Economic Note

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Global Warming: The Costs of Mitigation

Russia's decision to ratify the Kyoto Protocol has turned the climate treaty into a challenge that the European Union will have to face in the next, few years. It is not clear how, and if, the European Emission Trading Scheme, which is supposed to start on January 1st, 2005, will work. Anyway, if the European Union isn't willing to lose its face, something will have to be done in order to reduce greenhouse gases emissions. On the other hand, US President George Bush has put it plain and clear that his country will not follow the European way towards reduced emissions. He would rather rely on tax incentives to cleaner energies and voluntary compliance on the part of American businesses.

European politicians understand that the implementation of the Kyoto Protocol would have a great, immediate cost compared to small, long-term benefits (if any). This is why some of them (including EU former Energy Commissioner Loyola de Palacio, German Chancellor Gerhard Schroeder, and Italy's Minister of Environment Altero Matteoli) have suggested that EU should (seek to) promote a global effort to address global warming, instead of pursuing a unilateral, and costly policy, which is unlikely to be effective[1].

This paper will address the following questions: does it make sense to pursue *any* policy to address climate change? Is the Kyoto Protocol a cost-effective way to do it? The answer, in both cases, is *no*: European climate policies rely on uncertain science, bad economics, and a biased political approach.

The science of global warming

A coalition of academics, non-governmental organizations, international agencies, and governments have agreed that the primary culprit behind global warming is greenhouse gases emissions created by our use of carbon-intensive energy sources.

> "Climatologists and other scientists are not yet able to fully explain either the behaviour of the atmosphere, or to evaluate how single components affect the atmosphere as a whole."

About 80% of the carbon dioxide created by man comes from the combustion of oil, coal, and natural gas, while the remaining 20% is attributed to deforestation. However, over half of this gas is absorbed by oceans and plants. The CO2 concentration in the atmosphere has increased by 31% from the times of pre-industrialization - but this does not mean that such a phenomenon is due uniquely, or even mostly, to human activities[2].

The Earth's climate is not simple. The reality is that many of its components can heat or cool, according to circumstances. Sometimes they contribute to warming the atmosphere, and sometimes to cooling it. For example, ozone shields the Earth (thus making it cooler) in the stratosphere, while in the troposphere ozone works the other way around. Water vapour is a greenhouse gas, but when its concentrations exceed a threshold level, clouds are formed, and they act as a mirror pointed upwards, reflecting solar radiation. In short "water vapour's contribution to the contest is patchy, erratic and probably totally unpredictable."[3] Climatologists and other scientists are not yet able to fully explain either the behaviour of the atmosphere, or to evaluate how single components affect the atmosphere as a whole.

Scientists have observed an increase in average temperature of about 0.8°C starting from the mid 19th century[4]. Surface measurements show that almost all the warming which has taken place in the 20th century is concentrated in two well-defined time periods: from 1920 to 1945, and from 1975 onwards.

Humanity's carbon emissions have been rising since the Industrial Revolution, and proponents of catastrophic global warming believe that these emissions are responsible. But the discontinuity in observed warming in the 20th century suggests that this explanation is wrong.

There are many reasons why systematic observations could be biased, and therefore overestimated. First, measurement stations are mostly on land, so we have comparatively much fewer data about temperatures over the oceans. Second, temperature readings are often made near urban centres, which act as heat reservoirs[5], and these measurements may also be affected by economic and social variables[6]. Actually, satellite measurements do not seem to show significant variations in the

1 See Carlo Stagnaro, "Time To Come Clean", *EU Reporter*, 19-23 April 2004: 4, available ondine at http://www.eureporter.co.uk/images/LR_EUR_19Apr04.pdf.

2 Bjørn Lomborg, *The Skeptical Environmentalist. Measuring the Real State of the World* (Cambridge: Cambridge University Press, 2001): 260.

3 Robin Baker, *Fragile Science. The Reality Behind the Headlines* (London: MacMillan, 2001): 138.

4 Phil D. Jones et al., "Global and hemispheric temperature anomalies - land and marine instrumental records." In *Trends: A Compendium of Data on Global Change. Carbon Dioxide Information Analysis Center* (Oak Ridge, Tenn.: Oak Ridge National Laboratory, US Department of Energy, 2000), http://cdiac.esd.ornl.gov/trends/temp/jonescru/jones.html; Idem, "Global and hemispheric temperature anomalies - land and marine instrumental records", 2001, http://www.cru.uea.ac.uk/cru/data/temperature.

5 Piers Corbyn and Manoucher Golipur, "What is a Global Temperature? The Over-Representation of Temperate and Polar Zones." In John Emsley (editor), *The Global Warming Debate. The Report of the European Science and Environment Forum* (Bournemouth: The European Science and Environment Forum, 1996): 80-86.

6 Ross McKitrick, "The Influence of Economic Activity on the Measurement of Global Warming", September 2001, http://www.uoguelph.ca/~rmckitri/research/gdptemp.pdf.

average temperature of the atmosphere[7].

Last, we have too little data, for all intents and purposes, to be able to understand such a complex phenomenon as climate variations over decades, let alone centuries.

The costs of Kyoto.

The interest groups driving the Kyoto Protocol in Europe have failed to illustrate to the public that pursuing a mitigation policy is not without cost. Mostly, the debate has focused on the urgent need to react to climate change, without carefully considering the costs and benefits of various strategies.

The Kyoto Protocol is an agreement, which forms part of the United Nations Framework Convention on Climate Change. It mandates that ratifying countries will reduce their carbon dioxide emissions by precise and significant amounts. The Protocol focuses on limiting greenhouse gas emissions, but it doesn't address what is considered to be the actual problem, i.e. atmospheric concentrations of greenhouse gases[8].

Under Kyoto, European Union countries committed to reducing their emissions by 8% relative to the 1990 level, and some committed to even stricter targets[9]. Poor countries are excluded from Kyoto, although they contribute to about 50% of worldwide emissions. By 2050, that amount may rise to 75% of global emissions[10]. On the other hand, asking poor countries to adopt reductions similar to wealthy countries would have devastating effects on their economies and economic growth[11].

Besides, it is believed that the Kyoto protocol will not be enough to stave off climate change. In order to act seriously against allegedly man-made global warming, the protocol could be only a first step towards a crackdown that would be much more severe, and involve every country in the world. For example, IPCC asks for a 60-80% reduction in global emission to stabilize atmospheric CO2 concentrations at 550 parts per million[12].

A super-Kyoto regime implies at least two consequences of great importance, none of which has been highlighted by interest groups in Europe.

First, the use of energy for food production, refrigeration, transportation, heating, manufacturing and air conditioning would be greatly curtailed. Affordable, reliable energy has enabled human beings to live longer, healthier, happier lives. People, especially Europeans, would be forced to greatly curb or give up its use of energy, leading to a drastic reduction in quality of life.

Second, a "Super-Kyoto" would entail a global enforcement mechanism, through central planning by global agencies such as the United Nations, a prospect viewed with suspicion by many people. Poor countries would likely see this as a kind of "ecological imperialism" against their desire to obtain a better quality of life through economic growth, which relies on more intensive energy use[13].

In May 2003, the European Environment Agency announced that in 2003 most EU countries did not reach their emissions targets under the Kyoto Protocol[14]. The UK has already contributed heavily to initial reductions of emissions, by substituting coal with natural gas, as has Germany, which renewed the inefficient industry of East Germany after reunification. On the other hand, ten of the fifteen member countries increased their emissions during the 1990s.

> "The impact of the Kyoto Protocol on the European economies: German GDP would shrink by more than 5 percent; Netherland's GDP by almost 4 percent; UK's by 4.5 percent and Spain's by 4.8 percent. "

According to the projections, Europe's emissions in general will increase by 9% by 2020, unless dramatic political choices are undertaken to curb them. Margo Thorning of the International Council for Capital Formation has estimated the impact of the Kyoto Protocol on the European economies: German GDP would shrink by more than 5 percent; Netherland's GDP by almost 4 percent; UK's by 4.5 percent and Spain's by 4.8 percent. Petrol prices would increase, respectively, by 14, 11, 10, and 18 percent. The price of domestic heating would be, respectively, 40, 30, 46, and 40 percent higher[15]. Similar estimates have been performed for Italy, but that is of low interest to France because the Italian energetic system is very different (especially because Italy relies heavily on imports and have no nuclear plants). At a global level "The total annual cost of all the considered global warming problems is estimated to be around 1.5-2 percent of the current global GDP, i.e. between 480 and 640 billion dollars."[16]

[7] Roy W. Spencer and John R. Christy, "Precise Monitoring of Global Temperature Trends From Satellite." *Science* 247 (1990): 1558.

[8] "The goal of the Protocol is to stabilise emissions of CO2, not the atmospheric *concentrations* of CO2 (and of course the other greenhouse gases). Even if emissions could be stabilised at 1990 levels, six billion tons of carbon would be added to the atmosphere annually by human activities. That carbon would build up in the atmosphere and a doubling of CO2 would still occur near the middle of this century," Robert C. Balling, Jr., "A climate of uncertainty in the greenhouse century." In Julian Morris (editor), *Sustainable Development*: 156.

[9] *Kyoto Protocol to the United Nations Framework Convention on Climate Change,* 1997, http://www.cnn.com/SPECIALS/1997/global.warming/stories/treaty.

[10] Margo Thorning, "Climate Mitigation Policy and US Economic Growth." Congressional Testimony before the Subcommittee on National Economic Growth, Natural Resources, and Regulatory Affairs of the House Committee on Government Reform and Oversight, April 23, 1998, http://www.accf.org/Apr98test.htm.

[11] Indur M. Goklany, *Economic Growth and the State of Humanity* (Bozeman: Political Economy Reseach Center, 2001).

[12] IPCC, *Climate Change 2001. Third Assessment Report: Mitigation*, Vol.III (Cambridge: Cambridge University Press, 2001): 150-156.

[13] See Barun S. Mitra, "Sustainable energy for the poor", in Kendra Okonski (ed.), *Adapt or Die* (London: Profile Books, 2003): 98-115; Paul K. Driessen, *Eco-Imperialism* (Washington, DC: Free Enterprise Press, 2003).

[14] "EU greenhouse gas emissions rise for second year running", http://org.eea.eu.int/documents/newsreleases/ghg-2003-en

[15] Margo Thorning, *Kyoto Protocol and Beyond: Economic Impacts on EU Countries*, American Council for Capital Formation, 2002, http://www.accf.org/ACCF_KyotoEconImp.pdf.

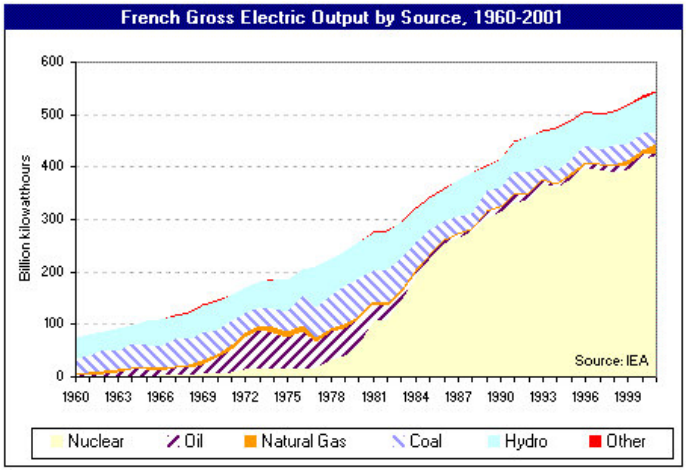
[16] Bjørn Lomborg, *The Skeptical Environmentalist*: 301.

What would this mean for the average European citizen? Consumers would see rapid increases in living costs - food, durable goods, heating and cooling, transportation - because all energy, not just oil and gas, would be more expensive. If emissions limits were established, the cost would be partially, or even mostly, shifted to consumers. Together with the increased cost of energy, consumers would see the buying power of their salaries greatly weakened. Because economic production would greatly slow down, many people could lose their jobs, and purchasing power (as well as general standard of living) would decline.

The cost of the Kyoto Protocol for the European Union is very steep indeed. Its benefits - the actual impact on the earth's climate that emissions cuts would achieve - are negligible, especially if the biggest emitters worldwide (the US and developing countries) will not comply with the Kyoto targets. Europeans should ask themselves again whether they are willing to give up their well-being - economic growth, purchasing power, and many jobs - in exchange for a hypothetical slowdown of global warming, which they may well be not interested in.

An overview on France

France has been one of the smallest emitters in the European Union over the past 20 years. At the same time, its level of carbon intensity is among the lowest in the EU, largely due to its reliance on nuclear power (which accounts for almost 80% of domestic energy production). France is responsible for about 1.6% of world carbon emissions; 67% come from the combustion of oil, 15.3% of natural gas, and 11% of coal[17].



However, French energy consumption is projected to grow in the next few years - as well as it has grown since mid 1990s. Consistently, CO2 emissions have grown slightly and will continue to grow. The Kyoto target for France in the first commitment period (2008-2012) is to return to the same amount of emissions as in the baseline year 1990. In 2001, emissions increased by 0.4%; with existing measures, and are projected to grow by 10% in 2010[18].

While oil consumption has substantially decreased since the 1970s because of the growing share of nuclear power production (oil contribution to primary energy consumption fell from 71% in 1973 to 40% in 2001)[19], France has an important national oil industry, which would be deeply impacted by Kyoto and further limitations to GHGs emissions after 2012. The French company Total merged with Belgium's Petrofina in 1999, and with France's Elf Aquitaine in 2001. The merge created Total SA, which is the fourth largest oil company worldwide. Moreover, EU environmental regulation forced French refineries to meet increasingly strict standards and to update their facilities - partly in order to emit less. This has had a cost which is hard to quantify; yet it has been paid by producers, consumers, and taxpayers jointly. The French are surely poorer because of these measures.

According to the U.S. Energy Information Administration, "At 38%, petroleum still accounts for the largest fuel share of France's energy consumption, but just barely; nuclear power is right behind petroleum, accounting for 37% of the total. Natural gas (14%), hydroelectric (7%), and coal (4%) accounts for rest, as combined geothermal, solar, and wind power consumption makes up less than 1% of France's total energy consumption."[20] This means that at least one of the goals of the "environment charter" (approved in June 2003, with the strong support of President Jacques Chirac) is unlikely to be met: increasing the share of renewables for domestic energy production. In fact, even if renewables were to become more competitive and attractive (either because of an unlikely progress, or thanks to subsidies), its contribution would be negligible: five or even ten times "less than 1%" is still not enough to be a real alternative.

Subsidies and caps to emissions are costly measures, which stifle economic growth - at the very least because they imply higher public spending, i.e. raising taxes. An increase in available funding may be obtained either by increasing taxes, or cutting other expenses (the third typical way, inflation, is no longer available to national governments in Europe). In both cases, French people would have to pay more to the government.

The French political elite seems deeply involved in its commitment "to save the environment", as demonstrated by the decision to enshrine the precautionary principle in the Constitution[21]. In brief, the precautionary principle means that, when you don't know the future (that is, always) you must assume the worst case scenario as the more probable. This has little do with science; yet, if this is to become the rule, one wonders how the French may face global competition.

For example, the French public electricity producer, Electricité de France (in the process of partial privatization), is not only developing a new nuclear genera-

17 Energy Information Administration - U.S. Department of Energy, *Country Analysis Brief. France*, http://www.eia.doe.gov/emeu/cabs/france.html.

18 European Environment Agency, *Greenhouse gas emission trends and projections in Europe 2003. Summary* (Copenhagen: EEA, 2003): 18.

19 EIA, *Country Analysis Brief. France.*

20 *Ibidem.*

21 "La Constitution s'ouvre à l'environment", *tf1*, http://news.tf1.fr/news/sciences/0,,3054096,00.html.

tor facility (the European Pressurized Reactor), but also pursuing an aggressive strategy to get into foreign markets. Will the precaution-oriented politicians allow a big company to go on with "dangerous" projects? While he was still French Economy Minister, Nicolas Sarkozy committed to boosting economic growth. 2003 growth was just 0.2%, but the hope for 2004 is a GDP growth by 1.7%. Is that consistent with a precautionary approach to climate policies? It's up to the French to answer this.

Conclusions

To conclude, we don't really know what's happening to our climate, we don't really understand why, and we're not really able to understand the consequences of these processes. Therefore, we should be very careful before making any decision whatsoever. Decisions always have a cost, which is often neglected or not taken into account as far as supposedly green policies are concerned. In fact, costly policies result in a poorer society, and a poorer society is not able to afford those measures which are needed to face *real, actual* problems (as opposed to uncertain, long-term problems).

"While he was still French Economy Minister, Nicolas Sarkozy committed to boosting economic growth. 2003 growth was just 0.2%, but the hope for 2004 is a GDP growth by 1.7%. Is that consistent with a precautionary approach to climate policies? "

As Brookings Institution's Robert Crandall puts it:

"Regardless of the model used, all forecasts of global warming see only a gradual warming over the next few decades or centuries. The alleged problems from the delayed impact of past and future greenhouse-gas accumulations do not become serious for at least fifty or sixty years. Every dollar dedicated to greenhouse-gas abatement *today* could be invested to grow into $150 in the next 50 years at a ten percent social rate of return, even at a puny five percent annual return, each dollar would grow into $12 in 50 years. Therefore, we need to be sure that the prospective benefits, when realized, are at least 12 to 150 times the current cost of securing them. Otherwise, we should simply not act, but use our scarce resources in other ways."[22]

French voters should ask President Chirac and his supporters if they have tried to estimate the costs and benefits of the Kyoto Protocol; moreover, they should ask if they have taken into account the "hidden costs" of the Protocol, i.e. the loss in economic freedom. Every collective choice results in reduced freedom for individuals, consumers, and entrepreneurs. A loss of liberty is never good news: but it is especially bad when it relies on faulty science, bad economics, and a costly ideology.

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22 Robert W. Crandall, "Economists and the Global Warming Debate." In Jonathan H. Adler (editor), *The Costs of Kyoto. Climate Change Policy and Its Implications* (Washington, DC: Competitive Enterprise Institute, 1997): 145, https://secure.cei.org/PDFs/Costs_of_Kyoto_Part4.pdf.

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