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Should Business Influence the Science and Politics of Global Environmental Change?

The Oil Industry and Climate Change (A)

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Henri Twist, vice-president for strategic affairs of OILCO is rushing towards his office, somewhat worried. In half an hour a special meeting of the executive committee will convene to address the climate change issue. He is about to propose a strategic line that would amount to a radical shift in OILCO's strategy – and for that matter in a direction never taken by any other major oil and gas corporation. Meanwhile, Maria Goodfellow, vice-president for financial affairs is waiting in the meeting room, reviewing her notes, while Colin Haddock vice-president for production and operations is still stuck in a traffic jam.

OILCO is among the ten largest oil and gas corporations in the world. Annual revenue is of the order of US$90 billion. It employs 85,000 persons worldwide. Its key business areas are oil and natural gas exploration, production, refining and distribution, and chemicals production. These activities amount respectively to 85% and 10% of its turnover. In OILCO's total oil equivalent production 67% is oil and 33% is natural gas.

At 9 a.m. on January 29, 1997, the Committee convenes. Paul Hardy, CEO of OILCO addresses his colleagues: "In less than a year, next December, some 150 nations will meet in Kyoto to finalize negotiations of a protocol to strengthen their commitments under the 1992 United Nations Framework Convention on Climate Change. This political process may lead to legally binding commitments from industrialized countries to reduce their greenhouse gas emissions – and in particular CO_2 emissions – in the mid-term future. As a major international oil and gas corporation, these new constraints on gas emissions may profoundly affect our activities, so we have to decide on our strategy towards the science and politics of climate change."[1]

As Colin Haddock enters the room breathlessly, Maria Goodfellow starts her presentation: "Ladies and gentlemen, my conviction is that we have to stick to our path and fight by all means against any action by governments to reduce greenhouse gas emissions. Obviously it is in our interest to prevent the adoption of any mandatory policy that would constrain our activities. We have to keep pursuing the goal of exposing the weaknesses of climate science and explaining to policy-makers that they cannot act on the basis of such an exceptionally uncertain science. Let us win the debate on science so that the climate change issue loses its unjustified credibility and popularity. By keeping open the discussion on the existence of a problem, we will avoid discussion of what to do about it, hence preventing unnecessary action."

"We should endeavor to inform the public on objective grounds. Both on its understanding of the science – we have to show the public how uncertain climate science is – and on its understanding of the costs in terms of individual well-being associated with action. Finally, we have to act upon the political process and find powerful allies amongst policy-makers. Whatever happens, we should make sure that the environmental problems associated with fossil fuels (if any) are understood in terms of consumption rather than production."

"What are your main arguments to support this position?" Hardy asks.

"Well, as you said Paul, climate change policy represents a threat to our business, so we have to act. If governments decide to act on greenhouse gas emissions, then this represents a regulatory risk to us. More than anything, we must avoid more command and control

1 See Exhibit A-1 for a short briefing on the climate change issue and the international negotiation process.

regulations – in particular supranational regulations – of our activities. A binding treaty in Kyoto could create a bad precedent of 'world regulation'." As she notices several nods of approval at this in the room, she projects a slide[2] and continues: "In the case of climate change, the situation is that there is no scientific evidence of human influence on the climate system, the best the UN IPCC scientists can agree on is a *suggestion* of a human influence on climate, while they stress that '*there are still many uncertainties'*. So, obviously, there is no scientific proof as such."

"Then why should we – and the citizens of developed countries – make sacrifices on a doubtful basis? And sacrifices they are: the Protocol, as it is discussed today, has powerful negative implications in economic, investment, trade competitiveness and employment terms. We make a positive contribution to the political debate by pointing to those implications and we must be heard on this: what is good for us is good for the economy. We do not want to become hostages of the green lobby. We are strong enough on science, technology and economic analysis, we have enough credibility as researchers and analysts to fight their science."

"But what if scientists reduce uncertainties and show a more obvious link between human emissions of greenhouse gases and global warming?" asks Julia Orwell, the human resources director.

"If human-induced climate change turns out to be a reality, then what we need, as a fossil fuel company, is time. By fighting against climate policy now, we will gain precious time. As this century has shown, technology will provide a solution soon enough. Now is not the right time for a drift away from fossil fuels. In the past, we have lost a lot of money already trying to go into the renewable energies business, so let's not make the same mistake twice. Renewables are a completely different business. We know about extraction, refining and fuel distribution technologies, while photovoltaics are based on semiconductor technology, and wind power draws on turbines and electronics. These are not part of our know-how, so again: now is not the right time (if ever there is a right time, for I personally believe that this whole global warming stuff is just green-doomsaying). In addition, industry has already made huge efforts in energy efficiency. It is really in other sectors (such as in agriculture for instance) that the real reduction potentials lie, but, as always, industry will be the easy target for policy-makers. The problem is the oil use, not its production. Let's be serious, if we show strong determination, governments are not in a position to impose this on us."

"This is quite convincing, but how do you suggest we implement this strategy?" asks Hardy.

"Well, first of all we have to contest their science with our own – which is more objective. We have a good tool at hand to help us: the Global Climate Coalition, of which we are already a member. It is an organization of business trade associations whose aim is to coordinate

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2 On the slide are the following statements: "Our ability to quantify the human influence on global climate is **currently limited** because the expected signal is still emerging from the noise of natural variability, and because **there are uncertainties in key factors**. These include the magnitude and patterns of long-term natural variability and the time-evolving pattern of forcing by, and response to, changes in concentrations of greenhouse gases and aerosols, and land surface changes. Nevertheless, the balance of evidence **suggests** that there is a discernible human influence on global climate." (IPCC, 1996, p. 22, my emphasis) "**There are still many uncertainties**. Many factors currently limit our ability to project and detect future climate change. In particular, to reduce uncertainties further work is needed (…)." (ibid., p. 24).

business participation in the scientific and policy debate on the global climate change issue.[3] Its membership includes many companies from the fossil fuel industry – coal, oil, and gas – and the automobile industry, but also other sectors of industry, agriculture and transportation. Up to now, it has effectively combatted action in climate policy. We should support and orient the GCC strategy in order to reach our goals."

"On the scientific front, we have to sponsor scientists who have a strongly skeptical stance on the climate change issue. We have to help them gain visibility and media access, so that they will weaken the mainstream science of climate change in the eyes of the public and of policy-makers. This will reposition global warming as theory rather than fact."

"In parallel, we should finance and support the development of economic models that predict extremely high costs of action. In this manner, we alert public opinion and policy-makers on the sacrifices that will be imposed on their well-being solely on the basis of alarmist speculation. We also need to show them that investing in renewable energy technology development for climate change reasons will take away investment resources from other public policy areas such as health and education. Doing this, we highlight the uncertainty of climate science and the certainty of the required economic sacrifices. In particular, we can point to the danger of migration of industries overseas, which would result in losses of jobs here and, by the way, would not reduce global emissions."

"On the political front, we should target legislative decision-makers and negotiators in the US. We can also target some traditional US allies that have heavy stakes in the issue, such as Australia for instance. We can use our lobbying networks for the US Administration and Congress. We can enhance and target our financial contributions to US congressmen. This is where the key is, because any treaty will have to be ratified by the Senate to enter into force. We can easily have the Republican-dominated Senate on our side. But we should not forget to target developing countries governments, so that they oppose the Protocol. Developing countries are a major growing market for fossil fuels in the future. We can show them that the Protocol, as discussed these days, will impede their economic development which unavoidably will require fossil fuels. There exists already some significant division between developing and developed countries in the Treaty negotiations and this indicates that the whole process can be blocked."

"To summarize, scientific evidence is extremely weak. There is actually no definitive proof that climate change is happening, or that it is human–induced, or even that it must be considered as a threat. We have to prevent action for as long as possible. Thank you." She slowly puts her notes and slides away.

"All right" says Hardy, "before we discuss this presentation, I suggest that we hear two more views by Colin Haddock and Henri Twist. Colin, if you please."

"Contrary to the views of Maria, I believe that we should reorient somewhat our strategy by becoming less active in the fight against action and by adopting a more low-key attitude. We should refrain from influencing the science and, at this stage, neither should we influence the international political process. And I will show you why. Obviously, the science of climate change is still the object of violent debate between those who claim that the whole issue is not

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3 See Exhibit A-3 for background information on the GCC.

relevant and those who consider that human-induced climate change is one of the most critical global environmental threats today. We have no direct role to play at this stage, except for losing energy, time, money and – maybe most important – credibility. In fact, as of today, our efforts to combat climate science and to counter the political impetus have resulted in worsening public opinion on the attitude of oil companies in this debate. As shown by several opinion polls in different countries, the oil industry's environmental credibility is among the lowest of all industry sectors. So we really should not take the risk of worsening our public image. The science is still too uncertain, we should not try to influence it, neither should we endeavor to influence a political process that is clearly tentative and unfinished. We should step back and let both processes take their course. Meanwhile, we start thinking about how we could react in the future."

"Moreover, we all know that international political agreements do not have much enforcement power and, in any case, we know that the US Senate will never ratify any significant agreement taken in Kyoto. Without the US, nothing will happen, the EU won't go ahead alone. There really is no reason to be alarmed now since whatever environmentalists say, and whatever the international decisions on climate change, for a very long time, energy from fossil fuels – in particular oil and gas – will be needed and the demand for it will continue to grow, simply because there is no alternative. In the worst case, should we end up with some kind of constraining climate policy, it would more or less impose the same constraints on us and on our competitors, so we will always manage to stay ahead."

"Now is not the right time to act, we can always act later, depending on the evolution of the science and of the regulatory context. Finally, I can only agree with Maria on the fact that our past experience with renewables has not been convincing. So let's not fall into the trap again. I don't think I need to go into more details here. "

"But Colin," asks Julia Orwell, "if we just sit back and wait, how will we manage the growing public pressure?"

"I am not at all convinced that public pressure is actually growing on this issue," answers Haddock. "Certainly environmental NGOs' pressure is increasing – and they do all they can to make us believe that it corresponds to public pressure. They are undoubtedly vocal on climate change, they urge governments of the world to adopt a precautionary principle approach and act immediately, even though scientific uncertainties are still very high. They also focus on equity issues between developed and developing countries, arguing that the former are responsible for today's levels of atmospheric greenhouse gas concentrations, and, as such, should be the first to reduce their emissions. They have gained quite a bit of expertise on climate change, actually. But the public is not so united behind them, if only because the issue is long-term and much harder to grasp than many other environmental questions. To me, on this file, NGOs have adopted a top-down approach rather than a more participatory kind of bottom-up stance."

"Going back to my proposition now, to sum up I propose that we adopt the following tactics: first, we refrain from taking a position publicly; second, we participate passively in the political process by sitting back and watching; third, we remain within our current industry trade associations but without aiming at driving their strategies; and fourth – and this is crucial– we gather as much information and knowledge on this issue as possible."

"Thank you Colin, you've been very concise and to the point, as usual. Now Henri, what is your view?" says Hardy.

"Well, let me warn you that it will take me a little bit more time to expose my views, for the simple reason that I am suggesting a radically new course," begins Twist.

"Don't worry Henri, we are ready for that too," answers Colin Haddock jokingly.

Henri Twist takes a deep breath and starts: "My proposal is to construct a dynamic strategy and become proactive in the industrial re-orientation that emission reduction policies will imply. Let us publicly acknowledge the role of fossil fuels in the build-up of greenhouse gas concentrations in the atmosphere and the need to address the problem of global warming." As Twist says this, he notices a discernible stir in the audience, but he goes on: "Let us decide on a series of actions by OILCO to curb our own emissions and to develop alternative energy sources. By doing the latter, let us position ourselves not as a fossil fuel or a petroleum company, but as an energy company. We have to be future-oriented and become the leaders in the next energy economy. And let us use our proactive position to influence governments, so that in both international and national policy they favor flexible market mechanisms rather than command and control regulations and taxes. To sum up, we have to reposition ourselves as part of the solution rather than part of the problem." He pauses.

"Well Henri" Hardy says, "now I see why you will need time, this is … provocative. Please, tell us what would justify this strategy."

"First of all – and we have to face it – the risk of climate change has been assessed as very serious by the IPCC, which, as you all know, is an international panel of some 2500 scientists that has been working on the issue since its 1988 creation by the United Nations and the World Meteorological Organization.[4] It is not credible for us to contest the science. We have to go from a discussion about the science to a discussion of the impacts on our business. Climate change policy represents a threat to our business so we cannot ignore the problem. We have to act because what we are potentially facing here is an important shift in our business environment and operating conditions. We have to be ready to adapt to this shift. Let's face reality: fossil fuels will not remain the dominant energy source forever. We want to manage the transition instead of having it managed for us from outside. If we are in a carbon constrained world, then carbon is a cost, and it is good business practice to take costs seriously."

"Climate change is the most complex environmental issue that has ever been addressed. Attempts at addressing it will have powerful implications for the world economy – bad and good. It is an issue that will shape policy for decades to come. Markets could soon be influenced, as products with high carbon content such as coal and oil lose favor. We cannot afford not to have a constructive strategy on the biggest environmental issue of the coming century. In our business we have a tradition of long-term thinking, climate change is a long-term issue, but we can, and should, start acting on it today. As I see it, being strategic and proactive, in a dynamic sense, will help us do better business in a world that has become highly complex and dynamic."

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4 See Exhibit A-1.

"The prospect is that public attitudes and demands will progressively shift under the perceived reality of the risk, and my point is that, in the medium and long term, those companies able to anticipate the major changes required from the industry will benefit. We want to stay in business, we want to remain a growth industry. If we fail to address the climate change challenge and find solutions, we will survive but decline into dull utilities, selling yesterday's product. Moreover, as Colin pointed out, we all know that fossil fuels will still be needed for a long time, whatever the outcomes of the Kyoto talks. So recognizing that there is a problem won't make us lose our core business for a long while. To the contrary, what we have to aim at is to grab a larger share of the future shrinking oil market cake. And once we are ahead of the curve in moving to new cost-effective energy sources, we may benefit from a possible acceleration of the political and scientific process."

"Meanwhile, this strategy will give us a commercial advantage over our competitors. We all know that there really is not much difference between our products and theirs. By doing this, we differentiate ourselves in the minds of consumers: it is good marketing. This brings me back to public pressure. We know, from our own experience and from that of our competitors, that the public is requiring more and more environmental consciousness from corporations. Civil society has now gained enormous pressuring power through the development of information and communication technologies. The examples of Shell's public exposure in Nigeria or on the Brent Spar speak for themselves. We are in no less danger of exposure then they are. A proactive stance not only will give us a good image with the public, consumers, and the media, but also with the authorities. To put it briefly: it is good marketing and good lobbying practice to show a green face. But I would go a step further: we should not only *appear* as being proactive, but we should really *act* proactively, in diversifying our investments for instance. Recent studies show that social responsibility – and in particular environmental responsibility – is more and more becoming a corporate imperative.[5] Adopting the strategy I propose is a way of accepting our corporate social responsibility and of maintaining a social license to operate[6]. It will impact on our image and reputation – as I tried to make clear."

"Another of our objectives, internally, is to have employees who are committed to the company. To this aim, we have to act as a responsible company. A proactive strategy will motivate our employees and unleash creativity. Our employees don't leave their values at the door when they come to work. Furthermore, a good reputation will help us recruit and retain the most talented people whose services we need to do the best possible business. We should not overlook the extraordinary motivating power of a constructive environmental stance."

"But this strategy is also justified in terms that are more immediately pragmatic. Such justifications might turn out to be decisive, should the board be asked to endorse my proposal. Let me summarise them briefly. By following this path, we will position ourselves as the leading oil and gas corporation on the issue. Being the leader will help us in our contacts with governments. It will allow us to influence the negotiations and policies in a way that is beneficial to us. Our biggest fear is that climate policy will result in command and control policies. This is just another reason to hurry up. We need to participate in the development of

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5 See for instance the Burson-Marsteller report: "The responsible century?", available at http://www.BM.com.

6 The expression is from Daniel Esty. See e.g. Esty & Gentry (1997).

policies that will influence our future, rather than have that policy imposed on us. We will also be in a better position to influence decisions on the rules for market mechanisms and we can ensure that they are effective, simply because we will be in the game when the rules regarding emissions reduction are written."

"Another important factor, to which our lawyers are pointing with more and more insistence, is the future of liability laws for our products. They could significantly evolve in the next 10-15 years and that would mean that we could be sued on the impact of our products on the climate. In such a case, showing that we were early-starters will greatly help us in court. Neither should we disregard potential credits for early starters, if, as one hears in the US Administration hallways, companies will be granted credit for early action, then it makes good business sense to be proactive."

"As far as our competitors go, us breaking ranks with the industry will surely annoy them at first, but I am convinced that our move will induce them to follow our steps. However, when they do so they will always appear as followers. The question is not primarily whether climate change constraints will impose a cost on us, but whether such cost will be higher for our competitors. If so is the case, then it can be good for us."

"I have emphasized the strategic and pragmatic justifications of this strategy, but there is also an ethical dimension…"

"I am not sure we should waste any time on this," says Maria Goodfellow, "our ethical responsibility is to make profit, and I doubt that one could secure this objective with your approach. I do not think that a company can afford to focus so strongly on an environmental issue such as this one, and still make money. We just have to delay action as much as possible. "

"Who says that my strategy does not allow us to delay political action?" answers Twist, "Given the public opinion and political climate (if I may say), we will gain more time and will more efficiently delay political action by acknowledging the problem and then acting slowly, than through openly obstructive denial."

"You should have been a lawyer Henri," Paul Hardy says sighing, "but please, go on with the tactics you propose."

"We should start with a well publicized recognition of IPCC science and conclusions and an acknowledgement of the need for curbing international CO_2 (and other greenhouse gases) emissions. We accompany this statement by a set of internal measures that OILCO will implement to reduce its process emissions. These measures are actions that we start taking now, before Kyoto, and in some sense, independently of Kyoto's eventual outcome."

"So you begin by announcing things that we have not yet achieved," interrupts again Mrs. Goodfellow.

But Twist continues on: "I suggest that we decide on a CO_2 emissions reduction target and timetable for the entire group. To achieve this goal, we set-up an internal emissions trading systems. This will help us to lower the costs of reaching our target, by allowing for the reductions to be made wherever they are cheapest. It would be a powerful means to gain knowledge on the potential and practicalities of tradable permits, as well as the necessary

managerial skills to efficiently participate in a world emissions market. This knowledge, in turn, will enhance our legitimacy as participants in the international negotiations that will eventually determine rules for the international market of emissions permits in case of the entry into force of a Protocol containing legally binding emission reduction commitments. Finally, we should not overlook the fact that our emissions reduction target – if intelligently achieved – could lower our operating costs in the mid-term, simply because it will force us to be more energy efficient."

"Also, we could start testing the other flexibility instrument discussed today: *'joint implementation'*.[7] We could work on joint implementation and carbon offset schemes around the world, again to gain expertise."

"Finally, we could increase our investment in renewable energies, in particular in solar energy. This would be a first step towards a transformation of OILCO from a fossil fuel company to an energy company. And even if we start by a small investment as compared to our core business, it would constitute a strong signal that we are 'going green' so to speak. In parallel, we could fund more research on low carbon technologies. We don't know what the future dominant fuels and technologies will be."

"I saw it coming," says Haddock, "you are now asking for a bigger budget line…"

"Please go on," says the CEO.

"Meanwhile, at the societal level, we should reinforce our relationship with the various stakeholders in this debate. In particular, we could collaborate with well-disposed environmental NGOs. We could even organize our own stakeholder consultations, which could both enhance our knowledge of their demands and our public image. Also, around the international negotiation process, the trend is towards more and more participatory approaches whereby stakeholders are involved. We should make sure we take part in those, again for both public relations and efficiency reasons. We have to show our willingness to engage in dialogue, and to be part of the solution. Finally, we should enhance our communication of the company's action on this issue, in a huge public relations endeavor. Thank you for your attention," he says, going back to his chair.

"You have done an impressive job," says Hardy, "how come you are proposing such a strategy?"

"I am here to serve the Company, Paul, but my role is also to participate in the development of the society I am living in. We can accomplish a lot by combining the two."

"Well now, let us make the best of all this," says Paul Hardy.

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7 See Exhibit A-1.

Questions to Students

You are Paul Hardy. Now that you've heard all the proposals, you have to make up your mind and devise a consistent strategy that you will have to get approved first by the Board and then by the market. You need to:

1. Consider what has not been said during this debate: the underlying ethical dimensions, the moral principles involved, and their potential impact.

2. Define the 'position' you would take, and why you would take it.

3. Construct your strategy with elements taken from one or several of the proposed strategies. Identify implementation tactics.

4. Prepare your arguments to promote and defend your position within and outside the company.

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Exhibits

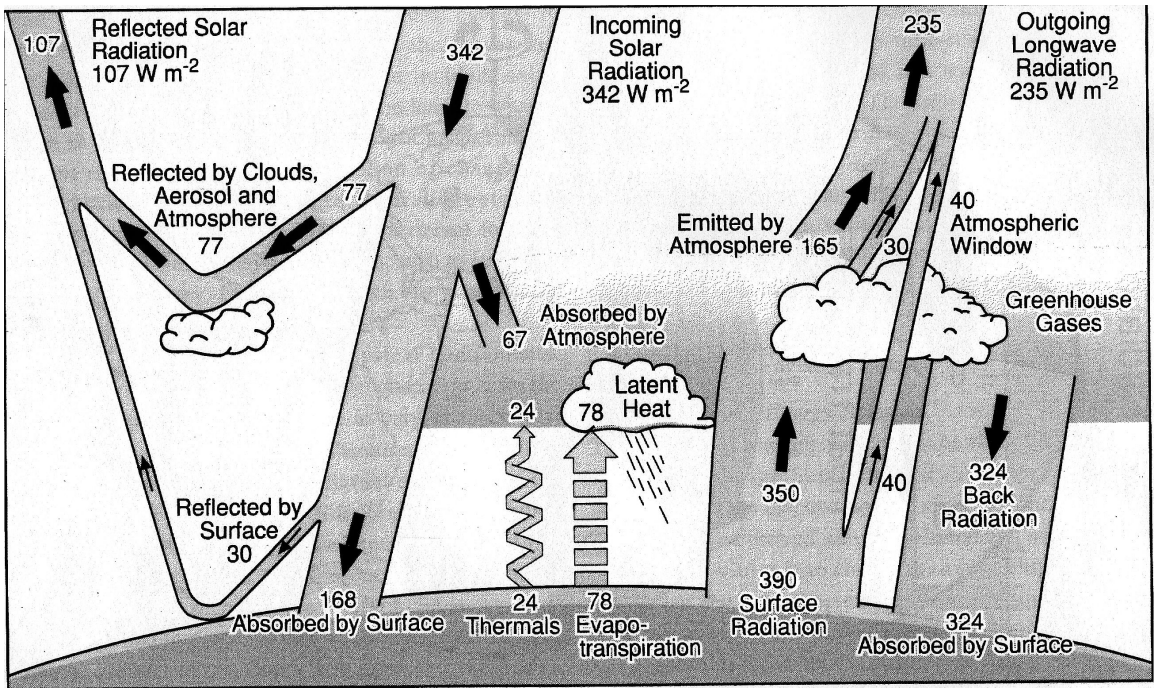
- Exhibit A-1: Background Information on Climate Change.
- Exhibit A-2: Sources of Anthropogenic Greenhouse Gas Emissions.
- Exhibit A-3: Background Information on the American Petroleum Institute and the Global Climate Coalition

Exhibit A-1
Background Information on Climate Change

The Greenhouse Effect[8]

The earth's climate is driven by a continuous flow of energy from the sun. This energy arrives mainly in the form of visible light. About 30% is immediately scattered back into space, but most of the 70% which is absorbed passes down through the atmosphere to warm the earth's surface. The earth must send this energy back out into space in the form of infrared radiation. "Greenhouse gases" in the atmosphere block infrared radiation from escaping directly from the surface to space. Infrared radiation cannot pass straight through the air like visible light. Instead, most departing energy is carried away from the surface by air currents and clouds, eventually escaping to space from altitudes above the thickest layers of the greenhouse gas blanket. (Figure 1).

Figure 1: Schematic presentation of Earth's radiation and energy balance (fluxes are in Wm^{-2}).



Source: Houghton et al. (1996, p. 58).

The main greenhouse gases are water vapour, carbon dioxide, ozone, methane, nitrous oxide, and the chlorofluorocarbons (CFCs). Apart from CFCs, all of these gases occur naturally. Together, they make up less than 1% of the atmosphere. This is enough to produce a "natural greenhouse effect" that keeps the planet some 30°C warmer than it would otherwise be - essential for life as we know it.

8 *Main Source*: Excerpts from UNEP (1999) Climate Change Information Kit. Available at http://www.unfcc.de.

Exhibit A-1 (Cont'd)

Levels of all key greenhouse gases (with the possible exception of water vapour) are rising as a direct result of human activity (see Exhibit A-2). Emissions of carbon dioxide (mainly from burning coal, oil, and natural gas), methane and nitrous oxide (due to agriculture and changes in land use), ozone (generated by the fumes in automobile exhausts) and CFCs (manufactured by industry) are changing how the atmosphere absorbs energy. Water vapour levels may also be rising because of a "positive feedback". This is all happening at an unprecedented speed. The result is known as the "enhanced greenhouse effect".

The climate system must adjust to rising greenhouse gas levels to keep the global "energy budget" in balance. In the long term, the earth must get rid of energy at the same rate at which it receives energy from the sun. Since a thicker blanket of greenhouse gases helps to reduce energy loss to space, the climate must change somehow to restore the balance between incoming and outgoing energy.

This adjustment will include a "global warming" of the earth's surface and lower atmosphere. But this is only part of the story. Warming up is the simplest way for the climate to get rid of the extra energy. Even a small rise in temperature will be accompanied by many other changes: in cloud cover and wind patterns, for example. Some of these changes may act to enhance the warming (positive feedbacks), others to counteract it (negative feedbacks).

The Science of Climate Change[9]

While the world's climate has always varied naturally, the vast majority of scientists now believe that rising concentrations of "greenhouse gases" in the earth's atmosphere, resulting from economic and demographic growth since the industrial revolution, are overriding this natural variability and leading to irreversible climate change. In 1995, the Second Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) confirmed that "the balance of evidence suggests that there is a discernible human influence on global climate". The Report projected that global mean surface temperatures would increase by between 1 and 3.5°C by 2100, the fastest rate of change since the end of the last ice age, and that global mean sea levels would rise by between 15 and 95cm by 2100, flooding many low-lying coastal areas. Changes in rainfall patterns are also predicted, increasing the threat of drought, floods or intense storms in many regions.

The climate system is complex, and scientists still need to improve their understanding of the extent, timing and impacts of climate change. However, what we know already alerts us to the potentially dramatic negative impacts of climate change on human health, food security, economic activity, water resources and physical infrastructure. Farming could be seriously disrupted, leading to falling crop yields in many regions. Tropical diseases are expected to spread; the geographical zone of potential malaria transmission, for example, could increase from around 45% of the world population today to approximately 60% by the latter half of this century. Sea level rise and changing weather patterns could also trigger large-scale migration from more seriously affected areas. While no one will be able to escape from

9 *Source*: UNFCCC Secretariat, A Guide to the Climate Change Process. Available at http://www.unfcc.de.

Exhibit A-1(Cont'd)

climate change, it is the poorer people and countries who are most vulnerable to its negative impacts.

The United Nations Framework Convention on Climate Change

In the late 1980s, under the combined pressure of scientists and environmental NGOs, the issue of climate change appeared on the international political agenda. The creation of the IPCC by the United Nation Environment Programme and the World Meteorological Organization resulted in the publication in 1990 of a first assessment report which found human-induced rises of greenhouse gas concentrations in the atmosphere and the consequent risk of significant climatic changes. This report launched an international negotiation process which resulted in the signature by 154 nations of the United Nations Framework Convention on Climate Change (UNFCCC), in Rio in 1992. The ultimate objective of the Convention is the "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system."[10] Two important principles underlie the Convention: the principle of equity and that of "common but differentiated responsibility" of countries. As a consequence, the treaty divides its Parties into two groups: Annex 1 Parties are industrialised countries, non-Annex 1 Parties are developing countries. It does not contain legally binding emissions reduction, only a commitment by Annex 1 Parties to adopt policies and measures to mitigate climate change, and a loosely stated objective of returning to 1990 emission levels by the year 2000.

The Kyoto Protocol

In 1995, Parties to the UNFCCC decided that the commitments under the Convention were inadequate and agreed to start the negotiation of a Protocol that would contain quantified limitation and reduction objectives for Annex 1 Parties. Schematically, there are three main groups around the negotiation table: the European Union and its allies, the United States and its allies, and the developing countries (grouped under the so-called 'Group of 77 plus China'). The EU, which probably has the greenest environmental constituency and has a clear interest in both reducing its importations of fossil fuels and taking leadership in the development of environmentally-friendly energy technologies, has always adopted the more proactive position, pushing for high reduction targets and a great deal of domestic effort (in the form of policies and measures) to achieve them. The United States are world champions both in terms of total greenhouse gas emissions (about 20% of the world's CO_2 emissions in 1990) and in terms of *per capita* emissions (about 20 tonnes of CO_2 per habitant in 1990 as compared to less than 9 tonnes for the EU and 0.7 tonnes for India).[11] The tradition of cheap energy, the power of industrial lobbies (in particular the fossil fuels, electricity, and automobile lobbies), and the cultural aversion to policies that are perceived as restricting one's individual freedom, render the US particularly reluctant to international and national climate change mitigation measures. For this reason, the US from the start called for

10 UNFCCC, Article 2. Available at: http://www.unfccc.de.

11 *Source*: Oberthür and Ott (1999).

Exhibit A-1 (Cont'd)

maximum geographical flexibility in the implementation of emission reductions and unconstrained use of market instruments, in particular emissions trading.

After more than two years of negotiations, the Parties adopted the Kyoto Protocol in December 1997. The Protocol contains a legally binding commitment from Annex 1 Parties (industrialised countries) to collectively reduce their yearly emissions of a basket of six greenhouse gases (CO_2, CH_4, N_2O, HFC, PFCs & HF_6)[12] by 5% in the period 2008-2012 as compared to 1990. This commitment is differentiated according to the countries circumstances and negotiation power. For instance, the US goes for a 7% reduction, the EU for 8% reduction – but this is further differentiated within the so-called 'EU bubble' where for instance Germany committed to a 21% reduction and Greece goes for a 25% increase. Japan commits to 6% reduction and the Russian Federation is allowed the status quo with 0%.[13]

Geographical flexibility is provided for through the introduction of three economic instruments, the so-called flexibility mechanisms: international emissions trading amongst Annex 1 Parties; joint implementation (i.e. the acquisition by an Annex 1 country of emission reduction units resulting from projects aimed at reducing emissions of greenhouse gases in another Annex 1 country), and the clean development mechanism (i.e. the transfer to an Annex 1 country of certified emission reductions resulting from project activities in non-Annex 1 countries). These mechanisms "are designed to help Annex I Parties reduce the costs of meeting their emissions targets by achieving or acquiring reductions more cheaply in other countries than at home. The clean development mechanism also aims to assist developing countries in achieving sustainable development by promoting environmentally-friendly investment in their economies from industrialized country governments and businesses."[14]

However, the Parties in Kyoto could only go so far as to agree on the principle of such mechanisms, but could not define precisely the corresponding operational rules. This was left to further negotiations.

To enter into force, the Protocol needs to be ratified (not just signed) by at least 55 Parties, incorporating developed countries (from Annex 1) which together accounted for 55% of total Annex 1 CO_2 emissions in 1990. At the time, the US accounted for 36% of these emissions, and Russia for more than 17%.[15] In the US, the Senate has to ratify international commitments by a two-thirds majority vote. And the prospect for ratification are rather meager.[16]

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12 See Exhibit A-2 for information on these gases.

13 Note that this apparent status quo in reality comes down to a license for increasing Russian emissions, since Russia's emissions at the time of Kyoto where about 30% lower than in 1990, due to the dramatic collapse the economy.

14 UNFCCC, A Guide to the Climate Change Process. Available from http://www.unfcc.de.

15 See UNFCCC 1997 and Grubb et al. 1999, p. 253-4.

16 On the US and international climate policy see Harris (1998), Agrawala and Andresen (1999), and more Vrolijk (2001).

Exhibit A-1 (Cont'd)

Post-Kyoto Developments

In November 2000, the Parties to the climate convention convened in The Hague for the third time since Kyoto. The expectancies were high since the objective was to come to an agreement on the rules for the flexibility mechanism, compliance and enforcement and the role that sinks of greenhouse gases (e.g. forests which, under certain conditions, may be net absorbers of carbon) would be allowed to play in the implementation of the Parties' commitments. The meeting failed and the Parties decided to reconvened in the Summer of 2001 to pursue their work.

In January 2001, IPCC Working Group One, charged with studying the science of climate change, adopted the summary for policy-makers for its contribution to IPCC's third assessment report. Its main conclusions include the following statements:[17]

- An increasing body of observations gives a collective picture of a warming world and other changes in the climate system.
- Emissions of greenhouse gases and aerosols due to human activities continue to alter the atmosphere in ways that are expected to affect the climate.
- Confidence in the ability of models to project future climate has increased.
- There is new and stronger evidence that most of the warming observed over the last 50 years is attributable to human activities.
- Human influences will continue to change atmospheric composition throughout the 21st century.
- Global average temperature and sea level are projected to rise under all IPCC SRES scenarios.

On March 13th, 2001, in a letter addressed to four republican Senators, US President George W. Bush reversed his campaign promise that his administration would regulate CO_2 emissions from power plants and strongly reaffirmed his opposition to the Kyoto Protocol, calling it an "unfair and ineffective means of addressing global climate change concerns."[18] The President's move followed a powerful pressure campaign from congressional and industry leaders – in particular form the electricity, coal and oil sectors.[19]

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17 IPCC (2001a).

18 Letter from President Bush to Senators Hagel, Helms, Craig and Roberts, March 13, 2001, available at: http://www.whitehouse.gov/news/releases/2001/03/20010314.html, accessed April 2001.

19 See coverage in the New York Times and Washington Post: Jehl & Revkin (2001), Jehl (2001), Pianin & Goldstein (2001).

Exhibit A-2
Sources of Anthropogenic Greenhouse Gas Emissions

Greenhouse Gas (GHG)	Main anthropogenic sources	Shares in emissions in industrialised countries in the 1990s	Share of GHG emissions of industrialised countries in early 1990s
Carbon Dioxide (CO_2)	• Fossil fuel combustion (coal, oil, natural gas); • Industrial processes: production of cement, aluminium, steel, ammonia, and hydrogen; • Deforestation, desertification, and agriculture.	>95% 2-3%	ca. 82%
Methane (CH_4)	• Fossil fuel production, distribution, and combustion (coal and oil extraction; oil refining; natural gas flaring) • Landfills • Agriculture: rice fields; livestocks (bovines & ovines) • Production of steel, ammonia and hydrogen; biomass combustion;	ca. 30% ca. 30% ca. 30% Not available	ca. 12%
Nitrous oxide (N_2O)	• Agriculture (nitrogen-based fertilisers) • Fossil fuel combustion • Industrial processes: nitrous and adipic acid production for the nylon industry	40% 20-25% ca. 30%	ca. 4%
Halogenated hydrocarbons (CFCs, HCFCs, HFCs)[20]	• Cooling processes (refrigerants) • Industrial processes: solvents, industrial foams, … • Insulation	not available	not available
Perfluorocarbons (PFCs)	• Industrial processes: aluminium production, solvents (semi-conductors)	not available	not available
Sulphur Hexafluoride (SF_6)	• Industrial processes: solvents, magnesium production, electric industry	not available	not available

Sources: Adapted from Oberthur and Ott (1999) and van den Hove (2000).

20 CFCs and HCFCs are both ozone depleting substances and greenhouse gases. They are being phased out under the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer, hence they are not addressed in the Kyoto Protocol.

Exhibit A-3

Background Information on the American Petroleum Institute and the Global Climate Coalition

In the US, many lobby groups participate in the debate on climate change to defend the interests of those they represent. This exhibit gives some background information on the American Petroleum Institute (API) and the Global Climate Coalition (GCC), both very important groups for the oil industry.

The American Petroleum Institute

The American Petroleum Institute is the most important US trade association for the petroleum industry. "It is a forum for all parts of the oil and natural gas industry to pursue priority public policy objectives and advance the interests of the industry in a legally appropriate manner. (…) Today, the most pressing issues revolve about public perceptions and government policies toward our industry – many of which have international dimensions. Speaking with one voice on these issues has become as essential as having interchangeable parts in the field. API speaks for the petroleum industry before Congress, state legislatures, the executive branch of government, and the news media. It negotiates with regulatory agencies and represents the industry in legal proceedings. It participates in coalitions that help shape public policy on issues such as global climate change, access and alternative fuels. And it strives to enhance credibility on the environmental, health and safety issues that are central to the public's perception of the industry and its products. (…) API is the petroleum industry's 'think tank'. It sponsors research, tied to the organization's priorities, that runs the gamut from economic analysis to toxicological testing, to public opinion polling."[21]

API opposes the Kyoto Protocol. Today, the underlying argument for this position goes as follows: "The ultimate question is how the world should deal with a highly uncertain problem like climate change. Should we turn to international bureaucracies and global mandates or should we rely on the energy, creativity, and flexibility of the private sector, the free market system, and public-private collaboration? Companies in the private sector know that if science ultimately shows the problem to be serious, then controls on emissions will become inevitable. They have strong incentives to respond to the risk of climate change because many of their investments have long economic lives. And companies are responding, in multiple ways. A program of mandates by an international bureaucracy would entail the worst characteristics of central planning and industrial policy. To oppose this is hardly to advocate 'no action'; it is, rather, to recognize that our decision as to which mechanisms of action to rely upon will have significant consequences for the efficacy and cost of the effort."[22]

The Global Climate Coalition

The Global Climate Coalition was created in 1989 by a group of organizations and companies willing to have a single organization to co-ordinate their action on the climate change issue. Its members included trade association and private companies from the fossil fuel, mining, transportation, and heavy manufacturing sectors, as well as from agriculture and forestry. Says former Chairman of the GCC and Vice President of the API, William O'Keefe: *"*In the

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21 *Source*: API website: http://www.api.org/about/aboutindex.htm. Accessed February 2001.

22 *Source*: API website: http://www.api.org/globalclimate/apipos2.htm. Accessed February 2001.

Exhibit A-3 (Cont'd)

beginning it was an information exchange and sharing tool. But in this country, if business wants to have a voice in a policy issue, it is typical to create a coalition. It is better to have unity to make one's voice heard."[23] The API was a board member of the GCC from the start. "At the time", recalls O'Keefe, "climate change was one of the many issues that we [API] were following. But in 1993, it became clear that this issue would grow in importance and potential impact for the oil industry, so the API asked me to become more involved in the GCC."[24] Other board members included: American Forest & Paper, Exxon, Chevron, Mobil, National Mining Association, and General Motors.[25] Until October 2000, the GCC's objective as stated on their website was "to coordinate business participation in the scientific and policy debate on the global climate change issue."[26]

The GCC has been one of the most influential US lobbying front groups on the climate issue. Its strategy was aiming at impeding action on climate change by influencing public opinion and policy-makers. This was done by several means. First, mostly in the earlier years, by questioning the IPCC science in which climate policy is grounded: "Existing scientific evidence does not support actions aimed solely at reducing or stabilizing greenhouse gas emissions. GCC does support actions to reduce greenhouse gas emissions or to increase greenhouse gas sinks that are justified for other economic or environmental reasons."[27] Second, by questioning the economics of proposed national and international policy actions: "Unrealistic targets and timetables, such as those called for under the Kyoto Protocol, are not achievable without severely harming the U.S. economy and all American families, workers, seniors and children. A new approach to climate policy is needed."[28] Third by rejecting the Kyoto Protocol as inadequate: "The issue is what constitutes responsible action and the Kyoto Protocol is not responsible action. It is a flawed agreement and cannot be salvaged with bilateral Band-Aids or further negotiations in Bonn, Buenos Aires or elsewhere. It is not a global agreement and will not work. Thus, we recommend that the President not sign and that the Congress not approve the Kyoto Protocol."[29]

In 1996, BP was the first major corporation to withdraw from the Coalition. It was followed in 1998 by Dow Chemicals and Shell, and in 1999 by Ford. In 2000, Daimler-Chrysler, Texaco and General Motors also left. In March 2000, the GCC has restructured and since then, only accepts trade associations as members.

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23 Interview with Mr. Mr. William O'Keefe, January 2001.

24 ibid.

25 Board members in 1998. Source: Ozone action, http://www.ozone.org/page16.html, accessed January 2001.

26 http://www.globalclimate.org/oldsite/mission.htm. Accessed February 2001. On the new GCC website, this objective is restated without reference to participation in the scientific debate: "to coordinate business participation in the international policy debate on the issue of global climate change and global warming". (See: http://www.globalclimate.org/aboutus.htm. Accessed February 2001).

27 http://www.globalclimate.org/oldsite/mission.htm.

28 GCC Position Summary. Available at: http://www.globalclimate.org/aboutus/possummary.htm, accessed February 2001.

29 Statement by Mrs. Constance Holmes, chair of the GCC before the US House Committee on Science, February 4, 1998. Available at: http://www.house.gov/science/holmes_02-4.htm, accessed February 2001.

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