industry Association, is therefore a central player in Norwegian industrial development. The OLF unites 47 oil and gas companies and 58 supplier companies on the Norwegian Shelf which account for approximately 29,000 employees. The OLF's task is to lead the industry's joint effort for development of a progressive and competitive petroleum industry with a good reputation and good rapport with the authorities, stakeholders and the public. The following text is a summary of the interview with its Director for industry and the environment<sup>10</sup>.

### **The Justification for Petroleum Production under the Climate Challenge**

With respect to sustainable development, the OLF sees itself just as much as part of the solution, as a part of the problem. While it acknowledges the need for a transition to sustainable alternatives in the long run, it sees a strong need for carbon based energy to support growth in developing countries. The provision of basic energy is a necessary precondition to address with the worst diseases and reduce child mortality, among other things.

The International Energy Agency envisions a world with extensive use fossil fuels for the foreseeable future, even within its climate goal of 2 degree warming. Petroleum will thus be part of a long term energy transition, which may last up to 40 years.

### **The Norwegian petroleum sector a clean alternative**

The Norwegian debate about bringing down Norwegian domestic emissions overlooks the contribution of gas exports to Europe. By substituting coal, Norwegian export of gas reduces European CO2 emissions four times the Norwegian total.

Furthermore, Norwegian petroleum production is cleaner and more energy efficient than most other places. The CO2 emissions from the petroleum industry are lower than in many other industries. The Norwegian petroleum industry is also increasingly using electricity for energy on drilling platforms in order to have cleaner production.

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<sup>10</sup>Interview with Director of industry the environment, Lars Arne Ryssdal. Oslo August 21st, 2009

The petroleum industry has also engaged in a dialogue with the fishing industry, to protect the fertile fisheries in the North. In addition it has also championed good health and safety standards and is – in this respect – considered one of the most advanced arenas in the world.

#### **Contribution to public finance**

90% of the income from petroleum industry is income to the state. The question of petroleum exploration and exploitation in Norway is therefore also about state revenue and public welfare.

#### **Petroleum economy as a basis for competency and also green innovation**

Staying at the cutting edge of engineering in oil and gas production also provides a platform for new green technologies. Although the investment in green technologies by the petroleum industry is small compared to petro-investments, it is nevertheless substantive.

Furthermore, the petroleum economy provides revenue for public engagement in transformation of the energy system. However, the Norwegian government is not providing incentives that are strong and consistent enough.

## ***2.6 The Federation of Norwegian Industries***

The Federation of Norwegian Industries is the result of a merger between the Federation of Norwegian Manufacturing Industries (TBL) and the Federation of Norwegian Process Industries (PIL), two large industrial federations of the Confederation of Norwegian Enterprise (NHO). The new federation comprises approx 25% of NHO and is by far the largest sectoral federation within NHO. Total annual turnover for the sectors which the Federation of Norwegian Industries represents exceeded NOK 650 billion in 2008. Total annual exports had a value of NOK 310 billion. Included in the Federation are some of the largest energy consumers, like the smelting industry and the paper and pulp industry. The federation also includes the supply industry to petroleum, recycling/waste industry as well as industry engaged in renewables, particularly photovoltaics, and CO2 sequestration.

Given its broad industrial basis, the Federation's director of health, environment and security<sup>11</sup> could find both upsides and downsides to climate policy. The following text is a summary of the interview.

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<sup>11</sup>Interview with Director of the environmental and health, environment and security division Trygve Østmo and Thoralf Thorsen, second interviewee. Oslo July 16th, 2009



### **A dual climate agenda**

Given its broad industrial basis, the Federation of Norwegian Industries experiences both upsides and downsides to climate policy. On the one hand, the smelting and paper and pulp industry is among the most energy intensive. These industries have been built up in Norway on the basis of access to cheap hydropower, and now face a double price hike resulting from market integration with high price regions in continental Europe as well as a price increase due to climate motivated carbon taxes and quotas.

On the other hand the Federation also organises industry that supplies the large Norwegian offshore petroleum sector, as well as new energy solutions for renewables, including photovoltaics and CO2 sequestration, where climate policy is a major driver. Furthermore, light metals from the smelting industry are also part of the industrial shift towards a more sustainable society, insofar as they are necessary ingredients in lighter *and less energy-consuming* transport.

### **Agreements for emission reduction**

Several of the Association's member firms have for some time now been engaged with government in emissions reduction agreements, and achieved very good results. These agreements have both included waste management and NOX reduction, both with significant positive climate effects. The NOX (nitrogen oxide) agreement has involved alternative allocation of NOX taxes into a fund to support technological improvement of industrial processes to bring down emissions. The packaging agreement was based on EU directives that obliged industry to recycle waste. These agreements were made between the Ministry of environment and industry, and inspected by the Norwegian Pollution Control Authority.

### **Governance efficiency**

The Federation of Norwegian Industries has been a strong supporter of agreements and technology funds, as a more effective and efficient means for achieving environmental and climate policy results than traditional taxation. The fact that industry has exceeded the requirements of the agreements is taken as a proof of this. The federation is critical of traditional taxation, as advocated by the Ministry of Finance. Taxation gives the wrong incentives as it is far less focussed and cost effective.

### **Carbon leakage and engagement with EU policy**

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The Federation of Norwegian Industries is concerned with the Norwegian delay in clarifying its emissions trading regime and its interface with the EU market. This delay limits Norwegian industry's possibility of positioning itself strategically in an important field.

However, the federation, together with its sister organisations, is seriously concerned with the competitive effects of one-sided emissions trading and carbon leakage that involves production moving offshore to countries with lower standards, whereby global emissions will not be reduced.

## **2.7 The Norwegian Farmers' Union**

Norwegian Farmers Union (Norges Bondelag) is Norway's largest farmers union and represents 62 000 members across the country. The organisation is politically independent and its aim is to improve the conditions for Norwegian farming and to promote the importance of farming in a modern society. We explored the Governments' climate policy further in an interview with a board member<sup>12</sup>. The following text is a summary of the interview

### **Causes of CO2 in farming/agro and initiatives to solve the problems**

The board member pointed out that Norwegian the farming and agricultural industry has worked on CO2 issues for some time, and has come to recognise that this sector, in total contributes around 9% of Norwegian CO2 emissions, including transport of products from the agro-industry.

In farming proper one of the major focus-areas is emissions of "gas" from fields. This gas is 300 times more potent than CO2 and therefore a major concern. The farming industry is working on new methods where the fertiliser is injected directly into the soil. With this technology, minimising climate gas emissions goes hand in hand with more efficient resource utilisation.

Just by changing its driving patterns, agro-industry has been able to save more than 25% of its diesel consumption, with positive CO2 effects. However, the industry could also utilise the considerable waste water coming out of agro-industrial processing. Such strategies, he claims, are currently being investigated.

### **CO2 binding**

The farming sector can be seen as a large "binder" of CO2. They are a major source of photosynthesis. More specifically there are three large "binders" of CO2 – soil, forest and the sea. As the sea is becoming more "sour" the uptake from plankton decreases, and possibly affects fish. This creates a challenge to the

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<sup>12</sup>Interview with Svein Guldal, member of the board of the Norwegian Farmer's Union, Oslo, May 25<sup>th</sup>, 2009

farming sector that will have to produce enough to replace the decreased supply of fish. Improved methods of forestry, may, according to the board member, provide both improved productivity and increased CO2 mitigation.

#### **The farm as an energy resource**

In recent years the farmers have become the developers of the Norwegian countryside. Since the advent of global warming, they have been challenged to see the farm as also being an energy provider. Norwegian farms have a great potential for small scale hydro and, as farmers typically own forests, they can also provide bio-energy. During two years of energy price hikes, farmers engaged to supply wood for heating. They have continued logging for firewood ever since, taking out some of the remaining 45 TWh bio-energy potential in addition to 25 TWh of small scale hydropower and 2.5 TWh from bio-gas and abundant additional wind power.

#### **Problems due to global warming**

With a warmer and wetter climate, one expects a number of new problems and crop diseases. This includes “blue tongue disease” and the Iberian snail. Norwegian farmers have to prepare for this situation. Erosion will also become more of a problem, and Norway, including Norwegian farming, will have to adapt to much more intensive rainfall.

#### **Global food scarcity when Chinese and Indian consumption increases**

The board member is against using farm-crops for energy. The limited expansion is already causing extensive price increases in food crops. With extensive growth in Chinese and Indian grain and meat consumption, it will be difficult to produce enough food, and Norwegian farming will need to cover our own needs.

#### **Norwegian small scale farming and disease prevention**

Norwegian farming, with its smaller scale, represents an insurance against disease. If animals on one farm are struck, the disease may be stopped before it spreads, because of the large distances between the farms. Furthermore, Norwegian farming also presents some of the cleanest and healthiest farming conditions in the world. Small scale farming therefore reduces the need for antibiotics.

### **New machinery, need for innovation**

Farmers are recognising that the weight of their machinery is becoming a problem, as it affects the structure of the soil. The packing of soil prevents roots from properly growing, while reducing the capacity to bind CO<sub>2</sub>

However, the mechanical industry in Norway has an extensive focus on oil technology, somewhat to the neglect of other sectors. Instead, the board member argues, we have access to world class technology that could be used beyond the petroleum sector. The oil industry tends to monopolise the resources available for the development of technological know-how and prevent smaller scale development.

## ***2.8 The Norwegian Association of Fishermen***

The Norwegian Association of Fishermen (Norges Fiskarlag) was founded in 1926 to represent the economic, social and cultural interests of fishermen. The association collaborates closely with public authorities both centrally and locally. The association is organised through eight county associations along the Norwegian Atlantic coast, headed by a central administration in Trondheim. The membership consists of boat and fishing gear owners, as well as fishermen, and covers both smaller local boats and large ocean-going vessels.

The Association's position on climate issues was presented to us in an interview with the Association's advisor<sup>13</sup>. The following text provides a summary.

### **Uncertain development**

The climate issue became the centre of attention at an industry convention in 2007. The convention concluded that there is uncertainty about how increased sea temperatures will affect the migration of fish, and it is therefore necessary to focus research on this issue. Danish researchers have studied the development of plankton in the North Sea, which is the feedstock of the fish. The association therefore supports the Norwegian government's policy of reducing the global emission of climate gasses.

### **Shifting habitat of fish**

The climate effects may be both positive and negative, and may affect different groups of fishermen, depending on their location. For example, recently there have been less fish on the inside of the Lofoten archipelago – one of the most well known spawning sites in Norway. The fish have migrated to other places as the

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<sup>13</sup>Telephone interview with advisor, Jørn Pedersen and July 12<sup>th</sup>, 2009

water gets warmer. This of course benefits fishermen there. In general, there is a tendency for fish to move up North. The mackerel – formerly found only in southern Norway – have been moving up to northern Norway. The Association is very unsure about the implications, and there are both positive and negative effects. While the global consequences of climate change are generally negative, the Association believes that the implications for Norwegian fisheries may be somewhat positive.

#### **Eco-efficiency, research and modernisation**

Norwegian fishermen and vessel owners have engaged actively in energy economising, with extensive positive climate effects. The high petroleum prices, has encouraged them to work actively towards reduced fuel use, both through improvements in engines and in vessel-hulls. The Norwegian NOX fund has been a useful instrument in financing this activity, and has provided financing for large-scale emission reduction projects. The Norwegian fishing fleet has been one of the most active users of this fund. The motivation behind the improvement of eco-efficiency has primarily been economic and NOX reduction, but this transformation also has tangible climate effects.

#### **Environmental accounting**

The Norwegian Association of Fishermen is also collaborating with public authorities and the broader fishing industry, as well as industry in general, in developing environmental accounting. This accounting will provide a useful tool to benchmark environmental performance.

## ***2.9 The Norwegian Confederation of Trade Unions***

Established in 1899 the Norwegian Confederation of Trade Unions (LO) has a long history and a strong position in Norway. LO has more than 860 000 members organized in 21 different trade organizations and represents 25% of the work force. The Norwegian trade unions are strongly rooted in the social democratic values with strong ties to the current labour/left wing government.

LO has recently engaged in climate policy, and the industry policy division carries the overall responsibility for this policy area, albeit in close collaboration with the division for work environment. Nevertheless, at the latest annual convention, climate policy was overshadowed by other issues such as pension reform and the consequences of the financial crisis on industry.

We explored LO's climate policy in more detail in an interview with the head of its policy division and work environment division<sup>14</sup>. The following text is a summary of the interview.

### **Strategic climate plan**

LO developed a *strategic climate plan* in November 2007, which was endorsed by the industrial divisions and by the central secretariat. The plan was revised in June 2008 and focuses on such areas as<sup>15</sup> increased r&d for renewable energy; support for bio energy; public support for wind power; new cleaner technology in power intensive industry; engagement for climate focus in private and public procurement; involvement in sustainable industrial development in collaboration with employees; and engagement for green tourism in Norway. As part of the follow-up, LO has also engaged in an environmental certification process under the Environmental Lighthouse Programme to secure that their offices live up to acceptable standards. However, climate issues got surprisingly little attention at the 2009 LO congress.

### **Climate and good work environment**

The three interviewees saw a clear connection between a responsible climate policy and a good work environment. They argued that if you go 40 years back and look at factories with black smoke coming out of their chimneys and bad work conditions, you will see parallel progress in both domains. Laws regulating work environments and the clean-up of the workplace have gone hand in hand with a clean-up of the external emissions. As people become more aware of the one side, they also tend to engage in the other.

### **Sustainability and competitiveness**

LO also sees a clear link between sustainability and competitiveness. LO has therefore taken initiative to push for a "strategic council for environmental technology" which has recently been created by the Ministry of Environment. The council will follow up on national strategies for environmental technology in order to secure a coordinated policy focus in this field.

### **Internal conflicts between LO divisions around climate issues**

It cannot be denied, says the head of the policy division, that there are differences of opinion on certain environmental issues among various specific business or

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<sup>14</sup>Interview was with Grethe Fossli, head of the policy division and Anne-Beth Skrede and Olav Lie from the work environment division. Oslo October 21<sup>st</sup>, 2009

<sup>15</sup> <http://www.lo.no/s/Naringspolitikk/Klima-og-miljo/LOs-klimastrategiske-plan/>

public sectors. If climate policy implies building down work places affecting a union, there will necessarily be debate. The debate about oil exploration in northern Norway, for instance, has created some controversy. However, transformation does not necessarily imply loss of jobs, and LO is open to necessary change. LO is a broad organisation and reflects the broad variety of opinions that you find in society at large.

#### **Norwegian LO in the elite club fronting climate among colleagues**

According to the interviewees, Norwegian LO plays a leading role in climate policy within the trade union community. Together with the other Scandinavian countries and Germany, Norwegian LO figures in the climate elite. Norwegian LO holds a particularly strong position in society, compared to many other countries, and when backed by a progressive left-wing government, this provides a good platform for climate leadership.

#### **International competition under higher social and environmental standards**

LO recognises that Norwegian industry is more competitive in arenas with relatively high social and environmental standards. Engagement to promote climate issues as well as other environmental and social issues therefore coincides with interests of Norwegian industry. LO is a strong supporter of environmental standards in public contracting and accordingly participates in a national panel for environmentally friendly contracting.

#### **Collaboration with the Confederation of Enterprises**

LO collaborates with the Confederation of Industries on climate issues. They are in the process of establishing concrete projects related to environmental and social certification of businesses. As this will also affect jobs and work processes, it is of central interest to LO. The certification project implies that trade union representatives and business leaders will work together on climate issues. Industry and trade unions in Norway have a tradition of partnered projects, which are financed through special funds in both organisations.

#### **LO has education on environmental issues**

LO has also engaged in climate change issues through education. Trade union representatives are informed about climate change and sustainable development. These courses are voluntary but popular, and will raise the level of climate consciousness in the trade union movement over time. Norway is fairly unique in its tradition of collaboration between employees and industry.

### **Climate is becoming increasingly important**

There is a considerable change in attitudes to climate and environmental issues. After LO got a climate-strategic plan, the issue attained far more prominence in the organisation and is now clearly profiled by the LO leaders. This gives LO credibility in the population and there is the expectation that trade union representatives will become spokesmen for climate issues within the firm.

### **Differentiation among sectors**

There are some obvious differences between sectoral trade union chapters when it comes to climate engagement and climate solutions. Some chapters have developed clear sectoral visions and ideas, while others have more or less neglected the issue. Other chapters are lagging behind. How far they will go towards common policy agreements is, for the moment, hard to say.

### **Collaborative relations with a left-wing government**

The interviewees praised the collaboration with the left-wing government and see it as a good basis for strong engagement in climate issues. Together with the collaboration with industry, the collaboration with government represents the core of “the Nordic Model”. There are, in fact, more conflicts between industrial sectors themselves than between labour and capital

## ***2.10 WWF Norway***

WWF is one of the largest environmental organizations globally, with 5 million members in over 90 countries. The Norwegian division was established in 1970, and has since had a growing number of members. As of May 2009 the organization had 10 000 paying member and 20 000 recipients of the newsletter. The main goal of WWF Norway is the conservation of nature and biodiversity. Its leader, Rasmus Hansson, is a frequent participant in public environmental debates, and enjoys the reputation as one of Norway’s “environmental” leaders. While the central focus of WWF Norway is lobbying and influencing Norwegian environmental policy and legislation, half of the annual income comes from the Norwegian Agency for Development Cooperation (NORAD) to undertake projects in Africa.

As a large mainstream environmental NGO the WWF has had to engage pragmatically in climate issues, in what one might call an environmental “realpolitik”. This reflects the need for compromise with industry and government. On the other hand many of the WWF staff is inspired by a broader and more fundamentally ecological perspective. This duality comes across clearly



in our interview with the Secretary General<sup>16</sup>. The following text is a summary of the interview.

### **Pragmatic transition based on least cost approach**

While maintaining the need to make a major transition to a sustainable society WWF has taken a pragmatic position on the means, says Hansson. Reductions in CO2 emissions are to come about through increased efficiency, then transition to electric transport, subsequently isolation of houses and electrification of petroleum extraction on the Norwegian continental shelf. The idea is to apply cost efficiency and take the less costly measures first before proceeding to more costly measures.

### **Climate runs over and traditional nature conservation**

According to Hansson, WWF supports the view that Norway can become a major exporter of green energy, but this must not come at the expense of nature. "If, as some of the major energy companies seem to assume, we seek to solve the climate crisis by destroying the rest of nature, we have thrown the baby out with the bathwater. We here have in mind a situation where we develop all the remaining Norwegian rivers, or fill up the whole Norwegian coast with wind mills." We must, however, accept a certain increase in renewable energy production, as the intrusion into nature remains mild, says Hansson.

Hansson argues that the climate question has surfaced so dramatically as a policy priority because it is framed in a language that is easily understandable by the power-holders. This is why the Norwegian environmental NGO Bellona does so well. It speaks the language of government and is well suited for debate programmes on TV.

### **Classic hydro energy conflicts return in new forms**

WWF fears that the new climate agenda, with its demand for more green energy, is about to re-activate the traditional Norwegian hydropower debate. The State power company talks about lakes and rivers that "used to be protected". The struggle to preserve waterways has traditionally been the core of Norwegian nature conservation, and WWF is not willing to give in on this point. The Hansson says that WWF must "force nature back into the climate debate" or in other words to widen the narrow climate agenda to also take on the broader local and national environmental agendas.

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<sup>16</sup> Interview with Secretary General Rasmus Hansson, WWF Norway, Oslo October 27th, 2009

### **Norway's unique energy profile**

The Secretary General makes a point of Norway's peculiar CO<sub>2</sub> profile. While much of the rest of the world has coal based electricity generation, Norway's emissions are dominated by petroleum extraction, oil and shipping. Norway is also in a very special position globally, as a supplier of clean energy as well as of gas, which is seen by many as a transition fuel, between coal and renewables.

### **Critique of the "only action abroad" policy**

WWF is highly critical of the Norwegian policy of doing most of Norway's climate policy abroad – by buying emission allowances – while undertaking very little at home, as Norway continues to expand its petroleum exploration. They argue that Prime Minister Stoltenberg's quota policy has failed, in that it does little to reduce CO<sub>2</sub> and is morally and politically useless.

### **Forests and climate: a complex issue**

The inclusion of forests in the Norwegian CO<sub>2</sub> accounting – as some forest owners have suggested – is highly problematic according to WWF. The increased uptake of CO<sub>2</sub> at the present is due to an increased forest growth following a period of rapid felling some years ago. In principle, the forest should be in balance. The inclusion of forest internationally comes from prevention of systematic deforestation, by converting forests into agricultural or industrial land use. Thus Norwegian investment in rain forests abroad cannot be compared to forestry at home, says the Secretary General.

### **Aviation, a problem sector**

Norway may achieve a lot of CO<sub>2</sub> reduction in the housing sector, in transport and in industry, but in international aviation WWF sees big problems. One issue is the accounting, where one may attribute emissions from aviation to the home country of the carrier, or to the passenger's home country or to a mixture of the takeoff and landing locations. WWF does not expect more than 20% reduction in emissions from aviation in the near future.

### **The moral responsibility of a rich nation & Norway's missionary role**

Due to Norway's petroleum based economy – and the concomitant destructive consequences for the environment – our wealth comes with a great moral responsibility."

The Secretary points to the strong Norwegian missionary tradition, which has evolved into peace-brokerage and development aid. Taking a strong role in bringing down CO<sub>2</sub> emissions, WWF agrees that the Norwegian "regime of

goodness” will add a green dimension to its established reputation. This involves development of renewable technology and acquisition of rain forests for conservation. WWF sees this positioning as the way to promote environmental responsibility as a policy that will eventually also pay off in industry.

The Secretary General is, however, aware that there are diverse political views on climate between Norwegian parties. Notably, the Progress party, which has come up as a strong, populist centre-right phenomenon in Norwegian politics, has raised serious questions about the climate change realities. However, the Secretary General argues, Progress party voters are probably just as environmentally friendly as everybody else. In fact, he sees the Labour party (now in government) as a stronger threat, because of its persistent pro-industry engagement, frequently at the expense of ecological sustainability.

#### **The need for better public framework conditions**

WWF points out that Norway still lacks adequate framework conditions to play the role of an international green front runner. The Ministry of Finance, in their opinion, blocks obvious possibilities for technology development and societal change. Norway has the resources to make significant investments in the research and development of sustainable energy technologies. Hansson recalls one particularly embarrassing example from the 1980s in which Norway financed the development of wave technology only to withdraw its support, resulting in the industry's relocation to Scotland.

#### **The institutional bias from the petroleum economy**

One of the problems of promoting green policy in Norway – according to WWF – is the institutional bias from the petroleum economy. The oil industry lobby is extremely powerful. In spite of the extensive Norwegian resources that could support green initiatives, the influence of the oil industry remains a significant obstacle to increasing the scope of ecological initiatives.

#### **Conflict avoidance policy & call for stronger action**

Another problem for strong Norwegian green policy is – according to the Secretary General – the country's cultural tendency to avoid conflict.

*We have a political culture which has forgotten how to take strong decisions and are oriented only at marginal improvement. There is a need for political leadership. People need to be woken up. Norwegian politics is too much woven into contradictions and excuses.*

### **Pragmatic positioning, but deep ecologist at heart**

WWF as an organisation has chosen a pragmatic approach. You may drive cars, but “nice cars” rather than “bad cars”. The Secretary General believes that we have, in other words, chosen not to challenge people’s fundamental values. Many of WWF’s staff may want to take a position more closely aligned with “deep ecology”, but see the need for communicating with society at large. WWF’s mission is to see “human beings living in harmony with nature”. The path leading there must be relatively pragmatic and romantic or philosophical divagations will lead us nowhere.

### **Successful influence on oil extraction in the North**

One of WWF’s success stories is their influence on oil extraction in northern Norway. Given the strong engagement by established petroleum interests to engage in oil exploration off the northern coast, WWF chose a pragmatic strategy of engagement. First they pressed hard to disclose statements on northern oil exploration from the Marine Research Institute and the Norwegian Pollution Control Agency, which had been kept secret by the government. Then they integrated information from the two agencies into a map and generated a factual basis for compromise in which distinctions were made between the relative vulnerabilities of different zones. This, according to the Secretary General, helped to productively shape the political debate, where a complete rejection of oil exploration would have resulted in WWF marginalising itself, and the petroleum industry winning the game entirely. The chosen method of compromise was successful.

### **Contrast with the failure to protect wolves**

The above success contrasts with the WWF’s failure to protect the habitats of wolves. In spite of their success in convincing the state authorities, strong engagement from segments of the local population blocked implementation of the recommended policy. The secretary general suggests that the WWF failure could have been due to the fact that some of scientific advisers on wolf behaviour speak urban dialect, which contributed to the conflict between rural and urban segments of society, ultimately preventing increased protection of habitats for wolves.

### **Effects of the financial crisis**

The Secretary General is uncertain about the effects of the financial crisis on climate policy. On the one hand, he sees an opportunity to use financial instruments to further ecologically sustainable policy, with obvious opportunities

to link green public investments to counter the recession. However, the absence of private investment capital – as private financial assets have crumbled – is not promising.

## **2.11 Amnesty Norway**

Amnesty is the largest human rights organization in Norway. The Norwegian branch of Amnesty was established in 1964 and now has more than 50 000 members and over 140 local chapters working to promote human rights in Norway and abroad. Our interviewee, the policy advisor of Amnesty Norway<sup>17</sup>, has been a central spokesperson for the organisation in the Norwegian debate. As indicated in her statements below, there is an emerging link between climate issues and human rights, both as a consequence of increased climate-migration, and as a result of an expanding human rights agenda. The following text is a summary of the interview.

### **Human rights, livelihood and climate**

There is a connection between human rights and climate, according to Amnesty, which is becoming more and more recognised. The connection is through livelihood. Human rights include fundamental social and economic rights, and in so far as climate change threatens livelihood, there is a connection. For example, desert nomads could lose their means of sustenance if global warming destroys the traditional food sources for their livestock. This may justify their migration to other countries and Amnesty is currently working to understand the implications of this complicated situation.

### **Expanding the human rights agenda**

At their last world council meeting, Amnesty International extended their mandate to focus on a broader concept of human rights, including economic, social and cultural rights. Under this broader understanding, there is larger scope for climate refugees to be included, and to be granted protection when they immigrate abroad.

The policy advisor points out that Amnesty has not taken a stand for completely open borders. Nevertheless, there is an expansion of human rights to include refugees from sexual discrimination and from repressive marriages, which may set a precedent for imminent cases of climate refugees.

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<sup>17</sup> Interview with the policy advisor in Amnesty Norway, Beate Slydal, Oslo, October 27<sup>th</sup>, 2009

### **National minimum rights for immigrants**

Amnesty has strongly supported migration policy that defines the rights and duties of countries vis-a-vis people within their territory. This convention is highly controversial in countries with large numbers of immigrants. Amnesty is of the opinion that migrants should have the right to minimum standards in the country where they have arrived, on par with native inhabitants. The policy advisor points out that the Norwegian government has been sceptical of this convention, and is thereby losing its edge in human rights, possibly even becoming a laggard.

### **Norway's dualism**

With its laws relatively restrictive to new immigration, Norway is – according to Amnesty – embarking on a dualist path. On the one hand, the country proclaims to be a champion of human rights. On the other hand they have not made it a priority to guarantee minimum standards of living for immigrants that are consistent with the domestic population. The Norwegian position on immigration remains ambiguous, – argues Amnesty's policy advisor – as the more restrictive attitude to immigration is a result of stronger participation of the Ministry of Finance and the Attorney General alongside the Ministry of foreign affairs in these matters. The first two organisations tend to be more restrictive with respect to including immigrants in domestic welfare arrangements than the Ministry of Foreign Affairs, which previously dominated this field alone.

## ***2.12 The Church of Norway***

The Church of Norway is a protestant church formally aligned with the state since Norway adopted its Constitution in 1814. The Christian values have been central in all parts of society, but the position and relevance of the State Church has weakened in the context of modern, secular society. An increasing number of people are leaving the Norwegian Church, fewer people go to church service and fewer children are being baptized (ssb.no). At the same time, other religions are gaining momentum due to immigration.

Nevertheless, with 83% of Norway's population – now 5 million – still members of the Church, it remains an important factor in society, and has engaged actively in climate issues and sustainable development. The engagement has taken place at several levels. At the theological level, the church is searching for new interpretations of the gospel, with a less anthropocentric and more ecological focus. At the societal level, the church is engaging in green and social justice oriented networks to participate in the transition to a more sustainable

society. The church is also conscious of its obligation to handle its own operations in a sustainable manner.

Our interviewee in the Church council's section for deaconry and society<sup>18</sup> has been responsible for preparing many of the Churches' initiatives in this field. The following text is a summary of the interview.

### **Ecology as a platform for the church**

The senior advisor points out that the church wants to be a prophetic voice against unsustainable consumerism and unbridled growth. "Green congregation" has become a new slogan, indicating both an ecological Christian outlook, and a willingness to scrutinize the Church's own practice from an environmental point of view. Furthermore he argues that there has been a reinterpretation of the tasks of the deacon with an ecological twist: instead of focusing on engagement with fellow human beings, the promotion of freedom and protection of (God's) creation has emerged as the new motto.

### **Networking with the environmental movement**

In its engagement in climate issues and for sustainable development, the Church has collaborated with a broad set of environmental and socially engaged organisations. The senior advisor has thus been the leader of the network organisation "Green Everyday Life" (Grønn Hverdag) and facilitated Church engagement in fair trade through the Max Havellar brand.

### **Consumption and justice: the Church and consumer culture**

The Church, according to our interviewee, has been engaged in critique of consumer culture. A document entitled "Consumer society as an ethical challenge" was presented as a background document for the meeting of the bishops in 1993, and "Consumption and Justice" has been a slogan since 1996. This implies that one sees questions related to the environment and social justice in conjunction with consumption. With this engagement the Church, as he sees it, wishes to provide an alternative to consumer society.

### **The church as a source of calm and reflection**

However, the senior advisor says it is important to acknowledge that the Church is not just another NGO, but an institution with its own distinctive qualities. One of the ideas that came out of a brainstorming session on the role of the church in

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<sup>18</sup> Interview with Hans Jürgen Schorre, Senior advisor on ethics and society in the Church council's section for deaconry and society, Oslo October 21st, 2009

sustainable development was for the church to cultivate meditation and mental calmness and to become a “tanking station” for reflection and deeper compassion in a stress-ridden society.

### **The outlook on man and creation**

Perhaps the most exciting development within the Church of Norway with regard to sustainable development and climate change is its work to review its core interpretation of the Gospel.

Our interviewee refers to a historian who, in an article in “Nature” or “Science” claimed that in some interpretations of the gospel, man is placed alongside or above the creation, and shall rule over it. Adherence to this belief can lead to a de-sacralisation of nature that encourages its exploitation. This attitude contrasts with nature-based religions and attitudes of traditional native populations from which we are now learning in relation to the ideological aspects of sustainability.

Schorre also refers to the African eco-theologian Konradi who claims that Christianity must work with four central issues that all relate to sustainable development:

- Firstly, with God’s absence in the creation.
- Secondly with the dualistic concept of man, split into soul and body.
- Thirdly the reduction of salvation from the whole of cosmos to individual souls.
- Fourthly the escapist eschatology where the focus on salvation and transcendence into heaven minimises concern for the world left behind.

At the last church meeting, under the motto “*Threatened life – faith’s answer*” the senior advisor argued that the Church should engage to modify the beliefs that threaten sustainable development. He coupled this to engagement in climate policy and the Church’s resolve to become accountable in issues related to sustainable development.

### **Early “desert fathers” were ecological**

In the rediscovery of the ecological roots of Christianity, there is a need to investigate neglected texts from the early days of the Christian tradition, says the senior advisor. He points out that there are several radical texts in the Bible on these issues. Particularly texts from the early “desert fathers” that were church leaders in the first centuries after Christ.



### **The need for a Christian ideology for engagement**

Our interviewee argues that in order to shift the behaviour of Christians to more sustainable modes, there is a need to give Christians an ideological justification for engagement in these issues which are specifically related to the Christian faith. As an example he pointed out that abstention is a core value – with a clear anti-consumerist appeal. The Church appeals to people to follow Christ in abstention, faith and service.

### **Sustainable creation**

In its effort to cater to this need, the church has initiated a project entitled “Sustainability and creation, an ecumenical project for church and society 2007-2017,” which is supposed to provide some basic ideas about sustainability and how they can be addressed from a Christian point of view.

### **Accounting for the church’s own practice**

While the Church’s main role – in sustainability – is obviously to adapt its religious teaching and outlook on society toward more sustainable lifestyles, the Church is also aware that it has to consider its own material practices. In 2007 the Church council stated, “It is urgent, it costs and it matters”. The church meeting also came up with a statement entitled “Threatened life, faith’s answer”. They had worked on these issues for over a decade and they decided that they had to provide an account of their work to complete it.

### **Youth organisation**

Ecological issues have also engaged the youth within the Christian church. An initiative in 1991 to have a council of young Christians meet alongside the church council has resulted in an ongoing practice, where the youth meets around midsummer to develop its own agenda, which is later presented to the regular council meeting in the autumn.

The church meetings of the young Christians have taken a radical tone on ecological issues. They have thus proclaimed that Norway’s oil policy is completely flawed, and that the church must engage in “ecological faith”.

## ***2.13 The Norwegian climate challenge – summary and discussion***

### **Norway as a front runner**

The stakeholders are different in their missions and goals, but one element seems to repeat itself in many stakeholder dialogues: they all consider Norway to be a front runner in their respective areas, and climate change is a high priority on their agendas. The Ministry of Environment emphasises Norway's leading role in CCS, contributing with the development of green technology. WWF supports the view that Norway may become a significant exporter of green energy (but not at the expense of nature). Within the trade union community, Norwegian LO sees itself as playing a leading role in climate policy and is part of the climate elite. Finally, according to the Norwegian Farmers' Union; Norwegian farming is one of the cleanest and most sustainable in the world.

### **Climate challenge as an opportunity**

In spite of numerous challenges, climate is also seen as an opportunity both by industrial stakeholders and farmers. The Norwegian Confederation of Enterprises sees that Norway has a large potential within renewable energy, though it currently lacks sufficient policy incentives. The Federation of Norwegian Industries also noted the need for new materials technology to supply new eco-oriented industrial fields. The electricity industry – almost exclusively based on renewables – saw the climate challenge as a great opportunity for expansion into broader energy supply, challenging the markets of the petroleum industry, while expanding into energy management and eco-efficiency. The Farmers' Union also emphasised new opportunities such as developing farms into an energy resource. Bio-energy is an obvious case, where farmers – which in Norway also typically own forest – supply wood for heating. Farmers are also land owners that may develop a small but important source of hydropower, bio-gas, and wind power.

### **Climate challenge as a threat**

Most stakeholders weighed opportunities against potential threats. Both the Confederation of Enterprises and the Federation of Norwegian Industries were concerned with the increased carbon costs for industry that consumes energy and "carbon leakage" due to unilateral EU and Norwegian carbon policies. The Farmer's Union was concerned with the spread of new diseases due to warmer climate and the Association of Fishermen was concerned with migration of fish to Northern waters as well as eco-system changes in the balance between plankton production and fisheries.

Climate threats were also emphasised by the NGOs. WWF Norway's leader is afraid that the climate question has surfaced so dramatically that it threatens to overrun broader environmental concerns. Amnesty, emphasises the challenging questions of climate and migration.

Furthermore, the stakeholder interviews reveal a number of dilemmas that Norwegian society faces with the climate challenge.

### **Ecological champion or a major petroleum producer?**

First the combination of the roles of a climate policy front runner and major petroleum producer is a significant challenge. This is highlighted by several stakeholders, including Sæverud of the Ministry of Environment. Without significant damage control, the Norwegian petro-economy could discredit the country's aspirations to be a leader of sustainable development. To solve this dilemma, Norway has committed itself to two major projects: the first is to support technology development for carbon sequestration, and thereby contribute to a "clean petro solution". The second is to spend petro-dollars on acquisition of rain forest abroad to preserve it as a CO<sub>2</sub> sink. Both projects entail serious challenges.

Carbon sequestration is closely linked to two Norwegian gas-power plants at Kårstø and Mongstad, which will be heavily subsidised by the state. It is hard to see, however, how only two projects could develop the technology enough to become commercially viable. Furthermore, the largest need for carbon sequestration is in coal plants, where emissions levels are much higher.

The second project is extremely politically sensitive, and implies acquisition of territories in developing countries to block certain types of local economic development. The large transfer of petro-dollars from Norway could increase its popularity with the international climate lobbies and the governments of countries receiving money in the short run. In the longer run, however, this could lead to conflicts with domestic interests in these countries, and Norway could get caught in an "eco-imperialist" trap.

### **A rich egalitarian welfare state and climate migration**

The second dilemma refers to Norway's status as a rich egalitarian welfare state, which is will likely be very attractive to the world's future climate refugees, while maintaining ambitions to be the global front runner of human rights. On the one hand, the immigration pressure has forced Norway to develop a restrictive immigration policy. On the other hand, the restrictive immigration policy is antithetical to Norway's reputation as a leader of human rights. This dilemma is particularly acute when it comes to Norway's position on basic social welfare

rights for immigrants. Given Norway's relatively high welfare provision, the Norwegian government has been reluctant to adopt minimum rights for immigrants that are on par with the native Norwegian population. Amnesty, in particular, points out this dilemma and predicts that Norway will be faced with increasing tensions as climate migration increases.

### **Aligning high climate policy ambitions with exuberant consumption**

The third dilemma relates to the incongruity of Norway's ambitious climate policy with its population's exuberant consumption. This leaves government with support for technical fixes or climate-action abroad, but little engagement for domestic climate action that might entail changes to behaviour, as was pointed out by WWF and others. The current solution to this dilemma coincides with one of the approaches to counter the effects of the Norwegian petroleum economy, namely investment in CO<sub>2</sub> abatement abroad. In addition to climate investment in rain forests in developing countries, the Norwegian government is undertaking extensive acquisition of CO<sub>2</sub> allowances abroad, including CDM projects, to make up for large increase in CO<sub>2</sub> emissions from petroleum exploitation, and to allow domestic consumption. With a 100% renewable electricity system, Norway cannot, like many other countries, meet its commitments to reduce CO<sub>2</sub> emissions by greening electricity production, and compensating for the extensive CO<sub>2</sub> increase from petroleum production in the sector of private consumption would be too uncomfortable to win public support. When the Norwegian government proudly announces that it will exceed the EU CO<sub>2</sub> goals to a large extent, it is through massive use of petro-dollars abroad. Furthermore, this strategy makes good sense to the econocratic Norwegian elites, who can argue that it is also a more cost efficient approach than domestic engagement.

### **Reinterpreting Christian values**

The fourth dilemma touches on deeper existential questions in the sense that the climate challenge entails a scrutiny of ethical and moral premises embodied in modern Protestantism in Norway. Our stakeholder interview with one of the Norwegian Church's climate specialists indicated that important Church leaders felt a need to revisit fundamental theological tenets on the relationship between man and nature, and to link up in a stronger way with the ancient Christian roots.

Early modernity entailed a marriage between capitalism and protestant ethics through a spirit of austerity and deferred gratification that allowed for productive investment and subsequent economic growth. The entitlement to grow at the cost of nature was embedded in the concept of man in God's image, residing above the creation. Late modernity has, according to Schorre, retained

the latter position, but substituted the first with consumerism. The western church and the Protestants in particular have therefore enshrined a dangerous ethical combination, which threatens to destroy our very existence on earth. Senior bishops have therefore engaged with the Council to advance a more ecologically holistic ethos with respect to man and nature.

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# Chapter 3: Stakeholder analysis of Climate Change in Ghana

Joseph Awetori Yaro

## 3.1 Introduction

This chapter summarises and analyses Ghanaian stakeholder attitudes to climate change. The analysis is built on interviews with diverse stakeholders that are engaged in climate change, or whose activities are affected directly by climate change.

It is the aim of this paper to analyse the different framing of climate change by different actors in the Ghanaian scene and assess the strengths, weaknesses, opportunities and threats that different actors face in their understanding and adaptation to climate change challenges. The current level of creative adaptation to the climate challenge implies a comprehensive transformation necessitating the contribution of actors in all sectors of society and their consequent adaptation is premised on diversity. A focus on stakeholders will enable an understanding of different perspectives, resources, possible scenarios for successful adaptation, and limitations to creative adaptation, which is of great importance in reversing or halting the ominous trend of our time.

An in-depth interview qualitative method was adopted in assessing the views of various stakeholders on the issue of climate change. In addition to expert interviews with representatives of organisations, we conducted focus group discussions for less organised groups such as peasant farmers and fishermen. This is necessary because the latter do not have a formal organisation with a uniform agenda. In order to understand holistically their understanding of climate change and the challenges they face it was necessary to talk to a wide selection, encompassing wealthy and poor members, .

We conducted stakeholder interviews with the following organisations and sectors:

- Major state environmental organisations:
  - The Environmental Protection Agency
  - The Forestry Commission
- Confederation of Industry: Ghana Association of Industry
- Labour unions: Trade Union Congress
- Association for the agricultural industry: Two commercial farmers representing different industry associations

- Association for peasant farmers: a focus group with peasant farmers at Gomoa Akotsi
- Association for fisherman: Interviews with executives of Kokrobite fishermen association
- Advocacy and technical NGOs:
  - Hatof Foundation
  - The Environmentally Concerned Citizens Association of Ghana
- Religious organisations:
  - The Christian Council of Ghana
  - The Institute of Islamic Studies
- Traditional authority: paramount Chief and Earth Priest of the Wungu traditional area in the Northern Region

The interviews revealed the understanding of climate change of the different stakeholders, the threats facing their specific organisations and sectors and Ghana as a whole – as well as the strengths, weaknesses, opportunities of adaptation and mitigating strategies.

On the whole the interviews were exciting, with interviewees full of enthusiasm and very passionate about the topic. Some problems faced in the data collection related more to difficulty meeting heads of governmental agencies that are either genuinely busy or sceptical about what to say on issues that have barely been touched by their organisation. Consequently, much time was spent on scheduling and cancelling appointments. Furthermore, policy documents from the government ministries and agencies are difficult to obtain – most of these documents were still under preparation or at the draft stage at the time of the study, so officials were therefore not comfortable with researchers quoting their draft reports being reviewed by experts.

### **Ghana: A Background**

Ghana is a developing agricultural country caught in the throes of climate change. Poverty in Ghana is highly spatialised and correlated with ecological conditions. The Government of Ghana ratified the United Nations Framework Convention on Climate Change (UNFCCC) in 1995 and acceded to the Kyoto Protocol (KP) in the year 2002. Having now joined the global community in addressing the current environmental catastrophe, Ghana has begun in-country strategies towards fulfilling its commitments to improving the environment and reducing carbon emissions. Key among these commitments is the implementation of the Clean Development Mechanism in the Kyoto protocol. The Clean Development Mechanism (CDM) seeks to assist developing countries to achieve sustainable

development through investment in critical sectors like energy as well as through introducing clean, efficient equipment, technology and processes, and improved natural resource management practices (Ministry of Environment and Science 2005).

According to the various Ghana Living Standards Survey (GLSS IV and V) poverty levels have been falling in Ghana since 1988. In 2005/06 the poor in Ghana made up 28.5% of the population, that number having declined from 39.5% in 1998/99, with the number described as extremely poor falling from 26.8% to 18.2% (GSS 2007). Thus, the first Millennium Development Goal of halving the poverty rate would be met by 2009 if the current growth rates were maintained (UNDP 2007). The general decline in poverty can be attributed to the high growth rates in cocoa production, due to government intervention resulting from the implementation of the Ghana Poverty Reduction Strategies I and II. The incidence of poverty varies by locality, sex, occupation and ecological zone. Generally, rural areas compared to urban areas harbour the bulk of Ghana's poor. The northern savannah regions are the poorest in Ghana compared to the transitional and forest regions. Climate seems to have a relationship with poverty levels with the exception of the coastal savannah whose economy is mainly non-agrarian in nature. The dependence of agriculture on rainfall means that farmers are affected by climate variability. According to Nelson and Agbey (2007, p. 184), ecological zones with high rainfall and low temperatures had a lower poverty level than those with low rainfall and high temperatures. The exception recorded for the coastal savannah points to the intervention by politico-economic factors.

Ghana has experienced about a 1°C rise in temperatures over the past three decades and about a 20% reduction in rainfall within the same period (EPA 2000). Tackling the cause of climate change by reducing the emission of greenhouse gases is vital to coping with climate variability. Currently, Ghana is unable to cope with climate variability, and the country will continue to struggle with medium- and long-term projected changes due to its poor level of development, which is associated with poor financial and technological resources needed for adaptation and mitigation. Climate change projections developed indicate that temperature will continue to rise, jumping approximately from 0.6°C in year 2020 to 2.0 °C in 2050 and eventually to 3.9 °C by year 2080. Rainfall will decrease on average by 2.8% by the year 2020 to 10.9% by 2050 and to 18.6% by 2080. Sea level changes with respect to 1990 as base year will on average rise by 5.8cm, 16.5cm and 34.5cm by 2020, 2050 and 2080 respectively. Most of the East coast of Ghana will experience serious erosion, leading to enormous costs for the state and adaptation difficulties by the local fishing industry.

Climate change amplifies its negative effect on countries by increasing the vulnerability of the poor in the areas of water quality and exposure to diseases, which in turn threatens work opportunities and undermines potential economic growth. Climate change will prove to significantly aggravate water stress, threaten food resources, amplify the impact of extreme weather events, displace many people (due to floods and sea level rise), and potentially increase the transmission of vector-borne diseases (EPA 2000). Droughts and floods have been common in Ghana's recent past; with consequential losses of life and property, reduction in the Gross Domestic Product, crisis in power generation from the hydroelectric dam and severely limited mobility of vulnerable groups.

### **Climate change policy in Ghana**

Given the background, it is urgent that the Ghanaian government implement the policies and programs necessary to restoring the integrity of the environment. Some government measures are outlined in this section.

A climate change policy dialogue process has been set in motion among governmental, business, academic and activist groups, and is intended to foster understanding of climate change issues and linkages to sustainable development. The Environmental Protection Agency (EPA) is the umbrella organization guiding the climate change process, and is tasked with developing the overall climate change programme while coordinating efforts with other ministries and organisations. Other organisations with active climate change units are the Forestry Commission and the Ministry of Lands, Forestry and Mines.

Ghana hosted a UN conference on climate change in August, 2008, demonstrating the seriousness the country places on climate change the broader focus on protecting its natural resources, economy and people. Ghana's initial national communication (INC) was completed in December 2000. It reviewed the country's Greenhouse gas emissions from 1990 – 1996, assessed levels of vulnerability and adaptation in all major resource sectors and ecological zones, and outlined some mitigation options with emphasis on the energy and forestry sectors. The second national communication (SNC) is covers the following areas: an update on the greenhouse gas emissions inventory, officially covering 1990 – 2006; sectoral vulnerability and assessments as well as climate change mitigation options in energy, waste, industry, agriculture and forestry; technology needs for both climate change mitigation and adaptation.

Ghana has prepared a Renewable Energy Regulation Law that will provide regulatory framework and legal backing to facilitate the accelerated development of the country's renewable energy resources, particularly the bio-fuel industry.

The country is also collaborating with development partners in implementing policies and measures to meet specific climate change challenges. Several studies have been funded by the World Bank, The Netherlands Climate Change Assistance (NCCSAP1 and 2), and the UN's Reducing Emissions from Deforestation in Developing Countries (REDD) programme is currently being implemented. REDD provides climate change strategies in developing countries by offering a cost-effective climate mitigation option with significant co-benefits (e.g. biodiversity, ecosystem services, rural quality-of-life). REDD activities in Ghana will involve:

- Paying communities for reduced deforestation
- Funding wild fire prevention programs
- Improving land tenure security and enforcing regulations against illegal logging
- Taxation of large-scale land clearance and promotion of off-farm employment
- Agricultural intensification in favourable areas
- Strategic planning of road improvements
- Supporting community-based forestry

Though climate policy formulation is new in Ghana, past environmental policies and practices are in harmony with current climate prognosis. Some of these efforts are described below. In the forestry sector, measures are aimed at forest restoration, protection, effective utilization and community participation. In line with this, existing legislation has established 283 forest reserves and 15 wildlife protected areas, covering more than 38,000 square kilometres or about 16% of the country's total area (Ministry of Lands and Forestry 1994). In 1999 the National Plantation Development programme, which aims to plant up to 20,000 ha of trees per annum, was launched by the government of Ghana. The intention is to cover at least 10 percent of the nation within five years, to help bridge the gap between supply and demand in the timber industry, and to safeguard the environment. Ghana has endorsed international principles contained in the Guidelines for Tropical Forest Management published by the International Tropical Timber Organisation, the Rio Declaration and Forest Principles, the African Convention on Wildlife Conservation, the Convention on International Trade in Endangered Species and others (MOLAF, 1994).

In the energy sector, it has been recognised that energy operations worldwide have bigger environmental impacts than most other economic sectors. In this respect, Ghana's policies on energy are aimed at reducing emissions and conserving and ensuring energy efficiency as the energy sector is currently the largest emitter of green house gases (GHGs) in Ghana. Four main abatement

scenarios have been looked at such as; replacing some biomass consumption with biogas and LPG by 2015, and the gradual addition of solar energy sources. The recent programme of installing energy efficient bulbs in all government institutions and private homes is also aligned with the government agenda to achieve sustainable development in climate change. Ghana is associated with the African Clean Air Agenda, which set out suggestions for realising better air quality to protect the health of its people as well as the overall environment. In line with this commitment, Ghana is one of seven African countries now using unleaded fuels through a successful phasing out of lead additives from gasoline, which were shown to have very serious health implications (Energy commission report, 2006).

Renewable energy development has a very bright future in Ghana and the Energy Commission ACT 541 of 1997 states categorically that the Commission shall recommend national policies for the development and the utilization of indigenous energy resources. Monies from the Energy Fund shall be directed to renewable energy resources, including solar energy (Ministry of Energy 2008). The Energy Ministry under the Strategic National Energy Plan (SNEP) also reiterated the ministry's vision of developing an energy economy that would ensure sustainable production, supply and distribution of high quality energy services to all sectors of the economy in an environmentally-friendly manner (Energy Commission 2006).

The introduction of climate change into the Ghana Poverty Reduction Strategy (GPRSII) reveals the effectiveness of achieving developmental and environmental goals in Ghanaian policy circles. The GPRS through the Strategic Environmental Assessment (SEA) deals with climate change issues by addressing factors such as deforestation, water and air pollution, sanitation and waste management, land degradation and coastal erosion and natural resources' effect on general social welfare.

Ghana has well-formulated, proactive policies and strategies for meeting the climate change challenge. What is left to be done is the actual implementation and enforcement of laws and regulations that seek to ensure the success of these policies.

### **3.2 Government agencies: The Environmental Protection Agency and the Forestry Commission**

The two government agencies interviewed are the Environmental Protection Agency (EPA) and the Forestry Commission (FC). Interviews were held with a principal research officer of the EPA<sup>19</sup> and the head of the climate change unit of the FC<sup>20</sup>. The following section is a summary of these interviews.

The EPA is the main agency in charge of coordinating efforts on climate change among all government ministries and agencies. Its mandate is to ensure that air, land and water are protected, so that future generations inherit a cleaner, healthier world. The EPA has offices across Ghana working on and carrying out Government policy, inspecting and regulating businesses and reacting when there is an emergency such as a pollution incident. The EPA works with both local groups and international partners to design sustainable environmental practices.

The FC is the most important organisation in protecting Ghana's forest and wildlife resources, as it is charged with ensuring the sustainable management and judicious utilisation of the nation's forestry and wildlife resources to ensure socio-economic development and equitable growth in Ghana. Among their other objectives, the FC develops and manages sustainable Forest and Wildlife resources; facilitates equitable access and benefit-sharing from and security to Forest Resources; and promotes public awareness and local communities' participation in sustainable management and land-use management.

#### **Perception of climate change**

These agencies perceive climate change as an emerging threat to their operations and existence. While the EPA has a wider mandate and concern about the multidimensional effects of climate change, the FC concentrates on current and perceived threats to forest and game reserves which are already difficult to protect. Their view of climate change is aligned with that of the United Nations: it is real, it is here, it is dangerous, and we have to deal with it.

#### **Readiness to deal with climate change challenges**

Government agencies are well-positioned to deal with climate change challenges because they are the focal point of government policy generation and execution. The mandate bestowed on them is a major source legitimises their function, and in turn allows for national and international support. The EPA has a research unit

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<sup>19</sup> We interviewed Mr. Emmanuel Tachie-Obeng of EPA on 26<sup>TH</sup> NOVEMBER, 2008

<sup>20</sup> Mr. Bamfo is the head of the climate change unit of the FC. Interview held on the 6<sup>th</sup> of August 2008

that collaborates with other institutions and universities to produce high quality research that is badly needed to establish the case for climate change, and develop scenarios for adaptation. The agencies have branches all over Ghana, and are staffed by a workforce capable of being trained to deal with the challenges of their work. These agencies often represent the Ghanaian government internationally, and benefit from collaborative efforts in mitigating climate change.

The agencies are most focussed on the aspects of climate change that affect their mandate areas. The EPA has a wider outlook, while the FC is specifically interested in environmental conservation rather than sustainable use. Even the EPA struggles with issues of inclusion and exclusion and tends to have a preference for nature reserves and pristine areas. The fear of the FC is that climate change will lead to a mass exodus of people from dry savannah to the forested areas, thereby ultimately driving them out of business. Climate change gives legitimacy to these agencies as carbon sinks are seen as saviours and Ghana's most viable option and contribution to reducing GHGs in the world. Solutions to the challenge are sought at the international level, where the most financing and technology is available. At the national level, policy and law enforcement are important contributors. And at the local level, awareness creation, participation and best practices are of prime concern.

Designing good policy for climate change based on internationally-accepted principles and the subsequent adoption of those policies through participatory strategies are the principal concerns of the EPA and the FC. Just like any other government body in Ghana, the agencies suffer weakness related to financing, technological and logistical resources, manpower inadequacies, and duplication of functions that waste resources. The poor record of resource management in all sectors is difficult to improve upon due to lack of awareness by the majority of peasants and ineffective law enforcement against bigger players such as the timber industry and poachers.

### **Climate change as an opportunity**

Opportunities have been created by the current awareness of climate change among the international community. This has increased the importance of these agencies overnight, bringing both national and international assistance to their operations. Over the past five years both agencies have established collaborations that have yielded massive infrastructural improvements and training initiatives, both abroad and internally.



### **Threats to combating climate change challenges**

The ability of the FC and the EPA to achieve their objectives and take advantage of current opportunities is dependent on environmental threats at the global level. Thus, the ability of these agencies to continue providing environmental services is to a large extent dependent on external support.

Waning international commitment to climate change will affect the agencies' operations. The high cost of technology necessary to mitigate climate change will reduce the pace of adaptation. The organisations stress that the lack of education on sustainable environmental management practices among the public will threaten agencies' efforts. The commitments in terms of budgets, policies, implementation and law enforcement are ultimately linked to what happens in global markets, making global recessions one of the biggest threats to the world, nations, and agencies within nations.

### **The way forward**

Law enforcement should be prioritised in order to realise policy goals. Specifically, the timber and mining sub-sectors need overhauling in order to stop their heavy environmental impacts.

There is also the need to increase awareness about causes of climate change among the general population. The consequences of practices such as tree felling, burning of forest/savannah, and engine emissions should be addressed publicly and visibly.

Mitigation practices such as encouraging tree planting and reducing emissions, and adaptation methods such as changing farming methods and practices, the use of energy efficient technologies in industry and inculcating an energy-saving culture are some potentially effective strategies going forward. Research on the impact of climate change on disease, food production, water systems and resilience against disasters should be prioritised. Research should also develop and adapt more efficient technologies and practices for agriculture, industry and urban planning.

The Reducing Emissions from Deforestation in Developing Countries (REDD) initiative should be taken seriously by both developing and developed countries to enable institutional capacity building, technology transfer and eventually a green environment.

### ***3.3 Peasant Farmers Association of Gomoa-Akotsi***

Peasant farmers constitute about 60% of Ghana's population and produce the bulk of the nation's food. The farmers of Gomoa-Akotsi are located in the central portion of the coastal savannah. It is located two kilometres from the sea, and has

access to two rivers. Small farmers are aware of the climate change phenomenon from radio discussions and visits by extension officers. We organised a focus group discussion<sup>21</sup> with the leadership of the farmers' group and five ordinary members composed of four men and six women. The following text is a summary of the session.

### **Understanding of climate change**

Climate change is defined in relation to how it affects farming activities rather than rising temperatures. The farmers' recent confrontation with climate change came in the form of the floods of 2005 and the drought of 2006. The year 2007 and 2008 were considered as normal years. The chief farmer defines climate change as "when the rains are too little or too much which affects our crop yields." They all agreed that heavy rains were better than droughts if it does not accompany too much property loss. The group also asserted that, "When it does not rain and you plant your crops they will not germinate, and there is generally poor yield. When it does not rain and the grass is dry, there are group hunters who usually come from Accra to set fire to the grasses which destroy crops and property. They also walk through our farms, destroying our crops." Drought introduces multiple interlinked problems for farmers. Recent weather variability has made them vulnerable to poor crop production levels almost every third year.

### **Strengths of peasant farmers**

Peasant farmers have considerable strengths as they adapt traditional farming systems and adopt new, more efficient methods and technologies at to deal with varying weather patterns. Mixed cropping is an insurance mechanism allowing losses by some crops to be covered by good yields in others since different crops have different elasticities of vulnerability to weather conditions. They grow food crops such as cassava, maize, and sweet potatoes and cash crops such as tinda, mallows, urea, and pepper/chilli. Farmers' poor access to loans is both an advantage and a disadvantage, as they owe no one when harvest is poor, but at the same time cannot improve farming methods nor increase production. The local industry has potential for improved agriculture using modern irrigation to grow a wide range of exportable crops. The potentials are poorly developed as lamented by a female farmer, "we have many streams that can be used for irrigation and fish farming, but the government is not helping us'." Though worried about the challenges to farming the farmers are diversifying their work activities. (We do multiple jobs. Almost every person does other jobs in addition

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<sup>21</sup>Meeting took place at Gomoa-Akotsi on the 9<sup>th</sup> of August 2008

to our farming such as trading for women and for men, masonry, carpentry, mechanics, etc.)

### **Challenges for peasant farmers**

Peasant farmers face ongoing challenges related to poor infrastructure, lack of technological know-how, and environmental degradation. The lack of available credit resources prevents poverty-stricken farmers from effectively adapting to climate change challenges.

The success of using their strengths and opportunities depends on the intensity of external threats. Poor access to land for cultivation due to hoarding among the chief and three other families will adversely affect the mitigation measures needed to combat climate change. They argue that, "There is the problem of land availability as it costs so much to rent an acre for farming: about 20 Ghana cedis (US \$18) per annum for cash crops. Those who do not rent must beg for land from the chief, and pay a token of 2 Ghana cedis per annum."

Inability to increase farmers' incomes because of general poverty among the population will affect investments in mitigation strategies. The volatile market for the vegetables they export needs stabilisation through provision of diversification and ready markets by buying agencies. Farmers demand more government commitment to socio-economic development of their communities and the overall modernisation of agriculture. They are not only interested in state support for farming alone, but also for their family members to have the opportunity to diversify into other activities. Technological improvements and market access are major concerns of farmers which they think is the responsibility of the state, while their responsibility is seen to be implementing location-based adaptations.

### **The way forward**

Peasant farmers perceive the assistance of government and NGOs as important in their ability to adapt to and mitigate climate change. There is an urgent cry for the state to launch a new green revolution with a broader focus that includes new technology, land tenure reform, financial credit, marketing guarantees for both internal price mechanisms and export markets, and community development. Irrigation is seen as the solution to the threat of rainfall variability, the most devastating consequence of climate change for inland Ghana.

## ***3.4 Commercial farmers analysis of climate change***

Commercial farmers are broadly defined as those growing both staple foods and export crops in large quantities. Our selected farmer organisations grow fruits

such as papaya, mango, pineapples and guava for export. Two commercial farmers from Nsawam and Ada were interviewed. The Vice President<sup>22</sup> of the Papaya and Mango Producers and Exporters Association of Ghana (PAMPEAG) in Nsawam was interviewed. The second commercial farmer<sup>23</sup> was the President of a group of commercial farmers in Ada. Both groups have links with the state and NGOs who support them in their activities. The following text is a summary of the interview.

### **Understanding of climate change**

Commercial farmers have a more sophisticated understanding of climate change than peasant farmers. They describe it as changes in rainfall and temperature or sunshine both within and between growing seasons. The PAMPEAG representative argued that, "The heat is becoming severe with a significant impact on agricultural activities." Cooler night temperatures are required for plants to fruit, while warm night temperatures encourage ripening.

### **Effects of climate change on commercial agriculture**

Climate change affects farming activities because unreliable weather conditions destroys farmers' plans in terms of output and planned activities. Changes in temperature cause crops not to fruit well which affects overall outputs. Climate change has made the weather too hot so fruits do not attain desired sizes before ripening, thereby affecting profitability. The major and minor seasons are being disrupted: in 2007, for instance, farmers could not harvest their maize because continuous rains around June and July. Pineapples do not need much water when flowering while pawpaw needs more water for the fruits to grow. Last year when the rains failed losses were incurred by pawpaw growers as their fruits were not big enough.

This situation together with the very high cost of production creates fear and uncertainty among commercial farmers. The effects of climate change have devastating consequences because of the high input/high output nature of this production system. The ability to plan output is crucial for the farmers.

### **Strengths of commercial farmers**

The strengths of commercial farmers in the south of Ghana stem from favourable ecological conditions, organised associations, collaboration with NGOs and AID

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<sup>22</sup>The vice president of PAMPEAG interviewed is Mr. Malik. Interview took place in Nsawam on the 4<sup>th</sup> of November 2008.

<sup>23</sup> Mr Daniel Appiah is the president. We interviewed him at the premises of Hatof Foundation, an NGO linked us, on the 6<sup>th</sup> of November, 2008.

agencies, and endogenous adaptation strategies. The forest zone has the right climate for their activities, if harnessed with the right technological upgrading. Several small rivers could be harnessed for irrigation, such as the Densu River, which would enhance capacity to withstand weather uncertainties. Growing of non-traditional exports started in the 1980s, and farmers have gained experience over the years in addition to skill training by NGOs, the Ministry of Food and Agriculture, USAID, GTZ and Blue Skies Agro processing company. The use of endogenous adaptation strategies such as having farms in different locations, mixed cropping and diversification into livestock rearing with synergies is ongoing. Some food crops are grown alongside the fruit trees so that when there are failures or marketing problems farmers can survive by feeding their families. Due to declining rainfall small scale irrigation from small streams using diesel pumps is gaining prominence.

#### **Climate change opportunities**

The major opportunity climate change opens to commercial farmers – especially those who grow fruits – is the longer period of sunshine intensity which is good for the growing of mangos and other fruits. The uncertainties of the weather have also resulted in creative adaptation in the field of technology adoption and the increasing use of small-scale irrigation methods.

#### **Problems militating against commercial farmers' efforts**

Commercial farmers, just as peasant farmers, are not receiving the attention needed to improve productivity. Most NGOs contribute very little to their cause. Even where farmers succeed in beating the odds of climate, they are confronted with the inability to access the European market because of the inability to acquire a Euro-gap certificate for export. The members of PAMPEAG only have certification covering farm operations. This enables them sell to Blue Skies, which in turn has the certificate to export processed fruits. Poor state support to the sector through extension services, subsidies and skill training makes the factors of illiteracy and poverty major weaknesses of the various groups.

Poverty in Ghana as a whole is seen as a major threat to farmers in adapting to the challenges of climate change. Bad government policies such as high interest rate on loans increase risks. For example, the Millennium Challenge account loans have interest rates of 28-31%. Import liberalisation has led to unfair competition for food crop producers and many farmers are moving to export crops which are also facing certification problems.

### **The way forward**

The state and donors have the responsibility to support farmers in Ghana through conducive policies that enable market access, technology adoption, irrigation provision and enforcement of laws. As farmer Ada notes, “The climate change phenomena are a challenge which can be overcome if everybody plays a part. We need a combination of technological solution, behaviour change and a shift in policy to mitigate the effects of climate change. A technological solution will require increasing productivity with less land.” Current collaboration with other associations in South Africa to find a solution to the mango jelly seed problem exemplifies the type of international efforts that can move the sector forward. The association is also constantly creating awareness among the members on the effective use of chemicals, including safe disposal methods, to ensure that the environment is healthy. There is a scheme by members of PAMPEAG of planting trees around farms to prevent crops and plants from failing when there are storms, and also act as carbon sinks. The use of herbicides reduces energy use in farm operations. Agro-processing should be encouraged to reduce post-harvest losses on farms and to increase farmers’ income needed to meet adaptation and mitigation strategies and measures.

### **3.5 Association of fishermen in Kokrobite**

Small-scale and artisanal fisheries in Ghana are an important food source for the country that is being severely threatened by climate-related developments. The Association of Artisanal Fishermen in Kokrobite, a small fishing village near Accra, is a good representation of the experiences of small-scale fishing in Ghana<sup>24</sup>. All fishermen in the village belong to the association. Their objective is to seek the interest of their members by collective action. They engage government and NGOs for assistance in terms of loans, training, subsidized fuel and equipment. They also make and agree on regulations for fishing practices according to new changes. Kokrobite is located 30 kilometres outside of Accra and is one of Ghana’s busiest tourist destinations, characterised by an indigenous population engaged in fishing and farming and a multi-ethnic service industry. Poverty is still high among the local fishing population as the industry faces its worst crisis. The following section covers the interview.

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<sup>24</sup>We organised a group discussion with three of the executive members including the chairman - Freddy Quarshie; secretary - Joseph Quarshie and; the organising secretary - Nii Tettey. The interview was held on the 9<sup>th</sup> of August 2008 in Kokrobite.

### **Fishermen's understanding of climate change**

Fishermen experience climate change in their daily activities, as storm occurrence is becoming increasingly high and unpredictable. Stormy weather and rough seas constitute the main perceptions of the negative impact of climate change. The poor equipment and lack of suitable fishing gear makes stormy weather a nightmare for fishermen. The president of the fishermen's association laments that "we do not have equipment that can give us information about the weather, and the weather is now unpredictable." Fishermen do not perceive any impact on their activities when there is too much or too little rain. Fish stocks are seen as independent of surface inflows into the seas from land. Rises in sea level are perceived only to affect their communities through submergence rather than fish catch. Sea erosion is a major consequence of climate change as many fishing communities are being pushed back from the original shoreline.

### **The characteristics of artisanal fishing**

Over the years the fishermen have accumulated extensive experience in a wide range of fishing activities which enables adaptation to the challenges of climate change. The canoe fishing industry is being rapidly modernized, as the secretary to the fishermen's association notes: "Most of our canoes are driven by outboard motors which makes movement faster and work easier than their forefathers. Modern nets, hooks and lines are employed which increases the catch."

The association is strong and acts as the major source of social capital that can be deployed for resource mobilization and action. Information dissemination is widespread among members, and is the driving force behind self-help projects such as acquiring outboard motors at a lower cost, and getting access to credit. Almost all spouses of fishermen work as fishmongers and support the men with the resulting income. Wives of fishermen therefore complete the market and represent a crucial link in the industry. Since fishing has a seasonal dimension with high and low periods, most fishermen engage in other activities such as carpentry, small goods trade, masonry, and plumbing. This indicates the potential for a high level of resilience and adaptation in the event of climate change failure in the fishing industry.

### **Threats to artisanal fishing**

Canoe fishermen are normally poor, and struggle to meet the rising cost of fishing gear such as nets, fuel and outboard motors. These inputs are necessary in any adaptation strategy to mitigate climate change. The fishermen's association president laments that, "Most of us in the industry are illiterates and therefore cannot manage our businesses well. We also do not have a good market for our products, and therefore receive poor prices. We do not have cold stores to store

our fish when there is a bumper harvest, which can result in fish going rotten and loss of profits.” Harvesting fish from the sea is simple enough, but receiving fair prices in return and managing the income efficiently is a challenge. The absence of storage facilities prevents fishermen from fully enjoying the fruits of their labour during the bumper season, which, if properly managed, could potentially support them for the rest of the year. Regular uncertainty is a major hindrance to effective planning. Fishermen do not have special insurance packages to protect them against hazards, risk and output fluctuations. The fishermen’s association has little influence in government agencies, and very little NGO support. This assistance is necessary to negotiate favourable policies in the fishing sector and to obtain access to additional resources. The pre-mixed fuel (for two-stroke engines) that is subsidized by the government is currently the only assistance received from the state, and even this small compensation is considered by the fishermen to be only moderately helpful.

Because local radio weather reports focus on information targeted to farmers, fishermen have few accurate resources for predicting the weather situation before embarking each day... Lacking the basic equipment that could provide reliable information on storm activity, the fishermen rely on superstitions and age-old prediction models which are not reliable in the era of climate change. World market demand and the overall supply of fish may come to affect the local fishing industry. Big trawlers sell off lower-priced fish to the Ghanaian market, while hoarding the more valuable delicacies available in Ghanaian waters. The increasing granting of licences to foreign vessels to fish in Ghanaian waters will continue to put pressure on local fishermen. Unconventional fishing methods by foreign vessels, such as the use of dynamite, chemicals and lights to attract fish will lead to even more unsustainable fishing in the future.

#### **The way forward**

State support is considered to be of paramount importance for sustaining artisanal fishing. Technological innovation should be the focus of new state policies, in addition to educational programmes being made available via radio and other common media. The activities of foreign vessels should be monitored to ensure sustainable practices. Protection of coastal communities from rising sea levels, especially in places that are already heavily affected by erosion, must be made a state priority.

### ***3.6 Non-Governmental organisations***

Environmental NGOs claim to have been tackling the issue of climate change long before it gained global attention. Ensuring sustainable resource usage in Ghana is



an important objective of these NGOs. The two NGOs interviewed were the Environmentally Concerned Citizens Association of Ghana (ECCAG) and the Hatof Foundation.

The ECCAG was founded in 1985 in Tema, a port city in the Greater Accra region. It became a national organization in 1987, when its founders identified the need to extend community-based natural resource conservation initiatives to include the rest of the country. The ECCAG is an indigenous volunteer organization with a mandate to facilitate the mobilization, organization and education of the population with the goal of achieving sustainable development in Ghana. The organization creates awareness around the need for tree-planting and the other initiatives for the protection of the environment. The ECCAG accomplishes this by distributing seedlings and educating individuals and groups, as well as screening documentaries aimed at informing the public on the need for a healthy environment.

The Hatof foundation, on the other hand, holds an accreditation from the United Nations Framework Convention on Climate. Its mandate is to develop the skills of individuals and communities to effectively conserve, restore and utilize the available natural resources in a sustainable manner. As an environmental and sustainable development organization, “the approach is to develop projects with community groups – especially the youth and women – to meet their development challenges, and to enhance community-based adaptation to climate change and other environmental issues” (Project Coordinator). Hatof is engaged in restoring some mangrove areas along the coast, encouraging the use of renewable energy, planting of sunflower crops for use in bio fuel production, tree-planting initiatives, and collaborating with government agencies and other NGOs. The following text is a summary of the interviews.

### **Explaining climate change**

Climate change is more than just increasing temperatures and variable rainfall. The wider ecological effects that result from such changes, which have always been the focus of these NGOs, are crucial to understanding and tackling climate change. A political ecology perspective has been adopted by these NGOs, in which richer industrialised countries and mining corporations are blamed for most of the environmental problems that cause climate change.

### **Main strengths of NGOs**

The environmental NGOs have strengths in several areas and a wealth of experience, which is important in meeting the challenges of climate change. Years

of working with local communities gives them strong credibility and increased ability to sell new strategies to people in comparison to state organisations.

Hatof enjoys technical knowledge about climate change because of its UN association. This knowledge is critical in overall strategising and benefiting from global efforts at tackling climate change. Currently, they have adequate funding from the UNDP, GTZ and foreign embassies. The ACCAG has the Ghanaian president's backing, meaning districts all over the country are expected to make conscious logistical and financial contributions whenever they have projects in these areas. The ability to influence policy is a major strength of Hatof, as they participate in UN and AU deliberations where they advise African heads-of-state on environmental issues.

New opportunities for improving the operations of these NGOs lie in various international agreements on carbon trading, CDMs, and collaboration with external and internal donors to execute environmentally-focused projects. They foresee themselves initiating CDMs with local communities, which are a more sustainable source of funding. Hatof believes that "bilateral and multilateral donors also identify credible NGOs for collaboration in executing environmental projects, which opens avenues for bigger and sustainable projects with economic benefits to local communities."

### **Problems and threats facing NGO's operations**

The major weaknesses of these NGOs stem from their small sizes and poor financing. They are small organisations and have limited influence due to both budget limitations and internal capacity. Hatof, for instance, has only three project sites, while the ECCAG is a mobile organisation with the president as the only permanent staff and the balance being comprised of volunteers. This makes their operations somewhat limited in reach, but showcases what can potentially be achieved.

Several threats may derail these organisations' potential, namely the annual bush fires that destroy new trees plantations and discourage local participation; the destructive effects of mining and timber companies distracting from the moral case that is made for local people to preserve their environments; poor development strategies that render the environment vulnerable to the careless activities of the poor; and poor technological adoption in all sectors. External threats include dwindling resources and funding for NGOs due to shift in policy, and current global economic situation.

### **NGOs' importance in meeting climate change challenges**

The NGOs believe they are important players in the management of the environment in Ghana, and should be included in larger policy discourses and possibly government funding structures. Hatof's major concern is "how climate change will affect developing countries' ability to achieve the Millennium Development Goals." The solution to environmental problems lies beyond simple remedies, and should grow to include economic, cultural, and political factors to elicit a broader social transformation. There should be small-scale business development schemes and alternative income strategies for people depending on natural resources to ensure economic sustainability, which will eventually bring about further environmental sustainability.

### ***3.7 Religious organisations***

According to the year 2000 census of Ghana's population of 18.8 million, Muslims number 2.9 million (representing 15.6 per cent of the population), while Christians make up 69 per cent of the population. The remainder is comprised of indigenous religions and others. Muslim leaders claim their numbers are closer to 30%. There are an unknown number of Christian denominations present, including Catholics, Methodists, Anglicans, Mennonites, Presbyterians, Lutherans, Seventh-Day Adventists, Pentecostals, and Baptists. There are three primary branches of Islam within the country: Ahlussuna, Tijanis, and Ahmadis. However, many Ghanaians combine their local traditional religion with either Christianity or Islam. Of the number of people reported in the census as Christian, likely half actually practise indigenous religions. These indigenous religions generally involve a belief in a supreme being, along with lesser gods and the veneration of ancestors. The north of the country accounts for the largest concentration of Muslims in Ghana, with large pockets also found in migrant settlements in the various large cities in the south. Indigenous religion and Christianity dominate in the middle and south of Ghana. Religious tolerance in Ghana is high, with Muslims, Christians, and other groups observing religious holidays with joint celebrations.

#### **The Christian Council of Ghana and the Islamic Research Institute**

We now present jointly the views of the Christian and the Islamic religions. We undertook interviews with established national level organisations representing the diverse views of different Christian and Islamic denominations, while only a single local traditional religious group was interviewed. Both Christianity and Islam focus on the betterment of the lives of their members. Climate change is of great concern to them, though its science is not completely understood by the

clergy. The Christian Council of Ghana has a mandate to strengthen the capacity of its member churches to contribute to achieving justice, unity, reconciliation and integrity of creation, and to provide a forum for joint action on issues of common concern. In seeking to achieve this, the CCG is takes guidance from the Holy Bible, while it claims to remain non-partisan in matters of national interest. We interviewed the Senior Programme Officer<sup>25</sup>.

The Islamic Research Institute is a research, teaching and advocacy organisation. We spoke to a panel consisting of the Deputy Director and two lecturers<sup>26</sup>. The institute is a subsidiary of the Islamic Research and Information Centre. The Centre was established in the 1960s through the effort of Shirk Umar Ibrahim Imam, the leader of the Ahlisunah Aljamiya sect in Ghana. The aim of the Centre is to propagate the religion of Islam. It carries out research into the religion of Islam and its role in social life. It carries out training of Muslim youth to become responsible citizens. It also engages in awareness-creation in the Muslim communities with respect to religious and national issues. The institute is funded through the contributions of individuals in the community and the Islamic Fund of Saudi Arabia.

The following text is a summary of the interviews with both organisations.

### **Religion and climate change**

The Christian council argues that climate change 'is an indictment on humanity and a manifestation of our failure'. Both religious organizations in question claim their a 'mandate is seeking the welfare and interest of the people, and are thus not solely focused on winning souls for the kingdom of heaven'. They are concerned about the physical well-being of the people, and focus on food supplies, clean water and public health meaning climate change is necessary a source of concern.

The Christian Council asserts that "God created the environment for the survival and comfort of man bearing in mind the generations yet unborn. Maintaining the integrity of creation means taking good care of the environment to derive comfort from it and protect it for the future generation." In other words, the environment is entrusted to humanity, which is to be held directly accountable for its protection. The organisations blame climate change mainly on rich industrialised countries that tend not to be as affected by its consequences.

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<sup>25</sup> Mr. Michael A Ansah is the senior programme officer of the Christian Council of Ghana. Interview held on 3<sup>rd</sup> December, 2008.

<sup>26</sup> Abdul-Karim Abubakari is the deputy director, while Shirk Mohammed Salis Ukpedito and Shirk Ahmed Harun Ture are lecturers of the Islamic Research Institute, with whom we held discussions on the 7<sup>th</sup> of October 2008.

The clerics argued that “man is God’s representative on the earth and has to live according to the wishes and laws of his creator. When he does that, anything he needs will be assured by his creator. When he contradicts God’s, rules he has to suffer the consequences such as climate change.” They further stated that’ the Qur’an advises mankind, “do not assassinate yourself because He is very merciful with you” The inference here is that, in damaging the environment, man is killing himself and thus violating God’s laws. Climate change is due to human overuse of the earth’s resources, yet Quran says we should not even ‘walk heavily’ on the earth because all other organisms are important. This is the Qur’anic take on the ecological footprint of man.

### **Religious organisations as vehicles for climate policy formulation and execution**

The main strengths of religious institutions lie in the huge congregations they administer. This is a potential platform for translating policy into action, for awareness-creation and fusing faith with science. The Bible and the Qur’an are important ‘texts’ laden with environmental teachings which need to be explored and linked to contemporary events with the aim of making the faithful change their attitudes and behaviours.

Islam is rich in specific information about the environment and how we should protect and keep it. It is stated multiple times in Islamic holy texts that, when you do good things such as planting a tree, you will benefit from it on earth and even when you die, you continue to get rewarded from the use of it (subsequent generations). Mohammed commanded his followers to be neat and keep the environment clean, making cleanliness the central pillar of Islam. Cleanliness, in this case, refers not only to the personal level, but also a larger societal scale – indicating the prevention of environmental degradation.

### **Problems in meeting environmental challenges**

The weaknesses of these organisations are perceived to be rooted in the clergy, as they do not have access to adequate information on climate change. Muslims and Christians in general do not have detailed knowledge of the biblical/Qur’anic take on environmental issues, and are therefore unable to integrate these teachings with emerging environmental concerns. The general public is also unaware of such teachings and the emerging environmental threats, and many tend to be apathetic towards environmental issues. A major weakness among Muslims is the high illiteracy, which reduces the possibility of effective education on climate change issues.

There is also the problem of widespread poverty, which increases the propensity for risky environmental behaviours as people extract environmental

resources to meet their basic needs. Simplification of religious teachings such as the notion that God is responsible for everything that occurs makes people apathetic to environmental issues. The low representation of Muslims in key areas of national interest limits Islam's contribution to policy. Most Muslims in Ghana are not educated due to the history of quranic schools limited many from formal education. This has led to the current generation of the intellectuals and public sector employees being Christian dominated.

The major threats to fighting climate change include unbalanced global environmental policies which are not in the interest of developing countries, because they don't take onboard the social-economic conditions of these regions. Also, the conditions attached to international assistance programs do not provide flexibility for local adaptations. National governments and local people should determine their own developmental paths and adaptation strategies suited to their physical and socio-economic conditions. Furthermore, the lack of political commitment in implementing sustainability laws also affects effective adaptation. Also, the Islamic clerics stated that Islam is threatened by the global media which risks derailing the efforts by western nations in changing behaviours and attitudes needed for combating climate change.

### **The way forward**

Potential solutions to climate change are identified by these organisations at two levels: individual choices and broader societal changes involving communities, states and global institutions. Religion itself is seen to be of the utmost importance at the individual level. .

Islam advocates that its followers use the environment without destroying it by 'walking lightly on the earth' and making improvement on it for future generations. This can only be achieved when Ghanaian Muslim's human capabilities are enhanced through education, poverty eradication and representation in national issues. Climate change discourse should be presented to the Muslim's of Ghana in ways compatible to the teachings of the Quran.

Christianity's principle of stewardship has the potential to influence the behaviour of Ghanaian Christians towards more environmentally-responsible lifestyles. Christianity, science and politics need an alliance to produce new ways of co-existing with nature in ways approved by God. Working with scientific and political groups could in turn influence Christians and Muslims to adopt more sustainable practices. The way forward is for politicians to be committed to wider developmental concerns that enable people to adapt to climate change. In doing this research findings and best practices should be shared with the religious public through their leadership. Both organisations advocated that our work should be

simplified and made available to religious clerics who will in turn educate, sensitize and create awareness to shape and change the attitude and behaviours of the faithful that will benefit the adaptation strategies they embark on.

### ***3.8 Indigenous Rulers: Chief (Naa Zori Saaka) and Priest (Kpanadana) of the Wungu Traditional Area***

We assess the traditional religion jointly with traditional authority as the two tend to cooperate in governance at the political and spiritual levels. Traditional authority in Ghana is the most important source of governance for the different tribes. Paramount Chiefs occupy the highest level of power, and are in turn supported by a hierarchy of Wing Chiefs, Divisional Chiefs, and Village Chiefs. Chiefs are generally inducted into office by priests who assist them in ruling. The Wungu Traditional Area is located in northern Ghana, within the Guinea savannah ecological zone – an area fraught with challenging environmental problems. Naa Zori, as Paramount Chief, rules over several villages<sup>27</sup>. He and his chief priest are both the highest-level decision-making body and source of religious influence in their area of jurisdiction. The following text is a summary of the interview.

#### **Perceptions of climate change**

Climate change is perceived by the traditional leaders basically as increasing weather vagaries that make farming an unreliable source of livelihood. The Chief contends that, “generally, the weather today is much drier and hotter than what we use to experience years back. Some decades ago during the Christmas period children and the elderly alike needed to warm around fires in the morning and evenings while roasting yam and groundnut as dessert. As we sit today, how do you see the weather? It is very warm, and that tells you that the situation has changed over the years. The weather is becoming warmer and drier.”

Heavy rains still sometimes fall but are no longer predictable. The local population attributed this lack of reliability to the inability of the Chiefs to ensure the well-being of the citizens. The Chief confirms this, saying, “in the past, we attributed those rains to the reign of some great Chiefs, but when a Chief’s periods is characterised by rain shortages, large storms can occur after long dry period, causing destruction.” This statement attempts to deflect blame for weather vagaries from Chiefs by echoing scientific literature that discusses cyclical patterns of rainfall. As was subsequently seen in the interview, however, the

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<sup>27</sup> The interview with Naa Zori who is the paramount chief of Wungu and T. Abdulai who is the Kpanadana (translated as custodian of the land/gods) was conducted on 10<sup>TH</sup> January, 2009

traditional priests held to the belief that these cycles of variation are not natural, but depend on which chief is ruling.

### **The cause of climate change**

Both men agreed that, “God and our ancestors give rain and no one has control over them. However, the way we lead our lives can also cause rains not to come in the right quantity.” It is also believed that the more favourable the rainfall trend, the shorter the lifespan of the ruling chief – meaning drought conditions are in the Chief’s best personal interests. In the Wungu Region, the environment has changed dramatically from luxuriant vegetation to dry grasslands, which in turn affects the temperature and rainfall. This, they agreed, was caused by agriculture, bush fires and wood-gathering, all of which have a negative impact on the environment. The Chief noted, “today you can raise your head and see very far which was not the case in the past.” The priest also attributed climate changes to the destruction of sacred places such as groves and riverbanks, remarking that, “as we continue to disregard our tradition and violate the sacred places, we will continue to incur the displeasure of our ancestors, and the consequences are devastating.”

From the priest’s point of view, the gods bring rains when called upon to do so. Current climate change problems are seen to stem from the people’s neglect of the gods, namely by failing to make regular sacrifices to them. According to the priest, in the past when there was a drought, the priests would offer sacrifices of animals and dried flour to ‘Tingbantitaali’ (the most powerful god), and would be met with rain on their return home, which is not the case today. “Christianity and Islam are destroying our tradition and we are losing a lot by being punished by the ancestors not intervening to prevent droughts and floods. We are paying the price for the failure of our Chiefs to make sacrifices and honour our gods and ancestors,” laments the priest.

### **The effects of climate change**

The effects of changes in climate are severe, and are responsible for increased poverty in the Wungu Area. Since the people are farmers, any shift in the pattern of rains and drought leads to poor harvests, which in turn bring about increased hunger and poverty. The chief laments that, “our parents farmed and built large livestock reserves especially of cattle, but today people don’t even have enough to eat.” The farmlands have experienced a drop in production, leading to widespread migration to the south and leaving mainly elderly citizens behind. There is a rising trend for local inhabitants to go into charcoal burning for sale as a source of income, further degrading the local environment as trees are cut for this



purpose. Also, when there are heavy rains, farms and houses are destroyed. Droughts and the resulting damages to pastures causes the local Fulani herdsmen to move around frequently in search of fertile areas and water for their animals, which increases the risk of theft and destruction of crops on farms.

### **Ability to meet climate change challenges**

The strengths of the community and Ghana for adaptation are enormous, claim both men. The chief says, "Within my land, we have many rivers and streams such as River Nasia, and River Wuyima (White Volta) which with the help of the government can irrigate a large land area and enable dry season farming. We equally have a large area of land which when properly used can feed not just the people here but Ghana and abroad especially with rice. We still have our spiritual and sacred groves dotted around which people still respect because of their powers." The inability to make use these strengths is attributed to the high incidence of poverty in the area.

The weaknesses of the community relate to their poor condition as the chief states, "farmers don't have money, they are poor, and they can't buy fertilizer and other farm equipment. The government does not give us loans. The rain here, unlike in the south, comes only in one season, that is why people go south to farm after we have completed our seasonal farming activities. The land area is low lying and so if there is heavy rain it causes floods which destroys lives and property. High population density affects our farming methods, while lack of storage facilities for water prevents dry season farming, and the loss of trust in our gods and ancestors affects climate." All these problems are common to the neglected countryside in developing countries. No opportunities are seen in connection with climate change, as every livelihood activity is affected and few avenues for meaningful diversification exist. Adaptation using modern technology and irrigation are the only possibilities; however, these remain too costly for the people.

### **The way forward**

There are many steps that can be taken at this point. One way forward is to encourage people to plant trees; government and international communities can construct dams for irrigation; chiefs can be empowered to enforce law and order; youth meetings can be encouraged; Council of Elders and opinion leaders in the administration of districts can be optimised for efficacy; the sacred groves can be protected; and the dignity of traditional religion can be restored. Members of other religions could also benefit from supporting their indigenous religious leaders in maintaining ancestral norms and practices that preserve the

environment. UNESCO has in the past assisted traditional leaders and their priest in protecting sacred groves. Similarly, governments and other religious groups can help enforce traditional rules and practices that have intended environmental benefits through policy and law enforcement.

### **3.9 Trade Union Congress (TUC)**

The Trade Union Congress (TUC) of Ghana is primarily concerned with the welfare of its members, but it also has an interest in the entire workforce of Ghana. The TUC of Ghana was formed in 1945 when fourteen unions (registered under the Trade Union Ordinance of 1941) came together under a central co-ordinating body. TUC of Ghana is the main umbrella organization for trade union activities in Ghana. It is made up of seventeen affiliated national unions. The TUC is the official mouthpiece of unionised labour in its dealing with government and with the employers association. It is non-partisan. It has its headquarters at the Hall of Trade Unions in Accra and currently has a membership of about five hundred thousand (500,000). We interviewed the deputy TUC General Secretary<sup>28</sup>. The following text is a summary of the interview.

#### **Lack of agenda-but growing concern**

According to the General Secretary the TUC has no active climate change agenda for now but understands the phenomenon as “having to do with the earth becoming warmer than normal.” He states, “Though we do not know how the issue of climate change will affect us directly because we have not given enough thought to it, we can look at its impact on the stability of jobs and mass unemployment, in both formal and informal sectors.” Climate change will be part of the agenda of TUC because it recognises that it is an important threat to human existence.

Global warming will affect fishing and farming which have additional effects on workers' welfare in general. Apart from the economic effects, climate change will affect workers through the environmental consequences and natural hazards including hurricanes, floods, and earthquakes. Using the example of the rising sea level, he asserts that, “as a country, the rise in sea level will affect our fragile coastal areas as it has already done with respect to some coastal settlements such as Keta and Ada through sea surges onto land. As people suffer from the rising sea level, it will require the construction of expensive dykes with the effect of reducing government resources and job security.” The TUC sees

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<sup>28</sup> Interview with the Deputy TUC General Secretary, Dr. Twum Baah, 26<sup>th</sup> November, 2008.

climate change as a threat to the welfare of their workers as it will reduce their ability to bargain with the state in the face of disasters. Given these concerns, the General Secretary asserts that, “We are certainly concerned about climate change but yet to be actively involved in the EPA framework or to make it part of our agenda.”

### **The potential role of TUC in climate change adaptation and mitigation**

As a labour organization, the TUC's major strength is the possession of a loud voice that can influence state and international policy on climate change. The TUC needs to build expertise in the area of climate change as individual members have a responsibility and contribution to mitigating climate change and at the same time can pressure the state to do same.

One weakness of the TUC is its lack of engagement with climate change because of its primary concern for the welfare of workers. Awareness of climate change issues is low among the Ghanaian workers. Implementing climate change policies can be a challenge if awareness creation among the public is not taken seriously.

Climate change is basically bad news with few or no opportunities to be gained. He asserts, “At the moment, climate change is largely a challenge but it can turn into crises if action is not taken now.” The concern of TUC is how climate change will affect the general economy and eventually jobs and cost of living. Climate change is hypothesized to aggravate existing drivers of environmental degradation such as population growth's effect on deforestation, and the change from deep shaft mining to surface mining for gold which destroys vegetation and leads to pollution of bodies of water. Everyone is responsible for the problem of climate change. In terms of contribution however, the industrialized countries, through long period of industrial activities and the attendant emissions, should be blamed for the current state of climatic phenomena. The developing countries on the other hand through environmental destruction can worsen the issue as vegetation plays an important role in the stabilization of the atmosphere through carbon sequestration.

### **What to do?**

We need a global framework with workable rules to tackle the environmental issues confronting the world today. There must be collaboration between all major players in the global economy. For the local scene he recommends a combination of technology, a shift in the attitudes of people, and the reshaping of government policies. In this regard science and technology need to provide the way forward by way of innovation and new approaches to doing things. The new

technology should be appropriate for people to adopt. In Ghana, we still live very close to nature in terms of our economic activities such as farming, hunting, and fishing. In this respect, we need to shift away from the bad and environmentally unfriendly types of farming and hunting to practices that will contribute to environmental sustainability. People need to begin planting trees and avoid slash and burn methods of agriculture in order to save the environment.

At the level of policy, the Government must lead the campaign for positive attitude towards tree planting and the environment in general. The World Bank and the IMF should also factor environmental issues in to their development programmes. Policy makers should promote sustainability in the development agenda so that in our budgeting an assessment of the environmental cost of the development is given prominence. All these efforts should be pursued at different levels involving regional bodies and international organisations with the political and economic power. The need for efficient laws protecting the environment and their effective implementation through institutions concerned with the environment. These institutions should be adequately funded and empowered to function efficiently. Policy makers should promote sustainability in the development agenda and in our budgeting we should be looking at the environmental cost of the development agenda.

### ***3.10 Association of Ghanaian Industries***

Similar to the Trade Unions Congress of Ghana, the Association of Ghanaian Industries (AGI) has neither an agenda nor discussions on climate change issues. We interviewed the executive director, of the AGI<sup>29</sup>. The leadership thinks this is unfortunate but the nature of the organisations makes 'non-core' issues peripheral on the agenda. However, the director claimed that climate change issues were becoming more important and would be included in their agenda in the near future.

The AGI is a non-profit organisation, registered in Ghana. AGI was established 1958 by a group of indigenous manufacturers, led by Dr (Mrs) Esther Ocloo. Today, AGI has more than 1000 members from all over Ghana and is considered to be the leading voice of the private sector. AGI's main objectives are to contribute substantially to the growth and development of industries in Ghana and to create a business climate, which will allow Ghanaian companies to be internationally competitive. The association works to enhance the effectiveness of

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<sup>29</sup> Mr Cletus J. Kosiba is the executive director of the association of Ghana industries (AGI). Interview took place at his office at the Trade Fair Centre, Accra on the 11<sup>th</sup> of November 2008

markets, strengthen the competitiveness of local industries, generate opportunities for private business, and create employment in all regions of Ghana. The association holds dialogues, which support favourable industrial policies, removal of excessive bureaucracy, reforms of the corporate tax system, modernisation of infrastructure and demand-oriented vocational training systems. The following text is a summary of the interview.

### **Why the concern with climate change**

From a media perspective, the AGI boss defines climate change as irregular weather patterns resulting from global warming. He contends, “Many industries in Ghana are agriculture-based and as such, any change in climate which will have an effect on agricultural production which is definitely going to have a serious impact on industry with respect to raw material supply both in quantity and quality which will in turn affect output and general productivity of industry.” He acknowledges that climate change demands that, “industries look at new technologies that will reduce emissions.” Such new technologies come with high costs to industries and this will affect profits and the general management of industrial activities seriously. Another major concern to industry in relation to climate change is the effect it will have on the demand and marketing of industrial products. Changes in climate will affect various sectors of the economy including people’s earnings and this will affect the demand for industrial products. Despite these concerns, industry in Ghana is not engaged in policy-making or the debate on climate change.

Potentially, the AGI has features that make it an active stakeholder in mitigating climate change. The AGI is a platform for galvanising support among industries with regard to sustainable energy use, emission control and control of standards in even agriculture. Guidelines for industry are being developed by the EPA, which will form an important basis of good practice and the contribution of companies to mitigating climate change challenges. AGI collaborates with several organisations internally and externally which form a good basis for exchange of ideas and information on sustainable practices.

Climate change presents an opportunity for industry to transition from existing technologies to new efficient technologies. There is also the opportunity for the flow of investment from developed countries to Ghana. Existing industries also get the opportunity to promote capacity building to ensure that they are able to survive the challenges of climate change.

### **Problems of AGI in meeting climate change challenges**

The major weakness of the AGI is the inadequate financial position of many Ghanaian industries which will make it difficult to procure new technologies to respond to the new demands of climate change. The business environment in Ghana is generally unfavourable making it expensive to work within. This takes away much of the profits that should have accrued to industries to place them in a better position to help in the mitigation measures against climate change. Globalization has also affected the financial bases of industries thereby weakening their ability to contribute meaningfully to solving the problem of climate change. Global competition is argued to be currently unfair because local industries are disadvantaged in comparison to their counterparts in the advanced world and therefore need support similar to what is provided out there. Local industries cannot compete price-wise, which reduces their profits and prevents their expansion, ability to adopt modern technology, and to exercise their corporate responsibility through investment in environmental projects.

One major threat relates to the possible influx of polluting industries from the advanced countries under the cover of investment and the possibility of technology in food production through genetically modified foods having negative consequences on health. Corruption and the lack of enforcement by the law enforcement agencies threaten the success of any meaningful environmental project initiated to mitigate climate change challenges. In terms of personnel, the AGI lacks the supervisory power to police compliance to guidelines that will ensure environmental sustainability.

### **The way forward**

The AGI will soon be operating under the guidelines of the EPA to ensure environmental sustainability. There is also a platform promoting strong collaboration among industry/ AGI, EPA and CSIR (Centre for Scientific and Industrial Research) to develop consensus with regard to managing the environment and ensuring environmentally friendly practices. There are also sensitization programmes to enlighten industrialists on the challenges of climate change. Government should also provide the enabling environment for research institutions and agencies dealing with the environment to function properly. The current strategies and laws must be made effective and given the needed commitment at the highest political level. One major obligation of industry is to develop and adopt new technologies to mitigate the effects of climate change.

### **3.11 Concluding remarks**

Ghana is vulnerable to the various manifestations of climate change which poses numerous challenges to progress in the agricultural, health, sanitation, energy, and environment sectors, as well as general economic growth. The effect of climate change on Ghana is multidimensional through floods, drought, rise in sea level (especially on the eastern coast), wild fires, the blight of insect, and heat waves. Climate change will affect different sectors in different ways but there are interdependencies between sectors, which explain the general vulnerability of all and not just those directly relying on nature for their livelihoods. While farmers must deal with problems of rainfall in relation to crop production, labour unions are concerned with disasters, food prices and falling incomes. Also, government and non-governmental environmental organisations echo their frustrations over slow progress and the desire for more funding for climate change programmes and projects. However, all stakeholders stressed the need for a holistic approach to meeting the climate change challenges. Traditional religion is particularly concerned with the effects of modernisation on the ways of life of people and their belief systems which are inimical to balanced natural order.

The main concerns of stakeholders and recommendations are discussed below.

#### **Concerns on general livelihoods and welfare**

In the agricultural sector, climate change will lead to reduction in productivity of some food crops, especially maize. Climate change may have a negative impact on the agricultural sector in Ghana where a large section of the population makes a living. Both cash and food crops will experience reductions in production which will affect livelihoods. Weather vagaries will be experienced on a frequent basis making it difficult for farmers to make predictions and plan accordingly. Drought and flooding affect farming, which can lead to hardships on the people of the Ghana. As agriculture is negatively affected by climate change there would be increased rural-urban drift to escape some of the environmental difficulties. Many industries in Ghana are agriculture-based and, as such, any change in climate which has an effect on agricultural production will also have a serious impact on industry with respect to raw material supply both in quantity and quality which will in turn affect output and general productivity of industry. Changes in climate will affect various sectors of the economy including people's earnings and this will affect the demand for industrial products.

For people who do not depend on nature directly climate change affects them through disasters such as drought, flood and heat waves. Most urban areas in Ghana have already experienced unbearable flooding exposing substandard abilities to handle disaster on the parts of both citizens and the state. The effects

of reduced agricultural production on food prices are of prime importance for workers and a drain on the foreign trade of the nation as food imports rise. Falling standards of living result from rising expenditures and stagnant incomes. Governance becomes difficult in situations of decreasing welfare as some people disregard rules of society to try to survive. Political strife can be the outcome of natural and economic disasters where the state is seen as not responding to the challenges effectively.

### **Concerns on ability to adapt/mitigate climate change**

Ghana has several strengths upon which well thought out adaptations can be built and executed. There are several governmental institutions already existing that can be used to execute policies and strategies to mitigate climate change challenges. Policies to combat climate change being developed are making progress. Civil society organisations can work to sensitise their members and are hence a major source of support for state policy and strategies in implementation adaptation and mitigation strategies. Stakeholders engaged in natural resource sectors have developed competence over the years in adapting to environmental changes. They all see the need to adapt and ensure good practice to reverse climate change.

However, there are weaknesses that work against the country's ability to face challenges posed by climate change. Ghana's record in carrying out sound policy on the environment is poor. There are structural weaknesses in the Ghanaian policy and institutional landscape that will obstruct the fight against climate change challenges. The difficulty of implementing strategies to meet climate change challenges stems mostly from the fact that over 60% of the population relies on extraction of natural resources and the land for their livelihoods. Alternative livelihoods need to be provided in order to enable agencies such as forestry and wildlife departments to intervene. Finance is a major problem that will prevent both state and stakeholders in implementing desired practices such as agricultural and industrial innovations to reduce carbon emission and increases productivity.

The current global economic crisis and food price rises could derail current efforts to adapt and mitigate climate change given the loose commitments made by advanced nations in the G8 meetings in Italy in July 2009. The current sectoral approach to implementing interventions is not conducive to meeting the challenges of the climate change. Climate change transcends different sectors and needs a holistic approach. There is already an overlap of functions by the different ministries and departments in Ghana. If these are not harmonised, efficiency will be compromised.



The failure by the state to increase awareness on climate change prevents successful implementation of strategies. Awareness creation through the media, information services, extension services, campaigns, and demonstrations is necessary to elicit endogenous adaptation by the public, the acceptance of state policies, laws and regulations. There are neither early warning systems nor organisations providing these services to enable *ex ante* strategising. Most climate change challenges would therefore be known when they enter the crisis stages.

### **The future**

From the above discussion, it is quiet clear that climate change as a global phenomenon is here to stay and its effects on all aspects of human life are manifesting themselves across the world, with the poor countries being the most vulnerable. It is also recognized that the fight against climate change is a shared responsibility among the developed and developing countries. Specifically, the stakeholders suggested the following pathways for Ghana:

- The government should support agricultural adaptation through efficient technology, irrigation and investment in non-farm activities. Empower, motivate and provide resources to research institutions to produce appropriate solutions to many of our environmental problems.
- There should a nationwide land tenure administration reform that guarantees security of tenure. This would increase incentives to manage lands sustainably and ensure a smooth implementation of REDD initiatives.
- National and international stakeholders should assist local farmers in acquiring certification for export to European and North American markets. These have far-reaching benefits for environmental management.
- Science and technology are necessary for mitigation and adaptation in the industrial sector so the government should lead the way in negotiating good technology deals for all sectors of the economy. Global institutions should play a major role in the financing of mitigation and adaptation measures.
- Individuals should change attitudes by engaging in environmentally friendly acts including tree planting and good farming practices. People should be educated to plant trees, avoid indiscriminate felling of trees and bad farming practices. Climate change is part of a wide range of environmental problems, so there should be a holistic strategy that takes

account of these others. Effective laws and education on bush fires and tree planting are needed nationwide.

- NGOs play an effective role in environmental management and should be brought into policy cycles too. The media, the church, civil society and everybody need to play effective roles individually and in collaboration to help in mitigating the effects of climate change.
- Government should develop the right policies and ensure effective law enforcement as well as collaborate with regional bodies like ECOWAS (Economic Community of West African States) and AU (African Union) in negotiations with the advanced nations since environmental issues transcend beyond national borders.
- Religious organisations can and should play an important role in educating their members on issues of climate change. The state and the international community should allow participation of these organisations in their activities to minimize the conflict between tradition and modernity, and also benefit from religious solutions to environmental problems.

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## **Chapter 4: China Stakeholder Analysis**

Jin Wang

### ***4.1 Introduction***

Global warming and the broad climate change caused by accelerating pollution around the world in recent decades are threatening to adversely affect the lives of millions of people around the world. Based on various expert assessments, China is one of the countries that would be severely affected by climate change.

The awareness of the threat posed by global climate change among national governments as well as the general public has been steadily heightened over the past decade, especially in the past five years. This is made clear by the concerted push by the Chinese government, starting about five years ago, to adopt a much more proactive strategy on climate change-related issues. This includes an ambitious plan to improve national energy efficiency by 20% in 5 years (from 2005 to 2010), which was recently expanded to an even more ambitious 20% increase every 5 years until 2030. It also includes much more active participation in climate change negotiations in recent years, and a broad-ranging and sustained central government-led media campaign to educate and inform the public about energy efficiency and conservation.

In this analysis of several major industries in China as important stakeholders of society, the environment, and the sustainability of future development, we investigate the awareness and attitudes toward global warming and climate change, as well as the stakeholders' attitudes and reactions regarding the central government's pro-active policies to curb emissions and improve energy efficiency.

Over the period of the last year, we have conducted extensive interviews with industry leaders, representatives of industry associations, journalists, and researchers. The interviewees were granted anonymity so that they could provide candid assessments of a wide array of issues, including government and industrial policies; therefore, in this report, participants will only be identified as "a leader" or "a representative" of an industry that has been included in the study. To supplement the interviews, we have also conducted reviews of relevant research papers, government and industry reports, as well as media reports of related industries, which we have relied on as secondary sources of information. But before we go into details on the industries, we will provide a general review of China's environment and climate challenges and policies.

### **China: A Background**

When the Kyoto Protocol was negotiated, China, along with India and other developing countries, was exempted from the type of commitment to reduce GHG emissions by a fixed deadline that most developed countries committed to. This was when the US was still the number one emitter of GHG globally; the country eventually abandoned the Kyoto Protocol under the Bush administration.

A decade later, China has overtaken the US to become the top emitter of GHG worldwide, and the US seems to have had a change of heart regarding the Kyoto Protocol after the change of administration. Since the Obama administration took over the White House, China and the US have engaged in a widely-observed dialogue on emission control and climate change. Global pressure is mounting on both countries to take responsibility and contribute positively to the global efforts at controlling climate change.

China has been very insistent on its position that it can't commit to a cap in emission because it needs to continue to expand its economy to fight poverty, but is still willing to make serious efforts at reducing emissions – although this position seems to have softened a little bit in recent years. This is partly because the Chinese government has already started a strict program to improve the overall energy efficiency of the economy and reduce GHG emissions as well as other pollutants. The efforts seem to have achieved some initial successes and increased the government's confidence in this area.

What some government officials, as well as scholars, are now saying is that China is already doing its part to reduce emissions, and the country's own targets will prove to be the equivalent of an emissions cap. In other words, China is believed to be living up to its responsibilities in the global effort at climate control. The condition that China has requested in order to commit internationally to an emissions cap, therefore, is for developed countries to also commit to "measurable, reportable, and verifiable (MRV) technology, finance, and capacity-building support" to the developing world. In other words, it has turned the MRV clause on its head and pointed a finger back at the developed world which has pressured China on this type of emissions reduction commitment for some years.

Whether this is just a negotiation tactic or "China's Grand Strategy," as some would call it, China's road to emissions reduction does rely heavily on technology and investment, and all levels of Chinese government rely heavily on industry to do the heavy lifting to achieve the stated goals. The government's massive campaign of "energy conservation and emission reduction" is largely targeted at national industries.

How the industries are holding up? How are they approaching the new mantra of "energy efficiency" and "clean technology?" What are their concerns?

How do they see current efforts in relation to long-term climate and environmental threats? In this study, we offer snapshots of a few industries through our analysis.

## **4.2 Chinese climate policy**

### **China's climate challenge**

Unprecedented rapid economic development over the past 30 years has brought about far-reaching changes to Chinese society. Hundreds of millions of people have been elevated from absolute poverty to relatively stable living conditions throughout the country, especially those in the countryside, by the rising tide of sustained economic growth. The Chinese miracle of the past three decades in many ways rivals the previous wave of development achieved by “the Asian tigers”—Singapore, South Korea, Malaysia, and Taiwan – only on a much larger scale. This achievement is widely recognized by both the Chinese people and the international community.

The flip side of this tremendous success story, however, is the heavy environmental price China has paid for such rapid economic development. Air, water, and soil pollution in densely-populated areas throughout the country have been on the rise due to the single-minded drive towards economic growth and increasing consumption over the past thirty years. Several Chinese cities now are ranked among the most polluted cities in the world, including Beijing, Shanghai, and Guangzhou. In rural areas, ecological systems are seriously strained and degraded due to over-farming, overuse of fertilizers and pesticides, and the accumulation of trash.

In comparison to environmental damages caused by the rapid industrialization that occurred in Western countries a century ago, the severe environmental damage caused by economic development in China today is not at all unusual. The much-publicized poor air quality in Beijing is likely not much worse than the “killer fogs” in nineteenth-century London, and the heavily-polluted rivers in China might not be much worse in comparison to the Thames or the Rhine a century ago. In other words, China, as in the case of Europe and America, fell into a “pollute first, clean up later” pattern when it finally decided to play catch-up with the Western countries through its own industrialization and modernization project a century later.

The fact that China is making the same mistakes the West made decades ago is regrettable. Both China and the world as a whole would be much better off if China could somehow avoid repeating the same mistakes during its own development process. However, this pattern must be observed with the acknowledgment that, so far, human history has primarily been a loose

aggregation of largely parallel national histories: lessons learned, benefits shared, and consequences suffered, mostly along and within national boundaries. A truly shared human experience has only taken shape in recent years thanks to accelerating globalization. That Londoners suffered from the suffocating toxic fogs due to coal burning in the early 20th century has almost no bearing on the Chinese developmental strategy in the 1980s or 1990s, because that was a categorically alien experience to China. The concept of sharing collective knowledge for collective benefit on a global scale remains, at best, a utopian ideal even today, due to historical, political, and economical influence.

Climate change caused by accelerating global warming due to human activities over the last hundred years will be the first truly global challenge. It requires, therefore, a truly global response to tackle it. China, for reasons both within and beyond its own control, has become a focal point of this global challenge.

According to the latest report produced by the Stockholm Environment Institute (SEI), China's energy, climate, and development strategy in the next 20 to 30 years will make or break the global effort to curb green house gas (GHG) emissions and to control the rate of further global warming within 4-5 degrees Celsius by 2050. As already the largest GHG emitting country in the world, China is facing tremendous international pressure to rein in its GHG emissions – pressure that has increased in pace with the country's rapid economic development.

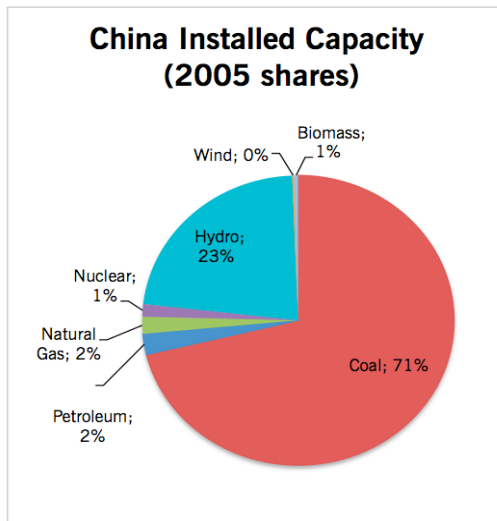
### **China's energy strategy and climate policies**

The focal point of China's GHG emissions is energy consumption. Economic development created fast-growing demand for energy by industries and consumers alike. Although the average Chinese consumer still consumes far less than their counterparts in the West, the sheer size of the population makes even a small increase by each individual add up to a large amount. The industries, on the other hand, are rather inefficient consumers of energy relative to their counterparts in the West.

Aggravating the energy inefficiency by Chinese industries is the fact that the energy infrastructure in China is heavily dominated by coal. According to recent numbers, two-thirds of China's energy demand and 71% of generating capacity depends on coal (Figure 1). Although the government has called for the development of diversified energy, including hydroelectric power, nuclear power and renewable energy, coal's proportion in the energy structure still increased in recent years. Excessive use of coal not only causes low efficiency, but also environmental pollution and serious global warming consequences.



Figure 1



Although the low energy efficiency of China's economy and the heavy reliance on coal within the country is not unique for a country at China's current development level, it is a path well-traveled by almost all industrialized countries during their industrialization period. The global community has changed enough over the past century that it seems to have little appetite to entertain the thought that China would follow the same path in its own push for development. Neither is it obvious that China intends to follow the same path.

Based on recent actions by the central government, China also seems to be reticent to play the "get even" game with the industrialized countries. If anything, the game China seems to particularly enjoy playing could be called "get-there-faster-than-you-did." For example, the amount of time it took China to raise annual steel production from one million tons to one hundred million tons; how long it took China to push annual automobile production from one million cars to ten million cars; the number of years that will separate China landing a human being on the moon from its first manned space mission, etc.

All of these factors indicate that the Chinese government seems intent to take on a new challenge; namely, how long it will take China to double or quadruple its energy efficiency and catch up with Europe or Japan. Like all other development goals, China set its sights on this particular milestone no so much out of competition, but mainly because of national interest. The adoption of increasingly proactive and ambitious energy and climate policies over the past five years have coincided with the rapid increase of the national demand for energy and skyrocketing energy prices internationally. China suddenly felt the danger of

energy shortage and the potentially crippling consequences.

The earnest drive toward higher energy efficiency and energy conservation across the board in recent years by the Chinese government has as much to do with energy security as with fighting GHG emission and climate change. In this sense, China is the best example of treating GHG emissions-reduction as a co-benefit of its primary policy goal of energy security.

According to the same SEI report, if China were to achieve its ambitious goal of improving energy efficiency by 20% every five years through 2030, the amount of CO<sub>2</sub> emission avoided would put the world well on its way to achieve the 4-5 degrees goal by 2050. But no country in the world had ever accomplished such a feat at as low a level of development as China is at now, and there are serious doubts about China's ability to overcome the necessary challenges to achieve this goal – challenges ranging in nature from natural, economical, organizational, managerial, cultural, social, and political.

So far, the Chinese government seems to be rather optimistic. Such confidence is in part based on the facts that (1) Chinese economy does have rather low energy efficiency, and (2) the energy structure is dominated by coal. These two facts both suggest that, at the very least, China has a lot of potential and room for improvement. The real challenge will come after picking at those relatively “low hanging fruits,” – can energy efficiency continue to improve at a steady pace for a sustained period of time, in order to reach the final target?

This current report on how several major industries in China are adapting to this new policy environment might help to shed some light on how such policies are actually being implemented in China, and hopefully provide some hints for how similar policies might fare in the future. After all, Chinese economy and society have yet to be dominated by government policies, especially those initiated and strongly pushed by the central government. The central government, in a way, has the biggest stick and the biggest carrot at its disposal, so it will get its way if it is really serious about it. The mere desire to remain on the good side of the government is usually enough to entice the businesses and industries to adopt official regulations.

As it will be shown below, during our interviews, industry leaders and representatives frequently cited the central government's new energy policy, widely referred to as “energy conservation and emission reduction,” as the primary reason for their own industry's need to come up with new business strategies. To ensure that they would meet the government's requirements, management sometimes implemented strict “quotas” to be met by a certain deadline.

Such unique Chinese-style government-policy-to-industry-strategy

mechanism on the one hand serves to grant the Chinese government further confidence that its policy imperatives would be followed by businesses and industries; on the other hand, it also reveals the limitations of the narrow instruments that the government relies on to achieve its policy goals.

### **4.3 Guangdong Light Industry Association**

The Guangdong Light Industry Association (GLIA), under the supervision of the Economic and Trade Commission of Guangdong Province, is comprised of companies, research institutes, and testing units of Guangdong light industry. The association was established in 1984. The GLIA plays an important role in assisting the government's management of industry and the bridging of government and companies, according to one association leader whom we interviewed. Over the course of the interview<sup>1</sup>, the leader of the association responded to a wide range of questions regarding the industry's position on climate change.

#### **Energy saving and emission reduction**

There is no doubt that China has made a great progress on economic development, however, as a cost of rapid development, the environment and resources are threatened by pollution and waste, which highlights the conflict between the economic development and the environment. This situation, which does great harm both to the economy and society, is directly related to an unreasonable economic structure and growth model. At the same time, global warming, caused by the emissions of the greenhouse gases has aroused worldwide attention. China has been the largest emitter of greenhouse gases in recent years, which indicates great needs for energy saving and emissions reduction not only to meet the demand of county's development but also to alleviate global warming.

Entrepreneurs have become aware of national policies through television, newspapers and the conferences on energy saving and emission reduction held by government agencies. However, most of companies are privately-owned, and their real target is meeting the requirements of their clients and to maximize profit. Government has implemented some changes in industry supervision recently, which, unfortunately, have not proven effective. Most of the climate conferences receive a warm reception simply because they are held by the government, yet the real effect is questionable.

On global warming issues, there is a reacting process from the State Council's instruction to provincial policies. Global warming is so pervasive that it is difficult to measure, analyze, evaluate, and resolve by specific techniques.

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<sup>1</sup> Interview conducted in November 2008, Guangzhou, China.

Attitudes vary among enterprises. Wealthy entrepreneurs are of the opinion that energy-saving and emissions reduction policies are not targeted at a specific company but at the economy as a whole, meaning all the companies must meet the same requirements to survive. It is only fair for entire industries to compete and push towards a highly efficient and energy-saving economy.

#### **Energy saving and emissions reduction policy as an opportunity**

Many companies responded positively and actively when the Guangdong Provincial Government and Guangzhou Municipal Governments proposed “energy saving and emission reduction,” “environmental certification,” and “environmentally-friendly enterprises.” These companies, such as Guangdong Paper Mill, Zhujiang Beer Brewery and Panasonic, supported energy saving and emissions reduction by adopting procedures of application, assessment and testing. In so doing, they all received the honor of “Model of company” from the government.

Both the government and consumers request that companies invest more in new equipment for energy saving and emissions reduction as well as pass the related tests designated by the EU. The government and customers focus more on public health and society’s security.

#### **Energy saving and emission reduction as a challenge**

There tend to be some problems during the climate change adjustment period that conflict with the management model of the companies. This occurs especially in the plastic industry which, for example, can hardly cope with the impacts from increased oil prices. The plastic industry is currently setting about cutting costs and adjusting manpower resources with optimistic expectations, but the adjustment period will be long and difficult.

It is especially difficult to measure the impact of climate change on light industry; even China’s government is unable to provide accurate data for this transition, let alone officially address climate change’s effect on light industry.

Most Chinese companies make simple mistakes which leads to low market share. More mistakes occur during the management stage rather than the research and development stage. It is more reasonable for China to get its start from strengthening the concept and awareness of energy saving and combining the problems specific to the companies, which is to say, improving public energy efficiency awareness and upping government assistance on technology and equipment.

#### **Increase awareness of energy saving through training**

Due to the atmosphere and models of management within Panasonic, staff excels not only in production and management, but also in overall consciousness of

environmental issues and energy conservation. The Panasonic staff are so conscious of environmental protection that they encourage this consciousness even at home. On the contrary, there are severe problems in domestic enterprises, both private and state-owned, such as serious waste, high rejection-rates, low productivity and a general lack of enthusiasm for the issues.

A procedure of training is needed to change these conditions, and the chance to visit, study and exchange staffs also needed. In all, it is possible for the consciousness of energy conservation to be raised through the following tactics: Firstly, it needs sufficient attention and support from leaders. Secondly, all staff including management should acknowledge and support the issues. Thirdly, more importance should be attached to training in the details of environmental protection and the environmental management system. Finally, an institution for environmental protection should be started and publicised.

Why does the enterprise pursue certification? The answer is quite simple. In essence, the driving force behind the enterprise is financial benefit, since the customer requires that products should receive certification by environmental management systems. Therefore, faced with the pressure of the customer, the enterprise pursues these certifications. But if the enterprise does not meet the qualification of environmental management systems, additional training is needed. A series of measures, required by the certification, should be adopted in the day-to-day management and manufacturing process. It is the requirement of the customer that has the most significant impact on the enterprise and the industry, which in turn has a great effect on energy conservation.

#### ***4.4 Paper Industry***

According to one leader of the Guangdong Paper Industry Association<sup>2</sup>, the paper industry is one of the basic raw material industries of the national economy; the level of paper and paperboard consumption has become an important indication of a country's degree of modernization and civilization. The paper industry is both capital- and technology-intensive, and requires a significant level of economy of scale. Its large market capacity and development potential have become a major driving force in the development of other industries such as forestry, agriculture, machinery manufacturing, chemical engineering, automatic control, transportation, environmental protection, printing, packaging, etc. The industry represents a new growth point in China's national economic development. As the paper industry uses wood, bamboo, reeds and other native plants, as well as paper fiber and recycled fiber as raw material (which can be a partial substitute for plastic, steel, nonferrous metals and other non-renewable resources), the

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<sup>2</sup> Interview conducted in November 2008, Guangzhou, China.

paper industry could achieve sustainable development and become an industry of circular economy, with great vitality.

At present, China's paper and paperboard production and consumption rank second in the world, behind the United States. The national paper industry has had considerable influence in the international market. With the development of the world economy and the growth of consumer paper products, the future development of the global paper industry will face resource constraints, environmental pressures and so on, which pose serious challenges to China's paper industry in particular.

### **Would the paper industry become the chief culprit to the destruction of global ecosystems?**

The paper industry has become the world's largest consumer of wood. According to statistics, the paper industry uses 27% of the world's industrial timber, reaching consumption levels of 700-800 million cubic meters per year, and the need to clear-cut tens of millions of hectares of forest. Many years ago, there was concern about the paper industry becoming would the chief culprit of the destruction of global ecosystem. However, over the years, the paper industry has proved that paper-making does not have to disrupt the ecosystem, and can actually serve to promote the preservation of forest. The paper industry cites reforestation as an important condition for their survival.

In some countries where forest coverage reaches 30-70%, the annual timber for pulp and paper production accounts for 30-60% of logging. Shortages of raw materials constrains the development of China's paper industry. Unable to meet domestic demand for forest resources, China's imports of paper-making raw materials has increased year by year, especially fibers such as pulp and recycled paper . According to statistics, when using wood as raw material, the production of every ton of paper requires 4-5 cubic meters of timber consumption. China produces only 20% of the wood pulp that it needs.

To enhance the awareness of environmental protection, the industry has taken actions to prevent and control pollution from the production process by adopting clean production technology, shutting down production lines that cause serious pollution, reducing emissions , and increasing environmental supervision, monitoring and law enforcement.

The so-called forestry-paper integration is a series of investment and business strategies reflect the notion that wood mills are an investment not only in the production of raw materials, but also in the environment. As the leader in the industry chain, the paper industry must to be responsible for improving the environment, the protection of vegetation, and significantly reducing water consumption and pollutant emissions.

### **Awareness of and attitudes toward climate change**

Enterprises within the paper industry have shown positive attitude toward the government's policy of energy conservation and emissions reduction. The emission standards set by the government are very clear and reasonable, and point out the direction that the industry should follow in the future, although such standards put a lot of pressure on businesses. By conforming to these standards, some leading companies have continued to improve their competitiveness, and have gradually brought themselves in line with international standards.

The biggest challenge for the industry in the adoption of such technological transformation to stringent government standards is capital. The first company to make such moves will face the highest cost, and therefore the "first-mover disadvantage" is significant in this case. By now, however, large-scale enterprises are actively undergoing such transformations; many of them have even completed the process, and are in good shape. Now, medium-sized enterprises are also starting to adopt the new standards under the government pressures. Small enterprises are the most difficult to influence. China must put pressure on them so that they too will comply and catch up to the overall industry, but the capacity of supervision by the government is limited, because these small enterprises are scattered. This means that if the local government does not apply the pressure on the businesses, it is very hard to make them comply.

One example of such difficulties at local government level is the National Development and Reform Commission's (NDRC) policy that has been issued for the development of the paper industry, emphasizing the use of recycled paper to reduce deforestation. But the provincial government and local governments not only do not have specific policies to promote recycling of paper, they even have taxes targeting paper recycling.

On the other hand, as much as companies see the importance of energy conservation and pollution reduction, they see little direct impact on their business by global warming and climate change. In responding to our question on the need to control GHG emission, the leader of the association dryly observed that the more carbon dioxide in the air, the better trees grow.

## ***4.5 Iron and Steel Industry***

The Guangdong Iron and Steel Industry Association was founded on April 11, 2005. According to the official documents produced by the association, it is a non-profit organization established in accordance with the law. Its missions are to provide services for members, further the rights and interests of the industry and members, safeguard market order and fair competition, communicate with the

government, represent the industry in public relations, and promote the development of social and public interest.

The iron and steel, petrochemical industry and fossil fuel power plants were greatly affected by the introduction of the Kyoto Protocol. China's steel industry has since made definitive progress in energy conservation and emission reduction, according to the Association. The total energy consumption of the iron and steel industry, however, still accounted for more than 14% of the country's total energy consumption. The iron and steel industry is now facing the difficult task of further energy conservation.

Upgrading technology to improve energy efficiency is meant to reduce greenhouse gas emissions, but also is in line with the country's economic and social development goals. To build a resource-saving and environmentally-friendly society, energy conservation and emissions reduction is the only choice, and is the only way to change the mode of growth and promote economic restructuring, according to the association leader whom we interviewed<sup>3</sup>.

#### **Energy conservation and emission reduction is one way to deal with recession**

If proper measures are taken, reducing carbon emissions could bring China economic benefits and improved reputation. Reducing greenhouse gas emissions is by no means a "loser's trade." Substantially reducing emissions of pollutants has dual significance. On one hand, it would reduce harm to the environment, improve air and water quality; on the other hand, reducing emissions means the necessity of converting "waste to treasure," which will bring about new economic growth points. Saving production wastes and converting them into something valuable is a way to increase profits in the current situation of declining steel prices and increasing raw materials prices. For example, some enterprises have been able to recover one hundred percent of the output of gas and steam, to be reused for power generation, in order to reduce production costs.

In the fourth quarter of last year, the central government announced a 4 trillion yuan economic stimulus package in response to the international financial crisis and to maintain stable and rapid economic development. The investment is also meant to further expand domestic demand to promote economic growth. It includes ten broad policy measures, including energy conservation and emissions reduction. About 210 billion yuan will be spent on ecological projects, and about 370 billion yuan on self-innovation and structural adjustment towards a more energy-efficient economy.

In accordance with the central government's quotas for energy conservation and emissions reduction, Guangdong Province has created its own standards and

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<sup>3</sup> Interview conducted in December 2008, Guangzhou, China.



quotas for iron and steel production in the form of “unit product energy consumption limits.” The Association provided consultations to government regulators during the policy-making process.

#### **Policy implementation has achieved certain results**

The Guangdong Iron & Steel Association plays an important role in helping the industry to re-structure and optimize itself. In 2008, the association held consultations with the provincial government on the construction of the new Zhanjiang steel plant. The Zhanjiang steel plant will be built as a modern, ecological, high-tech, high-energy-efficiency plant.

According to the statistics published by the state Environmental Protection Agency, during the first nine months in 2008, the steel industry had improved results in energy conservation and emission reduction. Large- and medium-sized iron and steel enterprises’ comprehensive energy consumption is averaged at 628 kilograms of standard coal per ton of production, 0.2% lower than the same period in the previous year. Energy consumption for every million yuan of added value, is averaged at 4.28 tons of standard coal, down 14.5%. Fresh water consumption is at 5.1 tons per million yuan, down 7.1%. CO<sub>2</sub> emissions dropped 26.4%, sulfur dioxide emissions fell 2.4%, smoke and dust emissions decreased by 5.2%, and industrial dust emissions decreased 12.0%. Overall, the large and medium-sized domestic iron and steel enterprises achieved more obvious progress in energy conservation and emission reduction in comparison to recent years. Some local small plants with dated technology and equipment had higher energy consumption and serious pollution levels. This points to the need to further eliminate those outdated steel production facilities.

#### **Enterprises are optimistic about energy conservation and emissions reduction**

Energy conservation and emissions reduction has become a pervasive trend. The corporate attitude is generally positive and optimistic. Most of the enterprises see energy conservation and emissions reduction as a way to spur the much-needed industrial restructuring process, in which the opportunities outweigh the challenges.

The enterprises are not entirely passive in implementing energy conservation and emissions reduction policies because many of them see it as beneficial, especially in terms of cutting energy consumption – which leads to cutting significant cost. Large enterprises will take the lead in introducing new technology to meet the policy requirements, while small businesses under strict policy requirements will face the fate of closure.

### **Capital and technology are currently the biggest obstacles**

Although attitude might vary in different businesses, especially between companies who are large, strong, and competitive, and those who are small and less competitive, access to capital is a major problem for all. Many of the companies are looking forward to the four trillion yuan stimulus package as a partial solution.

Many of the enterprises are aware of the possibility of obtaining international funds, but most of them lack the expertise to navigate the complicated system. Carbon trading is still in its infancy; the whole Guangdong province has only two or three projects in operation.

For businesses, profitability is the biggest concern. The enterprises do not see a direct link between their businesses and climate change, at least not in the short-term. They must adopt new technology to comply with government's energy conservation and emission reduction regulations in order to survive. But new technology costs money, and if the cost of new technology consumes their profits, their survival will also be threatened.

## **4.6 Agriculture<sup>4</sup>**

Agriculture is one of the most sensitive sectors to climate change. China is still a large agricultural country with a large population. Agricultural production, especially grain production, is directly related to social stability and sustainable development. Climate change will affect most of China's major crops because of the projected water shortage, varying growth period, and output fluctuation.

Over the past 20 years, most parts of China have shown signs of significant warming and volatile food production. The northeastern region has seen an increase of total grain output due to higher temperatures. The north, northwest, and southwest regions have experienced slowed increase of total grain output. The eastern and southern parts of China, however, have seen even greater negative effect on food production caused by warming.

Climate change increases heat resources at high latitudes, which extends the growth period in the north, and allows the boundaries of many crops to move northward. In northeast China, since the 1990s the area of rice cultivation has been extended significantly northward. In Heilongjiang Province, the area under rice cultivation in 2000 was seven times what it was in 1980.

In some regions, improved heat conditions mean less crop damage due to cold, and the increase of crop varieties. The Ningxia wine industry has seen significant growth over the past decade because in the past, due to low winter

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<sup>4</sup> Based on conversations with farm owners and secondary review of published documents and reports on the industry.

temperature, the production was largely limited to small-scale family farming. With current higher temperatures, the cultivation of large-scale vineyards has become possible.

Although food production has increased in some areas due to warming, overall the extreme weather conditions caused by global warming have had a much larger negative impact on food production. According to statistics, every year agricultural meteorological disasters cause direct economic losses of more than 1000 billion yuan, which accounts for about 3% to 6% of the gross national product. Most of this is caused by drought, floods, and hail. Between 1950 and 2001, China's average annual drought-hit area was about 20,000 hectares, annual grain losses due to drought amounted to more than 1400 million tons, which translates to about 4.7% of the national grain output over the same period.

### **The vulnerability of agricultural production**

China's agriculture has been very vulnerable due to limited resources and traditionally high population density. With climate change, the vulnerability of agriculture will become more apparent, the current distribution of agricultural space will change, and the output of major crops will decrease.

Climate change has brought additional pressure on China's agriculture and food production. According to the current potential of China's agricultural production, it is estimated that food production will have to meet current demand of 650 million tons as the population peaks at 1.6 billion people, but climate change has increased the difficulties of achieving this goal. It is estimated that if the current pattern of agricultural production remains unchanged, passively and fully accepting the adverse effects of climate change, then in 2080, China will face a short supply of food, which will pose serious challenges to the sustainable development of the society.

In order to adapt to climate change, farmers and rural communities need to consciously adjust their production practices, depending on farmers' level of agricultural technology and the level of income. Climate change may also bring new opportunities for production if the agricultural structure can be adapted to minimize potential losses and to achieve efficiency. For example, climate change provides an opportunity for crop adjustment, but will speed up the process of the original crop fertility, shorten reproductive periods, and weaken the ability to withstand climate fluctuations. The challenge of adjusting agricultural structure to take advantage of the change and avoid the adverse effects would be particularly challenging.

The perceived impact of climate change on rural populations is heavily dependent on natural conditions, changes in lifestyle, and the changing scale of production. But Chinese farmers' abilities to adapt to climate change are quite

limited by the dominant mode of production that is still family-based, small-scale operations. Each farmer family cultivates a small patch of land. They lack the necessary knowledge, capital, and technology to take bold actions. For most farmers, their perceptions of climate change remain intuitive and their attitudes remain passive.

#### **4.7 Fishery<sup>5</sup>**

China's fishing industry has grown significantly between 1978 and 2005. Fishery production has increased from 4,654,000 tons per year in 1978 to 51,076,000 tons per year in 2005. This process of growth was not sudden but continuous.

In terms of sea products, shellfish and fish accounted for a large proportion. The main product of freshwater was fish, which accounted for nearly 90%. Shellfish and other aquatic products took up a very small proportion. Freshwater products formed a fish-based pattern.

China's main sea fishery areas are Liaoning, Zhejiang, Fujian, Shandong, and Guangdong Provinces. Zhejiang Province was famous for the natural fishing, while other provinces developed cultured aquatic products. The output value and export volume of cultured aquatic products in Shandong province had ranked highest in the nation since 1994.

#### **The impact of global warming on fisheries**

Global climate change brings changes to the sea temperature, salinity, and pH value, which in turn greatly affects the fishery and aquaculture industry. Changes in the sea's temperature caused by global warming lead to bipolar expansion of aquatic animals. In areas where the sea evaporates at a higher rate, the salinity of the surface water of the sea will increase, while in higher-latitude regions, much more water flows into the sea due to increased rainfall, and such changes as melting glaciers are serving to reduce the salinity in the sea. Changes in water often cause physiological changes in fish, thereby affecting fish stocks and quantities.

It is estimated that there are 42 million people engaging in fisheries and aquaculture industry, with most of those are in developing countries. Fisheries are the main source of revenue in many poor countries, especially for the countries on small islands.

In China, the leading cause of damage to fisheries is water pollution. Water pollution incidents happen in China every year. Pollutants from industrial emissions, agricultural fertilizers, pesticides, and so on do damage to fish in lakes,

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<sup>5</sup>Based on conversations with people who work in the industry, including fishermen and business owners, and also secondary review of published documents and reports on the industry.

rivers, and in the sea.

Because of pollution, the habitat for the growth and reproduction of some fish and aquatic wildlife has been seriously damaged. The so-called "desertification" phenomenon has occurred in many waterways and fishing grounds. Although the government has taken measures in recent years to control fishing intensity and protect fishery resources, the illegal construction of fishing vessels still occurs and the intensity of fishing has not been effectively controlled.

Climate change, on the other hand, has also become a leading factor. During the past few years, meteorological disasters such as torrential rains, typhoons, and drought continue to occur frequently, especially in Zhejiang, Jiangsu, Fujian, and Guangdong provinces. Torrential rains and typhoons not only damage the fishing boats, but also change the salinity, pH value and water temperature, which causes imbalances between aquatic organisms, as well as introduces many hazardous substances and pollutants on the ground.

In order to protect the interests of the fishermen, the China Fishery Mutual Insurance Association was established in 1994, providing financial compensation as well as production services to members, and raising the overall capacity for coping with disasters. Measures were also taken by the management department to help clean up ponds, reinforce dams, and improve overall water supply and drainage facilities.

In recent years, fishermen have noticed that the spawning-time of fish has started to come much earlier than in previous years. Experts believe that this is due to the high temperatures in the South China Sea in the spring, causing the fish to be more active. In order to protect the fish stock, it is necessary to make the off season earlier. The high temperature in the South China Sea in recent years obviously points to the impact of global warming. Earlier this year, a group of fishermen made a highly publicized plea to the government agency to impose an early fishing moratorium to protect the fish stock, which highlighted the heightened awareness of the fishermen regarding global warming's impact on their livelihood.

#### **4.8 Labor unions<sup>6</sup>**

The official labor union in China is the Chinese National Labor Union. It is the only officially recognized labor union for all workers in China. The head of the National Labor Union is usually a high-ranking official of the Chinese Communist Party and a member of the party leadership group. The National Labor Union has a provincial labor union in every province, and each provincial labor union has their

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<sup>6</sup>Based on conversations with labor activists, labor scholars, and secondary review of published documents.

branch organizations within its member cities.

All factories and work organizations above a certain size are required to organize labor unions and become members of the local Chinese National Labor Union. All employees are supposed to join the official labor union and pay a nominal fee. The official labor unions do not have collective bargaining power against the employers. Their function is largely nominal in terms of defending the workers' rights and interests. Their relationship with employers is usually not antagonistic. Occasionally, there will be stories about a heroic labor union official or representative fighting against an employer to protect the workers from egregious abuse or rights violation. The very fact that they are lauded as heroes means the official labor union is usually quite powerless.

### **Labor activism**

In recent decades, as generations of migrant workers moved from countryside to the southern coastal area to work in the hundreds of thousands of factories, labor activism also emerged among the millions of factory workers. There have been many attempts by labor activists over the years to organize independent labor unions, but none have been approved by the government. Labor activists, especially those who operate outside the official Chinese National Labor Union, must keep their operations hidden.

Many of the labor activists are affiliated with various non-governmental organizations (NGOs) whose primary concerns cover a wide range of issues, from bona fide labor rights to environmental issues, across groups ranging from regional or kinship associations to international NGOs. In recent years, the popularity of corporate social responsibility (CSR) has prompted many multinationals to hire or fund many international NGOs to monitor labor and environmental practices of local factories, and to train the workers about their labor rights. These have produced many local labor activists and opened the doors in factories for labor activities.

### **Labor activists and climate change**

Based on conversations with several labor activists and labor scholars who regularly interact with labor activists and monitor labor activism in China, labor activists tend to perceive global warming and climate change as an opportunity for their movements.

Many labor activists share the view that globalization is the main culprit of global disasters, be they man-made or natural. The destructive effect of globalization is widely felt by indigenous and local communities and businesses. Global warming and climate change simply add to the list of adverse consequences brought about by globalization and global consumerism.

The fact that China is now the top emitter of CO<sub>2</sub> in the world is largely

due to its rapid industrialization and economic growth over the past thirty years. China is the biggest beneficiary of the latest wave of globalization because it has successfully ridden the tide of globalization to develop its economy and spread the benefits across billions of people, no matter how unevenly—the across-the-board improvement of living standards is apparent even to casual observers.

The spread of wealth, however, also means the spread of consumerism, and the spread of influence and control of capital and capitalism at the expense of workers' interests and labor rights, many labor activists believe. The biggest challenge to China's future development will be finding a strategy to meet the rapidly increasing demand for energy and resources by the one billion consumers who are inspired by the glorified consumerism of the West.

The path of development over the past thirty years is the perfect synergy of China's government-led, top-down, drive for industrialization and the West's insatiable appetite for cheap consumer goods. The government's decidedly business-friendly policies and the lack of independent labor unions contributed to the marginalization of labor and labor movements in recent decades.

The labor activists and labor scholars who are critical of this synergy generally view globalization negatively because of what they see as globalization's negative impact on the third world, and especially on the third world laborers.

The current crisis of global warming and climate change has prompted many to reflect upon the long-term effect and wisdom of globalization and consumerism. For labor activists, anything that can curb the influence and power of global capital and capitalism is a potential boost to labor interests and the labor movement. This is why we see a new symbiosis emerging between environmentalists and labor activists.

To government authorities, environmental causes and environmental appeals seem to be less threatening than outright demands for workers' rights, so many labor activists have turned to environmental movements and environmental NGOs as covers to organize. Many international environmental NGOs have active presences inside China and attempt to train and organize laborers around environmental issues. It is a mutually beneficial symbiosis because the labor activists find a less threatening cause in environmental movements, and it opens an important window for them to organize. The environmentalists, on the other hand, find in laborers a large group of the population that they can influence and turn into sympathizers or supporters.

But such symbiosis is not without tensions. For one thing, the true grass-root labor activists tend to be much more critical of the government-business synergy, and usually take a much more radical position regarding global capitalism and globalization. In their views, the environmentalists, those who are concerned

with global warming and climate change, are rather bourgeois and mid-class. They are seen to be not critical enough of global capitalism and not radical enough in their anti-consumerist positions.

In summary, labor activists in China vary in their attitudes toward environmental issues. Some of them see environmental movements as distractions to labor movements, or competition for limited attention and resources. Some of them see the benefits of joint efforts between labor activists and environmentalists. Some labor activists see the current debates about global warming as an opening because it might prompt wider reflection on the dominant global capitalist business model. Some, however, see the whole global warming and climate change talk with suspicion because of their fundamental distrust of the West and anything comes from the West – be it CSR in recent decades, or global warming in recent years.

#### ***4.9 Guangdong Provincial Environmental Science Association***

The Guangdong Provincial Environmental Science Association was established in July 1979. It is supported mainly by the Guangdong Provincial Environmental Protection Bureau and the Guangdong Provincial Association for Science and Technology.

Since its inception, the association has worked closely with the Guangdong Provincial Environmental Protection Bureau around the province to promote environmental science and technology, serve in an advisory role to the local governments, and educate the public about environmental issues. In recent years, the association's work relating to environmental protection has become increasingly important and has gained new prominence because of heightened public awareness of the environment, according to the leader of the association.<sup>7</sup>

##### **Economic development, energy conservation, and environment**

The government has set a very ambitious target of quadrupling China's GDP by 2020, while only doubling the amount of energy consumed to power such growth. This is a very ambitious goal. China needs to adopt a whole array of measures to achieve this, including dramatically increasing the energy efficiency of the economy, accelerating the development of renewable energy technology and highly energy efficient technology, and of course, general energy conservation.

There is concern as to whether China will have enough energy supply to power its rapid economic growth and steady improvement of living standards for millions for another 20 to 30 years. Many others are also worried about the environment,

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<sup>7</sup>Interview conducted in July 2009, Guangzhou, China.



especially what kind of environment we will be living in in 20 to 30 years. These are all reasonable worries.

What China will face in the next 20 to 30 years is the increasing demand for energy and greater competition for limited energy supply in the international market. Improving the energy efficiency of the Chinese economy, therefore, is of strategic importance to the country. What ordinary citizens can do is to join in the national efforts of energy conservation. If everyone saves a little, the total amount saved would be huge.

Regarding the environment, the rapid economic growth in the past three decades has caused serious ecological damage, especially in the coastal regions such as Guangdong province. Foreign investments from the developed countries have helped the Pearl River Delta area in Guangdong to become the manufacturing center of China and the world, but this is done at a great cost to the environment. Strategies to fight pollution and protect the environment while the economy continues to grow at a high rate over the next few decades is going to pose a serious challenge for the government, for the environmental protection bureau, and for the environmental science community.

The Chinese government and local governments have spent a lot of money on environmental protection efforts, but the effectiveness of such efforts is in question. The work involves a lot of complicated factors: technical issues, national policies, management standards, even local protectionism.

### **Public awareness of global warming and climate change**

Global warming and climate change are not the direct reason for most people who engage in energy conservation. Most people are more concerned with their immediate lives and environment than a global threat in the future, especially those who are still preoccupied with their basic, everyday needs for survival.

As one of the more developed areas in China, Guangdong and especially the Pearl River Delta area have more and more people who are already financially stable, and well-informed enough to be concerned with long-term issues of the environment. They are the ones who are most aware of the threat posed by global warming and climate change, but their numbers are relatively small compare to the vast majority of people who are still struggling to achieve economic security for themselves. One could say it is short-sighted or it is based on rather limited rationality, but between immediate economic security and long-term environmental security, concern for the former always wins out.

This is not to say that the vast majority of people will remain indifferent to energy conservation and environmental protection until their economic security is achieved. Actually, a great number of people are enthusiastic participants in energy conservation efforts. People recently turned out in great numbers to buy

energy efficient light bulbs because government subsidies made them more affordable, and they save money by saving energy.

The recent efforts to reduce the use of disposable plastic shopping bags have seen early success too because it makes more economic sense for people to bring their own reusable shopping bags than paying for the plastic bags every time. Such examples give us hope that smart policies do generate tangible results, so the key is to come up with the policies that are most effective in providing the right incentives for the majority of the public to change behavior. This is where China can learn from the developed countries that are several decades ahead in energy conservation and environmental protection.

### **More research and better coordination are needed**

We need more research on how global warming might affect the environment, especially of the Pearl River Delta region. Good research is critical for the environmental science community to give sound policy advice to the policy-makers, and to better inform the public about potential environmental risks both in the short term and in the long run.

So far, global warming and its effect on the climate and environment have been mainly discussed within the academic and policy circles. They have yet to catch on to become an everyday issue for the general public in China. The situation may change in the coming 10 or 20 years, or perhaps not, but scientists and policy-makers cannot simply wait for “the great public awakening” that might never come. Scientists and policy-makers have a responsibility to be more forward-looking and prepare the public and the society for future threats, be they energy shortages, environmental disasters, or climate change.

Global warming and climate change will bring serious challenges to the environment and communities along the coastal areas. Dealing with such challenges requires specialized knowledge, careful planning, extensive investment, and good coordination. No single government agency, no single local government, no single business or business community, and of course, no single individual could take on such a systematic problem and be successful in countering it alone.

The government can be an effective coordinator by bringing all the parties together and devising a coordinated action plan. Environmental science associations can best serve the movement by providing their expertise to inform the decision-making process. All relevant government agencies should be involved during the decision making to avoid later conflict. There should be effective measures to deal with local protectionism by local governments.

The international community, especially developed countries, can play an important role in China’s efforts to improve energy efficiency, reduce emissions,

and protect against environmental degradation. Through increasingly frequent exchanges with the international environmental science communities, we have enhanced our capabilities to monitor and study the environment and assess the environmental consequences of economic development programs. China – Guangdong province in particular – has steadily increased its environmental protection standards and regulations up to a level that is common in the US or Europe.

Enforcing regulations and achieving high standards, however, are not easy tasks. China needs the expertise, technology, and funding to upgrade its infrastructures, to improve energy efficiency, and to fight pollution. The international world can help China in many ways in achieving these goals.

#### **4.10 Confucianism, Buddhism and Taosim**

##### **Confucianism<sup>8</sup>**

There has been renewed interest in Confucianism by both the ruling party and the public in recent years. Confucianism as a traditional Chinese philosophy is especially appealing to the communist party in recent years because Confucianism was the reigning philosophy for almost every single dynasty since the beginning of Han Dynasty in 206 BC, and was so for a reason.

##### **Historical background**

The first emperor of the Han Dynasty presided over chaos both within his court and in the country. The official history of the Han Dynasty even has a story about how the emperor was once driven to tears when his top generals drew their swords and fought in front of him in the court. So when one surviving student of Confucianism (the emperor of the Qin Dynasty before Han buried most of them alive and burnt all their books) came forward to preach Confucianism to the emperor, the emperor embraced it right away and decreed Confucianism as the official ideology for the land.

The reason Confucianism was so appealing to the founding emperor of the Han Dynasty and almost every one came after him for nearly two thousand years is that Confucianism teaches order and harmony. According to Confucianism, the world has its own order that stretches from the heaven to the earth. The emperor is the son of the heaven and is given a mandate (the so-called “heavenly mandate” or *tianming* in Chinese) to rule over the land and his subjects. Every single person living on the land is his subject and has his/her rightful place in the heavenly order. If everyone knows his/her place in the order

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<sup>8</sup> Based on conversations with several philosophy, history, and social scholars who have written extensively on the history of Confucianism, and Confucianism’s role in a modern society.

and tries to stay in the order, the world is in harmony.

In order to teach everyone to know their place and act accordingly, Confucianism has a very elaborate system of rituals that masterfully uses music, dances, costumes, processions, etc. to teach and train everyone how to respect the order and act accordingly, from top court officials to lay persons in the countryside. After destroying the temples and abandoning anything had to do with Confucianism for many decades, the communist party is now openly embracing the cultural heritage of Confucianism, touting its virtues and usefulness in the new age. The local government of Confucius's birthplace even created a huge show a couple of years ago, resurrecting the rituals that was said that had not being performed for a long time.

### **Moderation and harmony in the modern world**

Besides its political philosophy, traditional Confucianism also has a natural philosophy that teaches moderation and harmony between man and nature. This is what many environmentalists in China are advocating now – traditional Confucianist moderation and harmony can serve as an antidote to the excess of modern consumerism. It is a fascinating idea, but turning the idea into practice would be a challenge. The kind of moderation and harmony between people and nature that Confucianism teaches is easier to realize in the traditional agricultural society than in modern cities. A traditional farming village is a harmonious ecosystem that includes all of the practices that environmentalists are advocating nowadays: produce your own food, reuse or recycle everything, no excesses. This is exactly the reason why such traditional farming villages could sustain themselves for hundreds of years before the modern age swept them away.

But how to continue to practice the same kind of moderation and harmony in modern cities that are fundamentally different from the small, self-contained ecosystem of a traditional farming village? Confucians moderation and harmony as a potential antidote to modern excess is an enchanted idea, but how to turn it into common practice is something that its advocates have yet to achieve.

### **Buddhism<sup>9</sup>**

According to the Buddhist interviewee<sup>10</sup> there are no explicit activities related to and directed at global warming/climate change in Buddhist communities in China

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<sup>9</sup>The section on Buddhism is written by Kathinka Fürst and based on interviews undertaken by her.

<sup>10</sup> Informant one is an international renowned Buddhist master. With a University education, former marriage, entrepreneur skills and his own blog on the internet, he is a representative of a new generation of religious believers in China. He has previously served as Dean at the Buddhist College in Hebei Province and a number of other Buddhist

today. There are two reasons for this: firstly, a self-restriction based in the Buddhist belief that one should not take an active part in political questions limits Buddhist representatives from taking on a dynamic public role in addressing these questions. Secondly, and perhaps most importantly, the strict political atmosphere in the country makes it difficult for religions in China to have an official public opinion on political questions.

### **Planting Trees**

Our Buddhist interviewee put forward the idea that it should be obligatory for governmental officials, students and party members to plant one tree each year and to take care of all the trees they had planted, in order to raise people's awareness about environmental challenges. By planting trees and caring for them, people would not only contribute to a general "*greenification*" of the surroundings and support the O<sub>2</sub>/CO<sub>2</sub> cycle, but perhaps more importantly, people would become more aware of the fragility of nature and would gradually make more environmentally-friendly choices in their daily lives.

### **Lifestyle and climate issues**

The interviewee also believed that Buddhism can make positive contributions to reduce human impact on global warming and climate change. According to the informant, industrialisation, greed and materialism is the root of human-caused global warming and climate change. As Buddhism encourages people to restrict their desires and urges and by influencing people to live a simple material life, but a rich spiritual life, it is highly likely that people would unconsciously make more environmentally-conscious lifestyle and consumer choices. The Buddhist response to challenges caused by ecological degradation is to focus on individual spiritual change. When people are freed from the materialistic urges and desires they will become more conscious of the value of life, claimed the informant. As such, people will automatically become more aware of their own negative impact on nature, and make more environmental friendly choices.

### **Cooperation with government to protect health and temples**

Buddhist communities are not presently engaging strongly to address climate change and global warming challenges. However, Buddhist communities are debating how the changes of times (electricity, water and sewage draining

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schools. He has started Buddhist educational activities centers in relation to twelve different temples and ministries spread across all China. He often gives lectures at renown universities such as Beijing University and Tsinghai University.

systems, transportation, internet etc.) has changed the lifestyle of Buddhist monks, causing them to lead a more resource- and energy-demanding lifestyle.

There was also concern in the Buddhist community about the burning of artificial incense in the temples and its detrimental effect on the air quality. According to the informant, respiratory diseases were one of the most common illnesses among Buddhist monks; this was clearly linked to the increased use of artificial incense. However, the interviewee claimed that it was very difficult to restrict the use of incense since burning incense is a tradition when visiting temples. The only way he had managed to restrict the use of incense was to collaborate with the Office for protection of Artefacts at the government. The office issued an order stating that due to the fragile state of the temples (which are protected cultural heritage buildings), it was forbidden to burn incense in the temple.

### **Taoism<sup>11</sup>**

Taoism stands out as a religious community which has explicitly engaged in environmental protection. One example mentioned by our Taoist interviewee<sup>12</sup> was a book published by the Vice-President of the Chinese Association for Taoism, Mr. Zhang Jiyu under the title "The Nature of Taoism and Protection of the Environment". Furthermore, the Taoist community has been actively involved in establishing the natural reservation park, "Chinese Taoist Ecological Forest Area," in Gansu province. However, like the Buddhists, the Taoists do not raise an active voice in political debates about climate change and global warming.

According to our Taoist interviewee, the main factors causing global warming and climate change are the man-made heat output by air-conditioning, cars, industrial pollution, etc. These are all man-made phenomena which cause extra unnatural heating to be added to the "Tao"<sup>13</sup>, and this is essentially seen as the root of the global warming and climate change situation.

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<sup>11</sup>Based on research undertaken by Kathinka Fûrst.

<sup>12</sup> Informant two is an active Taoist monk affiliated with the White Cloud Temple, which is situated in Beijing. He is in his mid-thirties.

<sup>13</sup>The character 道 (TAO) is translated in many ways, sometimes directly as 'way', 'path', 'route', or sometimes more loosely as 'doctrine' or 'principle', it is used philosophically to signify the fundamental or true nature of the world. The concept of Tao differs from Western ontology, however; it is an active and holistic conception of the world, rather than a static, atomistic one.

### **Harmony between heaven and man**

Taoism stresses the importance of "*harmony between heaven and man, induction harmony between heaven and man and syncretism between heaven and man.*" According to informant two, when there is a change in the "*Heaven Tao,*" this is always caused by a problem in the "*Human Tao.*" In order to address problems caused by global warming there is a need to attack the current situation within the "*Human Tao.*" Syncretism between heaven and man, and balance between Yin and Yang, can only be obtained by changing the current unbalanced situation in the "*Human Tao;*" and only through a truly balanced "*Human Tao*" will there be balance in the "*Heaven Tao.*" More generally, natural disasters are a sign that there is an unbalance in the "*Heaven Tao*" and the "*Human Tao.*"

### **Meditation**

Similar to Buddhist practice, the Taoists believes that through mediation and enlightenment people will become more conscious about their choices and how their behavior affects their surroundings, including nature. Furthermore, Taoists believe that through prayers, meditation and various rituals people can ask for forgiveness from the Heavens. If granted, this forgiveness can have the effect of creating a balance between Ying and Yang, which again can lead to the avoiding or resolving of natural disasters.

## **4.11 Conclusion and discussion**

The above analysis of industries as important stakeholders reveals that global warming and climate change have become salient factors affecting many aspects of business. Because of a strong push by the central government to implement stringent energy conservation and emission reduction measures, the industries are under heavy pressure to innovate and adapt to the new business environment.

Although the central government's push for higher energy efficiency through the wide-ranging policy of energy conservation and emissions reduction is motivated as much by the overriding imperative to achieve long-term energy security as to ensure climate change mitigation, they have intricately linked the two issues together, and have pushed on both fronts—energy and climate.

For the industries that must adopt the government's regulations on energy efficiency, most of them see it as a move in the right direction. IWhile not always met with enthusiasm, there is at least the realization that it is inevitable.

At the national level, especially for policy-makers, energy and climate issues are simply two sides of the same coin, because the bulk of China's GHG emissions come from the ever expanding, predominantly coal-burning energy

sector. For the industrial leaders, especially those at the local level, their attitudes toward energy conservation and climate change could diverge. Active compliance with the government's energy conservation regulations do not necessarily translate into explicit support for climate change mitigation, even though compliance with the government's energy policy would objectively benefit the mitigation efforts.

The implications of the findings are that industries are more likely to respond to more pragmatic incentives and pressures when approaching energy conservation practices and technology, especially if such moves can benefit their bottom-line rather quickly. As was made clear earlier, it would be very difficult to convince the leader of the paper industry association that GHG emission need to be curbed immediately if he thinks that more CO<sub>2</sub> in the air will only make the trees grow better, which in turn means more wood pulp for his industry. Yet, he, as the representative of other industries, is unequivocal about the need to improve energy efficiency for his business and his own industry, which in the end, will serve to curb CO<sub>2</sub> emissions.

Although not intended as a formal part of the stakeholder analysis, the general public's awareness and attitudes toward global warming and climate change have nevertheless appeared in every single conversation that we had with industry leaders and experts. The basic consensus is that the public generally perceives the threat of global warming and climate change as distant from, if not completely irrelevant to, their own lives. If global warming and climate change are global threats, and China is going to be among the most severely affected, why the Chinese public is not as alarmed as one might expect? Shouldn't the Chinese public be anxious about the disaster that is looming beyond the horizon?

In order to glimpse into the Chinese public's mind on this, one need to be aware of the physical conditions of the Chinese society today. The rapid development of the Chinese economy and the rapid-fire transition of Chinese society over the past thirty years surely involve a lot of achievements, not the least of which is lifting hundreds of millions of people out of poverty. If one has to name one failure, however, it might be that the country has so far failed to create any lasting sense of long-term certainty or security for most citizens.

Thirty years of rapid growth and transition means that for most of the adult population in China today, the most defining feature of their life experience is constant change. Everything is in flux, nothing is set in stone. The upside of such life experience is that one can hardly complain that life is boring, but the downside of constant change with no certainty whatsoever of long-term security is that everyone is anxious about their future all the time. Except a small minority who are extremely well-off and secure about their future and that of their



children, the vast majority of the Chinese public have to live with such everyday anxiety over their future with no end in sight.

If one main reason for individuals to take up the cause of fighting global warming is their concerns for the future – such as anxieties over what the planet might be like in 30 or 50 years – such anxiety is less likely to spur large numbers of the Chinese public towards global warming activism because most of them are already living with a high level of anxiety over their personal future. When you are concerned every day over how you will be able to pay for your children's education in 10 years, or how you could pay your medical bills if you fell ill, or even how you would manage to keep the apartment that you own now if the government suddenly imposed a property tax, whether or not the sea level will rise 20 meters in 30 years does seem like a rather distant concern.

Based on this analysis, a policy that promises immediate relief or reward to the individuals is much more likely to succeed in generating public actions in China than policies that focus on long-term, global public goods as benefits. The way to win public support for global warming and climate change policies in China is also by focusing on the immediate benefits of the proposed actions, not by stressing the long-term perils of inaction, because no worries of potential long-term climate disaster is likely to push anybody over the edge.

Such psychological analysis can be extended to business practices as well. The lack of long-term certainty weighs on business plans and business decisions just as it weighs on individuals. What is different for the businesses though is that their focus on short-term profitability over long-term sustainability does seem to be a more universal concern, rather than one that is limited to Chinese businesses. This does make it difficult, though not entirely implausible, to say that the Chinese businesses' lack of anxiety over global warming and climate change is also the result of their suffering from everyday anxiety over their future security (or the lack thereof), demonstrating the precisely the same concerns as individual Chinese people .



## **Chapter 5: Comparative Analysis**

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### ***5.1 Our uncommon futures***

Our comparison of climate challenges across three continents demonstrates the diversity of problems as well as the variety resources and skills needed to meet them. Norway, Ghana and China, therefore, appear to face a Common Future predicament (Brundtland 1987) although each has its own type of “uncommon future” in terms of immediate effects and perceptions Witoszek (2009). Norway has the luxury of expecting only mild negative effects, and will have extensive resources and technologies to meet the climate change. Ghana and China are will be confronted in more direct manner, and Ghana, in particular has very little resources and competencies at this time. As the world’s largest nation, China has what it needs, though when considered at a per capita level, it is still far below the standards of the richer north.

### ***5.2 Policy level***

At the policy level Norway has been an early actor in the international climate agenda. It was among the early ratifiers of the Kyoto agreement, and introduced a CO<sub>2</sub> tax in 1991. The present government’s climate policy puts Norway on an ambitious track, ahead of even the EU policy, with 30% reduction of CO<sub>2</sub> emissions by 2020 followed by carbon neutrality in 2030, if other western countries also go carbon neutral. There is, however, a built in duality in Norway’s desire to spearhead advanced climate policy due to its extensive involvement in large scale petroleum extraction, with huge stakes in the carbon-economy.

In Ghana climate policy formulation is new and builds on indirect effects from more locally grounded environmental policies and practices. In the forestry sector, measures are aimed at forest restoration as legislation has established numerous forest reserves and wildlife protected areas, accounting for as much as 16% of the country’s land area (Ministry of Lands and Forestry 1994). In the energy sector Ghana’s policies are aimed at conservation and ensuring energy efficiency and thereby also achieving positive climate effects. The energy sector is currently the largest emitter of green house gases (GHGs) in Ghana. Ghana is also a party to the African Clean Air Agenda which set out conditions for achieving better air quality to protect the health of its people as well as the environment. In line with this commitment, Ghana is one of seven African countries now using unleaded fuels (Energy commission report, 2006). In addition, Ghana has well-

formulated policies and strategies for meeting the climate change challenge in line with the policy outlook of influential international agencies and donor nations (Ministry of Environment and Science 2005, GoG 2002, EPA 2000). What remains is implementation and enforcement of laws and regulations that can ensure the success of these policies.

China's climate policy is primarily driven by overriding concerns for energy efficiency and the fight against local pollution, where the government has taken a strong stance, and is challenging industry practices. Climate policy in China, therefore comes largely as a side effect of other policies. The central government's new energy policy is widely referred to as "energy conservation and emission reduction," as the primary reason for their own industry's need to come up with new business strategies, so that they can meet the government's requirements, sometimes handed down as strict "quotas" to be met by a certain deadline<sup>1</sup>. The emission standards set by the government are very clear, reasonable, and pointing in the direction that industry needs to take, although such standards put a lot of pressure on businesses in the short run. By conforming to such standards, some leading companies have continued to improve their competitiveness while gradually bringing themselves in line with international standards

### **5.3 Industrial stakeholders**

The pattern repeats itself with industrial stakeholders. Parts of Norwegian industry focus on climate change as an opportunity and aim for a leading position in the global debate, yet other parts remain concerned that climate policy may be a competitive handicap. Ghanaian industry seems to take a more passive role and is only recently engaging. Chinese industry, on the other hand, follows the country's general policy orientation and targets pollution and resource efficiency in their operational strategies.

Norwegian industry has taken climate change and global warming on board as central policy themes. However, industry is divided on policy approaches and resulting in disparate forms of policy. As a large oil and gas exporter, core parts of Norwegian industry are committed to the carbon economy. These industry segments are eager to point out that they pursue offshore oil and gas extraction with high environmental standards, and furthermore that gas is an important transition fuel necessary for the near future. The Norwegian electricity industry, wholly based on hydropower sees the upside of the climate challenge,

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<sup>1</sup>Chinese State Commission of Economic and Trade, (2000), "2000-2015 Development Plan for the New Energy and Renewable Energy Industries." Available at <http://www.ccchina.gov.cn/cn/NewsInfo.asp?NewsId=3811>

and has plans for expanding into transport through electric vehicles. The energy intensive smelting industry, on the other hand, experiences increased costs from CO2 pricing as a major competitive handicap.

Ghanaian industry previously had little engagement with climate change issues but is currently awakening to the call by the Environmental Protection Agency EPA to incorporate climate policy into their activities. However, many industries in Ghana are agriculture-based and as such, any change in climate which will have an effect on agricultural production, is going to have a serious impact on industry with respect to raw material supply both in quantity and quality which will in turn affect output and overall industry productivity. AGI is also aware that climate change may affect other sectors of the economy and people's earnings and thereby indirectly affect the demand for industrial products. However, many Ghanaian industries are in a weak financial position and face difficulties in procuring new technologies to respond to the dramatic changes in weather conditions. Yet Ghanaian industry is now adopting the international climate agenda. In the future, AGI has agreed to engage with the Environmental Protection Agency (EPA) to ensure environmental sustainability. Responding to strong demands from society and government, Chinese industry is not directly concerned with global warming or climate change, but has engaged actively to reduce excessive local pollution and its impact on the environment. This is especially the case if there is a possibility to combine environmental concerns with cost savings in the promotion of eco-efficiency. On the other hand, in China the medium and small sized firms are constrained by capital, and face difficulties in finding the financial resources needed to invest in new energy saving and emissions reducing technologies. Combining environmental action with efficiency gains – eco-efficiency – has considerable political and commercial appeal in China.

While local environment and pollution are recognized as major challenges, global warming is seen by Chinese industry as difficult to measure, analyse, evaluate, and resolve with specific techniques. They therefore tend to disregard global warming as a strategic focus. Some industry leaders even question the need for such policy engagement.

#### ***5.4 Stakeholders in farming and fisheries***

Stakeholders in farming and fisheries are most directly exposed to nature, as climate change concerns their immediate livelihood. However, again, effects differ. On the one hand, the Norwegian stakeholders expect fairly mild effects and have plans to positively exploit new climate-opportunities. On the other hand, Ghanaian and Chinese stakeholders in farming and fisheries face more serious problems with less potential advantages.

In Ghana farmers engage in mixed cropping as an insurance mechanism allowing losses by some crops to be covered by good yields in others since different crops have different vulnerability to weather conditions. Farmers also diversify their portfolio of activities beyond agriculture. Almost every person does other jobs in addition to farming such as trading for women or masonry for men. However, peasant farmers have limited resources and perceive the assistance of government and NGOs as important in their ability to adapt to and mitigate dramatic climate conditions.

Ghanaian agriculture also has some commercial farmers that grow both staple foods and export crops in large quantities. Climate change has made the weather too hot so fruits do not attain desired sizes before ripening thereby affecting profitability. This situation together with the very high cost of production creates fear and uncertainty among commercial farmers. Furthermore, even where farmers succeed in beating the odds of an unpredictable climate they are unable to access European markets because of the difficulties of acquiring certificates for export in these markets.

Like farming, fisheries rely directly on nature, and hence are directly exposed to climate induced changes to natural processes. Representatives of small-scale fishermen in Ghana know of and experience the effects of climate change in their daily fishing activities as storms become increasingly violent and unpredictable. Fishing also indirectly affects the livelihood of whole families, as most spouses of fishermen are fishmongers and support the men with financial credits. While more turbulent weather creates more uncertainty for the fish catch, the absence of storage and cooling facilities prevents fishermen from enjoying the fruits of their labor. Increased climate volatility, thus comes in addition to other hurdles, including competition from big trawlers that flood the Ghanaian market and undercut local prices. In the long run, fishing communities are also threatened by rising sea levels.

Historically, China's agriculture has been very vulnerable due to limited resources and high population density. The perceived impact of climate change by rural populations is heavily dependent on natural conditions, changes in their own lives, and the changing size of the production. But Chinese farmers' abilities to adapt to climate change are quite limited by the current mode of production which consists primarily of family-based, small-scale operations. Each family of farmers cultivates a small patch of land. They lack the necessary knowledge, capital, and technology to take bold actions. For most farmers, their perceptions of climate change remain intuitive and anchored in concrete experiences while their attitudes remain passive.

In China, fisheries are haunted by the problems of a growing economy. The most central concern to fish farmers and the fishing industry in China is water pollution. Incidents happen in China every year. Pollutants from industrial emissions, agricultural fertilizers, pesticides do damage to fish in lakes, rivers and the ocean. The so-called desertification phenomenon has occurred in many waters and fishing grounds. Due to the warming of the South China Sea, the spawning time of fish has come much earlier than it used to, and in order to protect the fish stock it is necessary to shift the off season to earlier times of the year. However, overfishing is also a major concern to Chinese fishermen. In spite of government regulations, illegal construction of fishing vessels still occurs and the intensity of fishing has not been adequately controlled.

Norwegian farming and agricultural industry, on the other hand, has worked on CO<sub>2</sub> issues for some time. In recent years, Norwegian farmers have engaged in strategic reorientation from agricultural production to development of the Norwegian countryside. With the advent of global warming, they are challenged to also see the farm as an energy provider. Norwegian farms have a great potential for small scale hydro; and as farmers also typically own forests, they can also provide bio-energy. In farming proper one of the major areas of focus is emissions of nitrous from fields. This gas is 300 times more potent than CO<sub>2</sub> and therefore an important matter. The agricultural industry has been able to save more than 25% of its diesel consumption, with positive effects on CO<sub>2</sub> emissions. Besides more violent weather, a warmer and wetter climate is likely to bring new problems and diseases. However, Norwegian farmers expect to see a renewed interest in domestic farming as extensive growth in global grain and meat consumption may lead to a serious food shortage leaving Norwegian farming to cover Norway's domestic needs.

Representatives of Norwegian fisheries are uncertain about how higher sea temperatures will affect the migration of fish. They point out that the climate effects may be both positive and negative, and may affect different groups of fishermen, dependent on their location as the fish migrate to other places as the water gets warmer. While the global consequences of climate change are likely negative, the Association believes the implications for Norwegian fisheries remain to be seen. In addition to their concern for impact on fisheries, Norwegian Fishermen are working actively towards reduced fuel use, both through improvements in engines and in the hulls of vessel.

## **5.5 Trade Unions**

The climate challenge has been received differently by trade unions in the three countries of our sample.

The Trade Union Congress of Ghana has no active climate change agenda for now but understands that it will have to adopt sustainable practices to counter this serious threat to human existence. In addition to the economic ramifications, climate change will affect workers through the environmental consequences and natural hazards including hurricanes, floods, and earthquakes. The Trade Union Congress plans to engage with the Environmental Protection Agency to develop a climate agenda, recognizing the need to build expertise in this area. In the words of the TUC leader 'at the moment, climate change is a significant challenge but it can turn into a crisis if action is not taken now'.

In China the positions of labour unions on climate change vary. Based on the voice of unofficial labour activists, rather than on the state-appointed formal labour union, global warming is seen by most as destructive result of "western style" globalisation and consumerism. Indigenous communities and businesses thus consider global warming and climate change to be additional adverse consequences brought about by globalisation and global consumerism. Some labour activists see the current debates about global warming as an opportunity because it might prompt a broader critique of the dominant global capitalist business model. Some, however, are suspicious of the whole global warming and climate change discussion because of their fundamental distrust of the West and anything from the West, be it CSR in recent decades, or global warming today. For these labour activists, anything that can curb the influence of global capitalism is potentially an advantage to labor interests and movements. This is why we see a new symbiosis emerging between environmentalists and labor activists in a critique of the government's decidedly business- friendly policies. Yet it is also clear to others, more in line with the official labour unions, that China is a big beneficiary of the latest wave of globalisation because it has successfully ridden the tide of globalisation to develop its economy and spread the benefits across billions of people, no matter how unevenly. The across-the-board improvement of living standards is apparent to even casual observers.

The Norwegian confederation of trade unions (LO) has recently engaged in climate policy, marking a change in attitudes to climatic and environmental issues. After LO adopted climate-strategic plan, the issue attained far more prominence in the organization. Nevertheless, at the 2009 annual congress, climate policy was overshadowed by other issues such as pension reform and the consequences of the financial crises on industry. The LO also recognises that Norwegian industry is more competitive in arenas with relatively high social and environmental standards. Engagement to promote climate issues as well as other environmental and social issues therefore coincides with interests of Norwegian industry. Thus LO is a strong supporter of environmental standards in public



contracting and has supported the “strategic council for environmental technology” which was recently created by the Ministry of Environment. Norwegian LO is also proud to play a leading role in promoting climate policy among international peers. It sees itself, together with other Scandinavian and German unions, playing a pioneering role in promoting climate consciousness.

## **5.6 Non Governmental Organisations**

In all three countries we find NGOs playing important roles in forging societal responses to climate change. However, these organizations have different roles and opportunities from country to country. In Norway they act as critical watchdogs to push the climate agenda on the governmental level. In Ghana they are playing an educational and awareness raising role, in close co-operation with international organizations and donor countries that provide the bulk of their support. In China, many environmental NGOs are actively engaged in raising public awareness of climate change and environmental issues while advising the government on specific policy issues

In Norway, the mainstream environmental NGO, the Norwegian chapter of the World Wide Fund for nature (WWF) has engaged pragmatically in climate issues – demonstrating the need to strike a balance between industry and government. This has led to difficulties with many staff members who adhere to a broader and more fundamentally ecological perspective. WWF has been highly critical of Norwegian policy's trend of reducing Norway's CO<sub>2</sub> abroad through the purchase of emission allowances, while undertaking very little at home and even expanding its petroleum exploration. This, according to WWF, undermines Norway's credibility as an international champion of sustainable development. WWF has therefore engaged actively to limit oil extraction in northern Norway and reduce domestic CO<sub>2</sub> emissions. The human rights NGO Amnesty Norway has also engaged in the climate debate, arguing for a link between climate issues and human rights, both as a consequence of increased climate migration and an expanding human rights agenda. Insofar as climate change affects livelihood, there is a clear connection to fundamental social and economic rights. Amnesty fears that Norway's restrictive attitude to new immigration conventions amounts to a dualist path. On the one hand, the country claims to be a front runner in supporting human rights. On the other hand it is hesitant to secure minimum rights that are on par with the domestic population.

The two NGOs interviewed in Ghana were the Environmentally Concerned Citizens Association of Ghana (ECCAG) and the Hatof Foundation, both engaged in educating people and creating awareness on the need for tree planting and the protection of the environment. ECCAG does this by providing seedlings and

teaching individuals and groups about the need for a healthy environment with methods such as screening documentary films. The Hatof foundation is accredited by the United Nations Framework Convention on Climate and is working to restore mangroves along the coast, encourage the use of renewable energy, initiate planting of sunflowers for biofuels and trees, and collaborate with government and other NGOs. Currently, they have adequate funding from UNDP, GTZ and foreign embassies.

New opportunities for improving the operations of these NGOs stem from the various international agreements on carbon trading, CDMs, and collaboration with external and internal donors to implement environmental projects. Nevertheless, they also blame richer industrialised countries and mining corporations for most of the environmental problems that have led to climate change.

Given that China is a relatively authoritarian society, NGOs that freely address these issues are not easy to find. The Guangdong Environmental Science Association (GESA) – our source of information – is closely associated with the Guangdong Environmental Agency although it is officially a professional association. In a sense, however, it is also an NGO, although all such organisations in China are more official and more closely connected to the government than most NGOs in Western countries. GESA was concerned that the government's target of quadrupling China's GDP by 2020 while only doubling the amount of energy consumed to power such growth is too ambitious. The improvement of the energy efficiency of the Chinese economy, therefore, is of strategic importance to the country, especially with respect to the environmental effects of rapid industrialisation's. GESA points out that the Chinese central and local governments have spent a lot of money on environmental protection efforts although the effectiveness of such efforts remains an important question. It is expected that the vast majority of people will remain indifferent to energy conservation and environmental protection until they are economically secure. It is therefore a challenge to develop smart policies that generate tangible results. The key is to come up with policies that are effective in providing the right incentives for the majority of the public so as to change behavior.

### ***5.7 Religious and Philosophical stakeholders***

As previously mentioned, the messages from stakeholders on all three continents converge the most on a religious basis. Religious stakeholders, in all three regions, refer to core teachings in their traditions that have a strong bearing on global warming and climate change. A recurrent theme is the need to return to a more balanced relation between man and nature or between the human and heavenly

dimensions. In religious imagery global warming is God and nature's revenge on human exuberance and neglect toward God and nature

In Ghana, the Christian and Islamic congregations hold strong opinions on climate change and global warming, which they see as an indictment on humanity and a manifestation of the failure of civilisation. The traditional priest voices the strongest critique of modernity for having neglected man's relationship to nature; for him the modern religions such as Christianity and Islam were also to blame. With rather different rhetoric, the Church of Norway also criticises modern consumerism and seeks to establish a more balanced relationship to nature. This includes an admittance of the fact that certain so-called eschatological interpretations of the Gospel have given green light to environmentally destructive business practices. The Church of Norway is therefore searching for ecological themes in early scriptures.

The Chinese religious traditions, Buddhism and Taoism, have been less outspoken on ecological issues. These traditions advise their members not to play an active role in political questions, and the political atmosphere in China makes it very risky for religious/political communities to publicly voice opinions about anything which could be interpreted as political. Nevertheless both traditions claim that the ecological crisis is also a crisis of culture and of the human spirit, and that only by changing human behavior is it possible to reverse the course of the deteriorating environment. The secular Confucian philosophy, which has recently regained government support, teaches moderation and harmony between man and nature.

The Christian Council in Ghana argues that the environment is entrusted to human beings who, acting as stewards, are to be held accountable. They consider climate change to be unfair because the rich, industrialised countries who they hold responsible do not suffer consequences on a similar scale. In a similar vein, the Muslim religious leader argues that 'man is God's representative on the earth who has to live according to the wishes and laws of his creator. When he does that, anything he needs will be assured by his creator. When he goes contrary to God's rules he has to suffer the consequences such as climate change'. Climate change is due to man's overuse of the earth's resources. In this tradition, it is believed that God said we should not even 'walk heavily' on the earth because all other organisms are important. This can be seen as the Quranic version of the ecological footprint of man. Likewise, the traditional animist chief priest attributes climate change to human activities. The priest attributes climate changes to the destruction of sacred places such as groves and riverbanks as he remarks that 'as we continue to disregard our tradition and violate the sacred places, we will continue to incur the displeasure of our ancestors and the

consequences are devastating.’ Traditional beliefs hold that by neglecting the gods by not making regular sacrifices to them humans have created the problem of climate change. He particularly claimed that ‘Christianity and Islam, as modern religions, were destroying Ghanaian tradition and resulting in great losses.

In Norway, the church is positioning itself as a prophetic voice against unsustainable consumerism and uncritical growth policies. Perhaps the most exciting development within the Church of Norway relating to sustainable development and climate change is its work to review core interpretations of the Gospel. The theology that puts man alongside or above the creation as its ruler is losing prominence as people realize what such beliefs can lead to. According to the critics, this de-sacralisation of nature encourages people to exploit the environment with no regard for sustainability. This attitude contrasts with nature religions and the attitudes of traditional native populations from which the church now has to learn to address the new sustainability issues. In the process of rediscovering of its origins and the ecological wisdom to be found in early Scripture, the Church has begun to dig up little-known texts from the Christian tradition. In particular, texts from the early “desert fathers” – Christian leaders in the first centuries after Christ – support a closer relationship between humans and nature.

In China, the recent increase of religious and philosophical tradition in public environmental policy comes through in the statements of one of the vice-ministers at the Ministry of Environmental Protection, Mr. Pan Yue’s: “One of the core principles of traditional Chinese culture is that of harmony between humans and nature. Different philosophies all emphasize the political wisdom of a balanced environment. Whether it is the Confucian idea of humans and nature becoming one, the Taoist view of the Tao reflecting nature, or the Buddhist belief that all living things are equal, Chinese philosophy has helped our culture to survive for thousands of years. It can be a powerful weapon in preventing an environmental crisis and building a harmonious society.”<sup>2</sup> Stakeholders practising Buddhism, Taoism or Confucianism all claimed that the ecological crisis is also a crisis of culture and of the human spirit. Many environmentalists in China now refer to traditional Confucianist moderation and harmony as an antidote to the excess of modern consumerism. Buddhists also emphasised the environmentally conscious aspects of their tradition. They see industrialisation, greed and materialism is the root of the human caused global warming and climate change, and Buddhism encourages people to confront their desires and to live a materially

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<sup>2</sup>Miller, James (29.06.09): “*How Confucianism could curb global warming: China openly debates the role of Eastern thought in sustainability*”. Available online: <http://www.csmonitor.com/2009/0626/p09s01-coop.html>, quoted 16.09.09

simple but spiritually rich lives. When people are freed from worldly desires, Buddhists argue, they will become more conscious of the value of life, and unconsciously make choices about their lifestyles and consumption that are more environmentally friendly. Taoism also puts environmental protection at the centre. Taoists believe that all activities which damage nature are disrespectful to Heaven, causing people who act such ways to be punished by Heaven. Moreover, the Taoist text “The Scripture of Great Peace” (Taiping Jing) states that once the Heavens get upset, serious consequences will follow on earth; an angry mood in the Heavens will undoubtedly lead to misery on earth. Similar to Buddhist practice, the Taoists believe that through mediation and enlightenment people will become more conscious about their choices and how their behavior affects their surroundings, including nature. Furthermore, Taoists believe that through prayers, meditation and various rituals people can ask for forgiveness from the Heavens. If granted, this forgives can have the magical effect of creating a balance between Yin and Yang, which again can help to avoid or resolve of natural disasters.

### ***5.8 Summing Up With Implications for Climate/Sustainability Policy***

In conclusion, over a broad spectrum of stakeholders, climate change is only a dominant theme in the “rich North” where a smoothly functioning welfare society, greased with petro-dollars, can allow countries such as Norway to be concerned with issues beyond daily survival – especially if the most austere policy measures can be undertaken abroad.

Most stakeholders in China, on the other hand are concerned with the pains associated with their growing economy: problems of resource scarcity as well as the problem of local pollution, both to the air, soil and water. Out of this comes an indirect climate policy as a consequence of more immediate resource and environmental concerns. With economic growth in the double digits these issues are so overwhelming that in comparison long term climate effects remain abstract and unreal.

Ghanaian stakeholders are more preoccupied with deteriorating weather conditions. Phenomena such as more frequent droughts and floods in farming and urban communities and more frequent stormy weather at sea for fishermen are of immediate concern to people living directly at the mercy of nature. They stress the need for immediate action to help solve problems on the ground. At the same time, the strong influence and financial support of multinational organizations and donor countries has managed to successfully bring the climate change agenda into the Ghanaian debate. The country thereby finds itself in a dual modus,

between local realities and the international debate which are ultimately compatible since both are working for a sustainable future.

This pattern tends to repeat itself – though significant variations arise – throughout the stakeholder dialogues: from policy makers to industry and trade unions, from farming and fisheries to NGOs. Maybe the strongest convergence comes in religion, where religious and philosophical traditions in each of the three countries complain about the hybris of embracing of global consumerism, and about nature and God’s revenge.

### **5.9 Implications for Climate Policy**

The comparison of climate challenges across three continents demonstrates both the diversity of problems and the resources and capabilities to meet them. As a basis for climate strategy going forward, these findings does not support a common climate policy, but rather forging highly diverse climate approaches across the world:

*Climate change as a dominant theme is strictly speaking a “rich North” phenomenon. In a fairly smoothly functioning welfare society, greased with petro-dollars, Norwegians can allow themselves to be concerned with issues a bit beyond the daily survival; particularly if most of the austere policy measures can be undertaken abroad.*

However, the willingness to support a radical reduction in CO<sub>2</sub> emissions through emission pricing or taxation alone is hardly acceptable even by key Northern industrial and social stakeholders. A more viable approach for some sectors of the economy would be to start a move towards a green economy by innovation, with a focus on zero CO<sub>2</sub> emission goals for key sectors of the economy. By reformulating the climate game as a race to the green future rather than an exercise in burden sharing, the perspective shifts and what were constraints become opportunities. A green industrial revolution could be triggered if niche market policies helped create the momentum to overcome the difficulties of steep learning curves. Several of the Norwegian stakeholders were open to this type of policy.

For emerging economies like China, pollution control and resource efficiency are the key concerns, while climate policy per se remains a more distant and abstract concern. Replicating, in part, the experience of western industrialisation, rapidly developing areas of China are experiencing extremely high levels of pollution. Chinese industrial growth, given its enormous volume of production, is also running up against resource scarcity in an unprecedented way.

In order to engage Chinese stakeholders, climate policy must therefore be seen as a side-effect of more urgent pollution control and resource efficiency policies. Focusing on climate policy as the main goal would be a misguided strategy, although most solutions to the two more urgent problems would certainly have great positive climate implications.

For Ghana, and Africa in general, the challenge is to handle urgent ecological crises and to secure basic human livelihood. The focus should, in the first place, be on climate adaptation and on developing greater social and economic resilience to local climate effects. Presumably, most adaptation strategies consist of approaches that are positive for the climate in the long term. However, targeting climate change as such, with results to be joined only several generations in the future, is highly problematic in a setting with extensive problems of basic subsistence.

While differentiating policy approaches across the three continents emerge naturally from highly diverse experiences and stakeholder perceptions they also reflect a sense of global justice. It would be a natural duty of the rich North to take the initial innovation investments to its enormous per capita carbon footprints more sustainable, or around 10-20% of the current levels. This would allow for exponential technological growth and developing economies and carbon reduction or sequestration technologies might become available in the East and South at lower costs. In fact innovation for the green revolution might even take place in the expanding East, where large growth markets allow for rapid technological innovation. The extensive technology transfer in today's globalised economy could accommodate this.