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Historic Overview of Climate Framing

Amy Dahan

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In this paper, I propose an overview of the framing of the climate change regime which developed from 1992 up to nowadays. First, I deconstruct some features of this framing: the definition of climate change as a pollution problem, the evidence of its global character of the problem, the strategy of burden-sharing. Second, I put the focus on the main tools of the governmentality of the problem (carbon market, flexible mechanisms), on the specific relation between science and politics starting with the 2°C threshold, and finally on the rise of adaptation stakes. Today, the geopolitics of climate are profoundly affected by the convergence of the diverse crises currently sweeping the world and this current framing is in total failure. The last section is devoted to the question: what can be done particularly in Europe?

Working Papers Series

Historic Overview of Climate Framing

Amy Dahan

Août 2013

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The text

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Abstract

In this paper, I propose an overview of the framing of the climate change regime which developed from 1992 up to nowadays. First, I deconstruct some features of this framing: the definition of climate change as a pollution problem, the evidence of its global character of the problem, the strategy of burden-sharing. Second, I put the focus on the main tools of the governmentality of the problem (carbon market, flexible mechanisms), on the specific relation between science and politics starting with the 2° C threshold, and finally on the rise of adaptation stakes. Today, the geopolitics of climate are profoundly affected by the convergence of the diverse crises currently sweeping the world and this current framing is in total failure. The last section is devoted to the question: what can be done particularly in Europe?

Keywords

climate regime, framing, globality, carbon market, the 2°C, climate

Un aperçu historique du cadrage du régime climatique

Résumé

Dans cet article, je propose un aperçu du cadrage du régime climatique tel qu'il s'est développé depuis 1992 jusqu'à nos jours. Premièrement, je déconstruis quelques traits qui caractérisent ce cadrage: la définition du changement climatique comme un problème de pollution, l'évidence de la globalité du problème, la stratégie de partage du fardeau. Deuxièmement je mets l'accent sur les instruments principaux de gouvernementalité du problème (marché du carbone, mécanismes dits de flexibilité..), sur la relation spécifique entre science et politique autour du seuil des 2°C, et enfin sur la montée des enjeux de l'adaptation. Aujourd'hui, la géopolitique du climat est profondément affectée par la convergence des diverses crises (économique, financière, écologique...) qui déferlent dans le monde et ce cadrage dominant est en échec total. La dernière section de l'article est consacrée à la question: que pourrait-on faire en Europe?

Mots-clefs

régime climatique, cadrage, globalité, marché du carbone, les 2°C, climat

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For the early 1990's, Climate Change is *simultaneously*, an object of science, a domain of expertise and a political problem. Its peculiar nature rests on some distinct attributes: 1) the very construction of the object of climate change by climate sciences, particularly by computer models (without which it would remain elusive); more precisely, climate sciences tell us that given the inertia of the Earth's climate system, the risk is « already in the pipeline » (even if we don't perceive all the effects) and that some of these effects are likely to be irreversible; 2) the singularity of its body of expertise, the IPCC, a type of organization absolutely unique in the history of science that has generated and continues to generate controversy; and finally, 3) the specificities of the interactions between science and politics that have characterized the *framing* of the problem, as much as the process of negotiations needed to address it. Among the « new risks », climate change especially calls into question two foundational paradigms of the social sciences, first of all the focus on the nation-state as the prime unit of analysis, and secondly, the separation between nature and culture, and more specifically between the domains of science and politics.

And what of the framing? It has been stable since the beginning of the 1990s, with the exception of a single major inflection – the introduction and rise of the question of climate adaptation. The overall framing, to which I will return later in this article, has been a total and utter failure as was dramatically revealed at Copenhagen and which a number of analysts and commentators had already seen coming. This framing, in « our » opinion, is in need of a deep rethink.

The « pollution paradigm »

The construction of the climate problem on the international political scene is a process, which began at Toronto in 1988-1989, following the success of the Montreal Protocol (1987), which was conceived of to deal with the growing hole in the ozone layer. The success of Montreal created a model for the construction of international climate negotiations. The linking of the climate problem with that of the ozone positioned climate change as a *pollution problem* solvable by fixed emission reduction targets. The key constraint to these reductions was the signing of an international treaty analogous to the Montreal Protocol.

What several authors and ourselves call the « pollution paradigm » of climate framing determined the entire logic and approach of the Kyoto Protocol and everything that has followed in international arenas.

The pollution paradigm that we tried to apply to climate change has prevented us for numerous decades from taking full account of all the matters at stake, because it concentrates our attention on solutions at the end of the pipeline (at the site of discharge) rather than interrogating the sustainability of the very fossil fuel foundations upon which our economies are constructed. The climate question isn't just a narrow environmental question, or one that addresses itself just at the global level. It poses itself most specifically through the issue of energy development, in the choice of how to achieve « ecological modernization » (or not), and the new demands moving away from fossil fuels places on society, whose interests are narrowly articulated by industrial and economic questions tied at once to the politics of nation-states and to globalized forms of market competition.

After twenty years of climate negotiations, the reduction of GHG emissions is essentially, it must be said, a failure. A number of the Kyoto Protocol signatory countries (Canada, Australia, Japan...) have not even met the relatively modest reduction goals set for 2012. The United States, the largest emitter in the world during the negotiation period, did not ratify Kyoto and has subsequently refused to take any leadership in reducing global emissions; and emerging countries have seen their emissions explode spectacularly, with China surpassing the United States since 2008.

Second element of framing: globality

Why and how did the global scale and the global arena become the obvious level for the concern and appropriate treatment of the climate problem?

In his book *A Vast Machine*, Edwards (2010) analyses two processes that proved necessary for the modelization and simulation of modern climatology: « making global data » and « making data global », which we could translate as « the collection of data at the global scale » and « the creation of global data ». The first of these processes, which

began in earnest in the 1950s to feed the needs of weather forecasting services, recalls the technical, organizational and political challenges associated with the constitution of a *global network* of Earth observation. The World Meteorological Organization (WMO) was the principal actor of this work. The second process is associated with the need to *make comparable* the data collected by this system, a task that included the analysis of collection methods and the correction of biases between different data sets and the use of multiple modelizations to create a complete homogenized set. The « World Weather Watch » was, according to Edwards, a real « techno-political success » that, beginning with its inception and over the course of the climate change debates, conjugated scientific methods with political initiative.

The Earth's climate system is characterized by *holism*: it is linked on the one hand to the laws of conservation at a large scale (energy and mass) that constrain its behavior, and on the other hand, to multiple interactions and feedbacks of biophysical and chemical processes whose unfolding has become comprehensible to us only because of computers. Today, we know that a simple definition of the observed climate doesn't exist; the climate is only defined through modelization. The privileged tool of computer modeling is associated with the mobilization of numerous scientific constructions of a global nature: General Circulation Models of the atmosphere (GCM), in addition those of the interaction between atmosphere and the ocean (AOGCM), the idea (fictional) of an average global temperature, the average sea level (and its dreaded rise), and the instant globalization of green house gas molecules, etc. But variability exists at all levels and is a major source of uncertainty, and this must be retained when thinking about any scientific procedures and practices. To use and validate global models, scientists need additional tools: other than immediate observation, they need to summon an assembly of other models, more or less simplified, more or less idealized and conceptual – those that they call their “laboratory” – through which they conduct complex inter-comparison protocols to evaluate their models. The preeminence of the sciences studying the physics of the climate contribute to the constitution of a global climate risk, thus of its treatment at a global level.

We can summarize the three modalities by which climate sciences have influenced politics:

- The concentration on global atmosphere models as the essential tool for climate projections, as well as for obtaining regional forecasts (through « downscaling » of the global models), contributed to the globalization of climate problems and made the global arena appear like the natural scale through which to treat climate risk.
- The reductionism of physical-chemical climate sciences tends to highlight the universal characteristics of GHGs and to separate them from their locally social significance. The molecules of methane produced in rice production or those of carbon gas produced by car exhaust emerge from extremely different social actions, yet play an identical role in turning the greenhouse gas effect into an equation.
- The focus on « likely scenarios » in long-term modelization also contributed to a marginalization of extremes and of the possibility for rapid changes in the overall climate system. Shackley and Wynne (1996) even speak of « tuning out of extremes. »

Nonetheless, other factors, distinct from these scientific aspects, operated to make in the 1990s the global scale the obvious and natural level at which climate change needed to be dealt with and apprehended. As has been well shown by Stefan Aykut in his doctoral dissertation (2012, p 73-91), the second « normative » type of globalism came from the social and political sciences; it affirmed itself first in a neoliberal vein in the context of the Soviet Union's disintegration and arguments about the « end of politics » or the « end of history » (Fukuyama 1992) that accompanied the moment. Then, it appeared in more pessimistic arguments on the retreat of the State from broader social questions held by a number of authors (Held 1995, Habermas, Beck...) who noted the incapacity of nation-states to confront and control a diverse set of risks (environmental and technological risks above all, of which the paradigmatic example will be the 1986 Chernobyl accident, but also transnational economic and financial risks, migratory risks, terrorism, etc.). These arguments parallel emerging discourses on international regimes, global governance (Smouts 1998), and global civil society. In addition, the 1990s witness, with the Rio Conference, a rebirth of multilateralism *a la* United Nations and of the creation of institutions for the governance

of global environmental problems. Aykut asserts that the texts and arguments of these authors were not only the reflection of new ways of describing environmental problems, but that they were responsible themselves for shaping the very problems of their analyses through the ways in which they considered them.

Finally, to these globalizing political discourses can be added those of economists on « global public goods », of which the atmosphere is considered an ideal-type, and to which the application of formal conceptions such as game theory can be put to the test at the international level (cooperation, defection, prisoners dilemma, free rider, etc.) The relations between climate science and the political process have been ambiguous. Everything from the organization of the field of climate science to the relations between the diverse disciplines that participate in it have been subjected in their turn to the influence of the political process: the absolute priority of establishing a global warming constant, the hierarchical distinction between the community of modelers and the community evaluating climate impacts (the former buttressed by an asymmetry of means put at their disposal), « top-down » organization and funding of research, etc. In short, global scientific concepts and global political solutions (in the arenas of the COPs and the United Nations process) mutually reinforced each other. The IPCC reaffirmed in its first papers that « climate change is a common concern of mankind, affects humanity as a whole and should be approached within a global framework».¹

The Strategy of « Burden-Sharing »

The combination of globalism and the pollution paradigm lead to the strategy called « burden-sharing», which established reduction and stabilization goals for CO₂ emissions.

Inscribed for developed countries in the Kyoto Protocol, this strategy of « burden-sharing » consisted of trying to lock global emission levels onto a path of reduction within a fixed time frame (Kyoto's 2012 horizon). This strategy stayed the same as much in the effort to extend the Kyoto Protocol beyond the 2012 compliance period,

1. Annex of Synthesis Report of WGIII, IPCC, 1990a p 263; picked up again in the summary of the 1992 report, 1992a, p 60; cited by S.Aykut (2012, T1, 77).

as well as in the quest for a different treaty that would include the United States and other major emerging economies. In other words, the explicit framing of the negotiation process evolved more and more clearly toward an international treaty fixing emission reduction targets for all countries and a calendar of staggered implementation, with emission caps that lowered over time. This ambition included, to boot, the adoption of a general formula that could at once take into account historic responsibilities, present capacities and questions of equity.

The actors that most fervently defended this framing were the environmental NGOs. Playing an important role both as pressure groups inside the negotiations (Fisher, 2010) and mobilizers of public opinions in their particular national contexts (Ollitrat, 2008), NGO's assumed the task of spokesperson for a global treaty at once ambitious and legally binding, « based on climate science » that took into account questions of equity and the right to development (Fisher and Green, 2004). Yet, this *top-down* framing, which never adequately reflected the much more complicated practice of actual negotiations², appeared to the Americans, as an illusory ambition.³ Second, the framing is eventually also rejected – for diverse reasons of sovereignty and the right to development – by the major emerging economies.

The stringency of the reduction goals and numbers had been, on the road to Kyoto, the principal object of negotiations between industrialized countries. These countries were generally seeking to minimize the goals, but negotiators determined them within their legitimacy as sovereign representatives. These numbers were political. However, as we will see with the example of the 2°C, some of these numbers and goals tend to become themselves elements of the “objective” frame, tied to scientific expertise.

2. The emission reduction goals by country coming out of the Kyoto conference, for example, were the result of political negotiations, and the global goal (-5.2% for Annex I countries between 1990 and 2008-2012) was determined in a second round, by aggregating national goals (Depledge, 2000: 47, §221).

3. See the project « International Climate Agreements » directed by Joseph Aldy and Robert Stavins, their report distributed at Poznan (2008), as well as our analysis of this report in Dahan (2009: 41-43).

Carbon market and compensation

Another key element in the framing of a climate governance regime : the carbon market, which was imposed at Kyoto, with its accompanying flexible mechanisms, especially the Clean Development Mechanism (CDM). These tools (to which we could add the forest carbon finance mechanism REDD) have been defined through the international negotiations and could be seen as new modes of North-South cooperation, in that they redefine and ostensibly augment financial flow of aid destined to developing countries. These flows are linked to *compensation* for carbon reductions. We are no longer in a classic vision of North-South relations (in particular the old story of the « plunder of the Third World »), but are looking at the creation of markets and products born from efforts to stabilize the immaterial: units of *avoided emissions* of carbon that nonetheless respect international reduction engagements of Annex I countries. It is important to highlight how these instruments are presented: in one part as a flexible mechanism of burden-sharing on the part of countries from the North, and secondly, as a boon to countries of South that will permit them to capture new streams of revenue and financing.

Numerous examples testify to perverse effects to which the CDM market has lead, notably in China, who has attracted more than 40% of CDM projects. One example -- recently brought again to my attention but already present in the excellent MacKenzie's paper "Making things the same"-- puts into sharp relief the market perversity brought about by the combination the pollution paradigm and mechanisms of carbon reduction compensation in CDM projects: with the passage of the Montreal Protocol, we banned the use of chlorofluorocarbons (CFCs), a potent ozone destroying gas found in refrigerants and other consumer products. CFCs were eventually replaced in refrigerants with hydrochlorofluorocarbons (HCFCs), then hydrofluorocarbon (HFC), a harmless gas for the ozone layer but a gas with huge global warming potential. Countries from the global North were required to make these transitions in refrigerants quickly, and the countries of the global South were given 30 years to comply. In China and India, there still exists HCFC factories that produce the waste chemical HFC23, a « super greenhouse gas » that is 11700 times more potent than CO₂. Since HFC23 is produced in

relatively small quantities and incredibly localized at a handful of factory sites, a number of Chinese and European actors on the carbon market, including the World Bank, devised a plan to install HFC23 scrubbers on factories in China to capture HFC23 and destroy it through incineration. This operation, which is simple and good for the stability of the climate, costs 0,17 € for each ton of CO₂ burned (an incinerator is not very expensive) and brings huge returns in terms of units of avoided Carbon Dioxide equivalent emission (11700 tons for every ton of HFC 23). The potential that such a scheme of greenhouse gas waste disposal, properly translated through the CDM mechanism, could bring huge profits (a return on investment estimated by a factor of 100) created an incentive for these refrigerant companies to simply pollute and « un-pollute » to earn money, without any consideration for whether their air-conditioners were actually selling or not. This is not just an anecdote: half of the CDM certificates sold in China were connected to HFC23 reduction projects. Let's consider that to achieve the same results, it would just have sufficed to have China issue a command and control law requiring all factories to install an incinerator to incinerate HCFC. There would be no more additionality and thus no more CDM. But the Chinese government has no interest to do this, since it receives a 50% tax on all CDM projects it hosts.

The framing of the «climate regime» into a market, frames greenhouse gases into entities subject to measures intended to deal with moral hazard and the kind of perversions of the Chinese example, dealt with through additionality, permanence and leakage; those conditions themselves become the obstacles to be overcome and proved, instead of considering the different social origins of carbon and GHGs and their connection to livelihoods and development.

Irreversibility, the 2°C

The other element that has contributed to our current framing of the problem of climate change is the question of the irreversibility of risks on the scale of human generations, including the possibility that the largest portions of carbon emitted will stay in the atmosphere more than 100,000 years. From this situation of irreversibility was born the idea of setting a temperature *threshold* that we want to avoid because of the danger posed to humans and ecosystems.

The best example of this coproduction between science and politics is found in the figure of 2°C, the threshold marker of dangerous global warming that should not be passed. We have described elsewhere (Aykut and Dahan, 2001: 148-151) the history of 2°C, which we can summarize here: the figure originally came from the key-concept of *climate sensitivity*, defined as the reaction of the climate system to a doubling of concentrations of carbon gas in the atmosphere compared to the preindustrial era; the range of sensitivity that was found by scientists, notwithstanding uncertainties in the systems overall behavior, was established between 1.5°C and 4.5°C (Charney et al., 1979). This range was kept in the first IPCC reports. But to the abstract notion of climate sensitivity, was soon added that of « likely warming » within a given time frame, that depended on hypotheses of specific socio-economic development pathways and the expected greenhouse gas emissions issuing from these pathways. In the 1990s, the majority of climate model projections set horizons of 2100, 2200 and even 2300, which have the advantage of erasing effects of natural variation at smaller scales. In choosing a « middle scenario » (IS92a), the IPCC estimates in its Second Assessment Report (1996) that the warming expected for 2100 would be 2°C; this time, the figure enters in a prospective approach of scenario construction, mid-way between scientific considerations and policy purposes. In effect, the projections targeting 2100 don't actually inscribe themselves in a precise political agenda.

The last stage in this story begins with the mobilization of the notion of *critical thresholds*, henceforth analogous to the notion of thresholds in pollution or radioactivity. Notably, this is a result of the approach of *backcasting*, applied particularly by the WBGU (1995, 2003) – an institution of experts on questions of global change created by the German government – that searched to determine an « acceptable » risk in terms of warming, to translate it then into maximum concentration of greenhouse gases and, finally, to define the emission trajectories compatible with this goal. The criteria chosen for *acceptable risk* were that the range of temperature could not exceed the limits in which current terrestrial organisms, including humans, had developed over the past 120,000 years. This time, the figure takes a much more direct political significance, and it is adopted at first by the European Union, which turns

it into a pillar of its climate politics in the arena of the COPs.

The Copenhagen Conference and the subsequent others have fixed the threshold of 2°C as a political goal of the international community, without ever clearly specifying to what timeframe this number refers, which leaves the door open to a multitude of controversies and scenarios, as well as to the possibility of overshooting the limit target, under the assumption that an overshoot would be followed by a rapid decline of emissions.

The unequivocal message of scientists on irreversibility is that each year that anthropogenic CO₂ continues to contribute to climate change creates irreversible conditions for at least 1000 years, with regards to melting of ice sheets, the acidification of oceans etc. And, third message, sea level rise – emblematic threat for small islands and countries such as Bangladesh as well as coastal zones – is delayed, slower, but equally and irreversibly linked to the peak of CO₂ emissions that will be achieved in the 21st century.

The significance of all these messages is convergent: we must act in the quickest possible fashion and the most essential action to take is the *reduction* of emissions, in particular CO₂. Nonetheless, the mobilizations of these warnings are tied to a simple fact: even if we imagined suddenly and completely stopping our use of fossil fuels (a total utopia), anthropogenic induced warming (and its impacts) would continue, due to the inertia of the system and to non-linear interactions between components of the system. This last assertion opens an avenue to other potential positions: adaptation, as well as geoengineering.⁴

4. We cannot develop in the space here the discourse calling for geoengineering as a possible response to anthropogenic climate change. Among the multiple technological propositions imagined, one has become emblematic: the direct injection (by canons or projectiles) of aerosols into the stratosphere (in imitation of volcanic eruptions), which are expected to act on the balance of solar radiation in the atmosphere and compensate for the anthropogenic forcings of the greenhouse gas effect. This eventuality (SAI) has already become the object of computer simulations in Earth system models (ESM) to list the effects of artificial aerosol injection on other climate parameters, notably precipitation. For a bibliographic review on the subject and analysis of ethical and political issues in the aspect even of considering such solutions, see Hulme (2012), Schneider (1996) and the Report of the Royal Society (2009).

The rise of adaptation stakes

Nevertheless, the obviousness of globality did not go without saying, it encountered resistance. In the 1990s, developing countries were not convinced of the seriousness of climate risk. They contested that the problem was treated first and foremost as a « physical » problem that privileged the global over the local. They critiqued the point of view of global computer modeling, or at least the transfer of its methodology to the political realm, which according to them⁵:

- would erase the past (i.e. the North which is built-up and industrialized contributed the bulk of pollution, not the South)
- would naturalize the present (in particular, the reference to the year 1990 in the Kyoto Protocol is judged to be unacceptable, the present is not given but needs to be interrogated)
- would globalize the future (CO₂ becomes global, without doubt, but not humans).

The critique of developing countries thus sees the entire framing of the socio-economic scenarios not as a question of allowing them more input to contribute to the acceptance of the models, but as deeply problematic because it privileges certain methods in the first place. These methods are not seen as politically neutral.

Critical analyses of the social and political sciences are therefore in support of these positions: they describe globalization as a process that affects societies and people in a *differentiated* way. Thus, they judge the theories of globalization and homogenization as *ideological discourses* that mask the persistence – or the reinforcement – of inequalities and of structures of domination. The geographer Mike Hulme (2009) has additionally blamed the globalization of climate change with erasing the anthropological experience of climate and of weather, which remains, as he writes, before everything else subjective and local.

In this hybrid zone between science and politics, if globality makes an object of lively critiques, these critiques will at the same time continue to evolve and change their target. In the 2000s, developing countries progressively abandon all their previous skepticism of climate risks because

these latter were increasingly being observed and directly measured in their own countries (glacier retreat, heat waves, droughts...); to the contrary, they began underlying their specific vulnerabilities in confronting the changes announced by scientists. Between 2002 and 2007, united through the group G77+China, they will succeed through an exceptional activism supported by NGOs, with the comprehension and consent of the IPCC, to make *adaptation* a central theme of climate negotiations. This debate puts an emphasis on the transfer of technology and finances. After initial reluctance, Europe rallies to the cause of developing countries, while at the same time refusing – unlike the United States – to disassociate simultaneous actions for reductions and actions for adaptation. The articulation of the global and local thus remains a particularly sensitive and conflicted issue, which invokes the even more troubled question of differentiated responsibility for historic anthropogenic change (Dahan & Aykut, 2012, 25-41).

In the arena of global negotiations, it must be considered that the questions of adaptation are also failing to bring results: they are stuck between technical and financial transfers of the North toward the South, aimed at helping the most vulnerable countries adapt. But, since we haven't added any considerable funds on top of existing development aid, we see an atrophy of attention to these questions, even though on the local level, initiatives enrolling diverse categories of NGOs are currently thriving. An emerging country such as India, which adopts very uncompromising positions in actual climate negotiations, under the pretext of not harming the development of its populations, is experiencing a huge growth (7 to 8% by year), but to borrow the phrase of C. Jaffrelot (2012), a "growth without development and without poverty eradication". The Kyoto mechanisms that should have served developing countries, such as the Clean Development Mechanism, principally benefited China and included a lot of perverse consequences.

Since Copenhagen, we have entered into a bizarre netherworld balanced, on the one hand, by the continuous and increasingly grave warnings of scientists on the impacts of climate change, constructed around key numbers, dangerous thresholds (2°C) and « carbon budgets », which presuppose an efficient global administration with enough capacity to act on the planetary

5. Interview of A. Dahan and V. Journé with leaders and scientists from developing countries (Dahan, 2007).

scale and, on the other hand, the rising approach of *pledge and review*, dominant since Copenhagen, that advocates for a politics of national and sovereign action, more or less weak, with no particularly constraining emission reduction goals or targets. The goal of overall binding international reductions, still held to by the UN, is becoming more and more unreal, and the process is bogged down in self-created incrementalism.

Economic crisis and backlash of environment

From Copenhagen (2009) to Rio (2012), a regression of the global dimension of environmentalism, one of the three pillars of sustainable development announced at Rio (1992), is becoming more and more confirmed. The countries of the North are obsessed with problems of economic growth and debt, the issues of expanding markets focus the attention of emerging countries and the problems of basic development continue to preoccupy the Least Developed Countries. The geopolitics of climate are profoundly affected by the convergence of the diverse crises currently sweeping the world. Never has the distance between the discourse on the gravity of climate risks and the withdrawal of States from climate action based on their national interests been so vast.

Economic globalization, and the international regimes (in energy, development, trade) that weakly administer it, do not assist in the transfer toward a low-carbon economy. If anything is clear following the history of Kyoto, it is that the climate regime can no longer stay cloistered from these other regimes. There is a paradox in the sense that climate negotiations tend to want to take on all the problems of development – in the COP people speak of preparing the “business plan” for the entire planet – and yet they remain completely separated from all these other regimes.

Three directions of action are absolutely essential to end this impasse: i) effect a complete cancellation of all subventions to the production of fossil fuels, a question already on the international agenda because of the financial crisis and the contraction of national budgets ; ii) reconsider the politics of development and their institutions (the World Bank, development aid, etc.). The most important priority is to avoid creating path dependencies that will make climate policies even more costly in the future ; iii) make it so that the

principle of the free-market cannot remain the single organizing principle of global trade ; certain forms of environmental protectionism must be possible.

To inscribe the climate question in a register of larger global importance, particularly the register of developing countries, we see different questions surface. Take the challenge of increased urbanization, for instance. The urban population is responsible for $\frac{3}{4}$ of final energy demand, and it is expected to double from now to 2050. To plan « low-carbon » cities and compact development (densification, passive heating solutions, public transport infrastructures, and other crucial projects), the window for intervention is extremely short before build out already occurs. It is thus extremely urgent to put these questions at the heart of the climate regime, while for the moment they are officially absent.

In this context, for example, the impacts of the perspective obtained by the European Union at Durban should not be over-estimated. Not only does this punctual success not guarantee anything for the future, but it is also very ambiguous. It reinforces the temptation to stay closed within a calendar of negotiations that does nothing more than produce slow and cautious action, thus to repeat again the error of Copenhagen, where all the attention on climate change stays concentrated at the global level. To avoid this paralysis, we must conceive of the climate regime as a polycentric regime: the real solutions and advances should come also from other levels of action, other transversal initiatives, and the ambition of national policies associated with structural reforms in their home countries; more fundamentally, the solutions that could come from the construction of alternative approaches, such as making transition technologies widely available, would remove current obstacles and favor a real transformation of the geopolitics of climate change.

What can do Europe?

What are the perspectives at other scales? I don't have the pretention to respond to this question in a general manner. Let us speak briefly about Europe.

Europe, who had influenced the process all the length of the 1990s through its indirect leadership, through diplomacy and the formulation of concrete objectives and a coherent politics of

climate change, chose in the 2000s in conjunction with the shift in strategy announced by the Lisbon Treaty (market regulation) to base its leadership on the implementation of the EU-ETS carbon market. The mistakes of this market have heavily tarnished the credibility of this approach.

Today, for Europe, it is no longer sufficient to simply give the diagnostic and deliver warnings about the failings of current climate engagements. To escape from the current fruitless impasse in which the process, and the thinking around it, has fallen, we must attack directly the questions of what kind of transformations we need to resolve the climate crisis, and inscribe them in a grand new mobilizing narrative. Given that the transition away from fossil fuels, which is just beginning, is a revolution comparable to the size of the industrial revolution of the 19th century, and that it must be more or less prepared and organized instead of haphazardly perpetrated, the German WBGU has suggested a scenario of transition that calls at once for a big transformation of our societies underpinned by a *new social contract* that drives the case home. (Dahan & Aykut, 2012, 126-169).

We need structural reforms in the realm of energy production, building codes, energy efficiency, urban growth and reforms of our underlying institutions and formulas for measuring of growth; a project for a new Europe that can be a response to the convergence of the crises that so clearly threaten the Union. Ecological modernization could be the path that leads us out of this situation.

References

- [2008] M. Armatte, Climate Change: Scenarios and Integrated Modelling, *Interdisciplinary Science Reviews*, 33(1).
- [2007] M. Armatte, Les économistes face au long terme : Scénarios et Modèles du Changement Climatique, in Dahan A. (ed), *Les Modèles du Futur*, Paris, La Découverte.
- [2012] S. Aykut, *Comment Gouverner un Nouveau Risque Mondial? La construction du changement climatique comme problème public à l'échelle globale, européenne, en France et en Allemagne*, Thèse de Sciences Sociales, soutenue le 30 Mai 2012, 740 p., EHESS, Paris.
- [2012] S. Aykut, J.-B. Comby & H. Guillemot, Climate Change Controversies in French Mass-media, *Journalism Studies*.
- [2011] S. Aykut & A. Dahan, "Le régime climatique avant et après Copenhague: sciences, politiques et l'objectif des deux degrés", *Natures, Sciences, Sociétés*, 2011, n° 19 p 144-157.
- [2001] U. Beck, *La société du risque. Sur la voie d'une autre modernité*, Paris, Aubier. Edition originale allemande en 1986.
- [2010] U. Beck, Climate for Change or How to create a Green Modernity?, *Theory, Culture & Society* 27, 254- 266.
- [1979] J. G. Charney, A. Arakawa, B. Bolin, *et al.*, 1979. *Carbon Dioxide and Climate: A Scientific Assessment. Report of an Ad Hoc Study Group on Carbon*.
- [2007] A. Dahan (sous la direction de), *Les Modèles du futur*, Editions La Découverte, Paris.
- [2008] A. Dahan, Climate Expertise: between scientific credibility and geopolitical imperatives. *Interdisciplinary Science Reviews* 33, 1, 71-81.
- [2009] A. Dahan, « Entre Poznan et Copenhague : le régime climatique au milieu du gué », *Natures Sciences Sociétés*, n° 17, p. 271-282
- [2010] A. Dahan, "Putting the Earth System in a numerical box ? The evolution from climate modeling toward climate change", *Studies in History and Philosophy of Modern Physics*, 41 (2010), 282-292.
- [2012] A. Dahan : De Rio à Rio. Le gouvernement global du changement climatique, *Mouvements*, n°70, Juin 2012, p 20-30.
- [2012] A. Dahan & S. Aykut, *De Rio 1992 à Rio 2012, vingt années de négociations climatiques. Quel bilan, quel rôle pour l'Europe, quels futurs ?*, Rapport pour le Centre d'Analyse Stratégique, Octobre 2012, 200 pages, à paraître *Documentation Française*.
- [2012] A. Dahan, M. Armatte, C. Buffet, A. Viard-Cretat : "Plateforme de Durban: Quelle crédibilité accorder encore au processus des négociations climatiques?" Rapport de Recherche, *Koyré Climate Series*, n° 4, Mars 2012, 32 p.
- [2011] A. Dahan, C. Buffet, A. Viard-Cretat : "Le compromis de Cancun: Vertu du pragmatisme ou masque de l'immobilisme?" Rapport de Recherche, *Koyré Climate Series*, n° 3, Février 2011, 40 p.
- [2010] A. Dahan, S. Aykut, C. Buffet, A. Viard-Cretat : "Les Leçons politiques de Copenhague : Faut-il repenser le régime climatique ?". Rapport

- de Recherche, *Koyré Climate Series*, n° 2, Février 2010, 48 p.
- [2009] A. Dahan, S. Aykut, H. Guillemot et A. Korczak, « Les arènes climatiques : forums du futur ou foires aux palabres ? La Conférence de Poznan », Rapport de Recherche, *Koyré Climate Series*, n°1, Février 2009, 45 p.
- [2008] A. Dahan et H. Guillemot "Climate Change : scientific dynamics, expertise, and geopolitical stakes", in *Global Science and National Sovereignty: Studies in Historical Sociology of Science*, G. Mallard, C. Paradeise, Routledge, New York, 2008. p 195-219.
- [2001] D. Demeritt, The Construction of Global Warming and the Politics of Science. *Annals of the Association of American Geographers*, 91(2), 307-337.
- [2010] P. Edwards, *A Vast Machine. Computer Models, Climate Data, and the Politics of Global Warming*. Cambridge MA, The MIT Press.
- [2004] D. R. Fisher and J. Green, Understanding Disenfranchisement : civil society and developing countries' influence and participation in global governance for sustainable development. *Global Environmental Politics*, 4(3), 65-84.
- [2010] D. R. Fisher, COP 15 in Copenhagen. How the merging of movements left civil society out in the cold. *Global Environmental Politics*, 10(2), 11-17.
- [1992] F. Fukuyama, *The End of the History and the Last Man*, New York, Free Press.
- [1995] D. Held, *Democracy and the Global Order: From the Modern State to Cosmopolitan Governance*, Stanford, Stanford University Press.
- [2009] M. Hulme, *Why we disagree about climate change*, Cambridge, UK, Cambridge University Press.
- [2010] M. Hulme and M. Mahony, What we do know about the IPCC ? *Progress in Physical Geography*, DOI: 10.177/03091333103737119
- [2012] M. Hulme, Climate Change through Stratospheric Aerosols Injection, *Progress in Physical Geography*, DOI: 10.177/0309133312456414
- [2012] C. Jaffrelot, *Inde, l'envers de la puissance*, CNRS Editions.
- [2010] S. Jasanoff, A new Climate for Society, *Theory, Culture and Society*, 27, 233-253.
- [2009] D. MacKenzie, Making things the same: Gases, emission rights and the politics of carbon markets, *Science Direct, Accounting, Organizations and Society* 34, 440-455.
- [2010] S. Ollitrault, *Militer pour la planète: sociologie des écologistes*, Rennes, PUR, Res Publica.
- [2010] N. Oreskes & E.M. Conway, *Merchants of doubt: how a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming*, London, Bloomsbury Press.
- [2009] Royal Society, *Geoengineering the climate. Science, governance and uncertainty*, Report of the Royal Society, September 2009, 83 pages.
- [1996] S. Schneider, Geoengineering: Could - or Should - we Do it ?, *Climatic Change* 33, pp. 291-302.
- [1996] S. Shackley & B. Wynne, Representing Uncertainty in Global Climate Change Science and Policy: Boundary-Ordering Devices and Authority. *Science, Technology and Human Values* 21, 3/Summer, 275-302.
- [1998] M.-C. Smouts, *Les nouvelles relations internationales. Pratiques et Théories*, Paris, Presses de la Fondation Nationale des Sciences Politiques.
- [2010] S. Solomon & al., *Climate Stabilization Targets*, Report for the National Academies Board on Atmospheric Sciences and Climate (NRC).
- [2009] N. Stern & al., *Stern Review: The Economics of Climate Change*, London, HM Treasury.
- [2011] SREX Report, *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation*, <http://ipcc-wg2.gov/SREX/>
- [2006] F. Thomalla, T.E. Downing, E. Spangier-Siegfried, G. Han and J. Rockström. 2006. Reducing Hazard Vulnerability: Towards a Common Approach Between Disaster Risk Reduction and Climate Adaptation. *Disasters*, 30 (1), 39-48
- [2010] UNEP, . The Emissions Gap Report. Are the Copenhagen Accord Pledges Sufficient to Limit Global Warming to 2°C or 1.5°C? A preliminary assessment.
- [1995] WBGU, *Scenario for the derivation of global CO2 reduction targets and implementation strategies. Statement on the occasion of the First Conference of the Parties to the Framework Convention on Climate Change in Berlin*, Bremerhaven.

[1997] WBGU, *Targets for Climate Protection. A study for the Third Conference of the Parties to the Framework Convention on Climate Change in Kyoto*, Bremerhaven.

[2003] WBGU, *World in Transition. Towards Sustainable Energy Systems*, London and Sterling, VA, Earthscan.

[2009] WBGU, *Solving the climate dilemma: The budget approach*, Berlin.

[2011] WBGU, *World in Transition - A global contract for Sustainability, Report, , Factsheet n°1, 2, 3, 4 /2011*

[1996] S. Yearley, *Sociology, Environmentalism, Globalization. Reinventing the Globe*, London, New Dehli, Sage Publications.

[2009] S. Yearley, *Sociology and Climate Change after Kyoto: what roles for social science in understanding climate change ? Current Sociology*, 57(3), 389-405.

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