



Climate change: new markets, a new economy?

Minutes of the first hearing, May 18, 2009

Introductory Remarks

Presentation of the City on the Move Institute by its Secretary General, Xavier Fels

Taoufik Souami

Lecturer, Institute of Urban Planning

Our aim is to make these public hearings very interactive. The idea of holding a public hearing came about under the impetus of François Ascher who, unfortunately, was not able to be with us today. As you will be aware, transport represents about 30% of all greenhouse gas emissions. When it comes to the building industry we have the technical know-how today to reduce the amount of energy consumed by buildings. However, in other areas such as mass public transport we do not yet have the necessary skills to allow us to manage consumption levels. Similarly, various studies have demonstrated the advantages in energy savings of car share programmes. However, there are many variables that could impact on the decision to participate in such programmes. Generally speaking, a number of political

issues are also at stake, as well as the technical issues. The ultimate aim is to reduce greenhouse gas emissions *without* having in a negative social impact.

In this meeting, we are aiming to shed a different light on all the relevant issues, in particular by looking at what is going on in other countries, in this case, the United States. We wanted to look outside the European model and see what was happening elsewhere. We chose the US because these issues are very much out in the open in that country.. In addition, the US encapsulates a wide range of situations and the most extreme conditions. In California, for example, the economy and the population are very dependent on automobile mobility. At the same time, the level of regulatory control is also very high. We therefore wanted to see how mobility was managed in such a context.

Cleantech itself is of great interest. This term refers to green technologies with a low impact on the environment, and they obviously have a very good future ahead of them. We will try to highlight the reality of these technologies in the US and in North America generally, which benefits from a major Cleantech sector. We were also interested in seeing how our US colleagues considered themselves vis-à-vis the past, in both the economic and other sectors. Will these clean technologies enable us to break with the past?

For all of these reasons, we have set up this programme of public hearings. We will not be focusing on one technology over another. Nor will we be going into specific detail on any particular technology. We will instead be trying to stimulate discussion and debate, and identify areas that would benefit from further research. We considered that a public hearing would be the best way of achieving this. A public hearing is a unique forum. It is not a conference or a seminar, and there are no round tables. The idea is to hear the points of view of people working in the field of mobility, in the widest sense of that term. We clearly felt that we wanted to hear from people from different activities and sectors, which do not necessarily interact in the normal course of events. The setting is an informal, open one where we are all free to provide our points of view, our comments, or our proposed solutions.

As this is the first in a series of about eight hearings to be held over the next 18 months, we look forward to your feedback on how we can improve this process. A hearing committee has been set up, with an emphasis on the word “hearing”. It contains a wide range of specialists, including François Ascher who founded the Committee and has recently been awarded the Urban Planning Grand Prix 2009; Edwin Zaccāi, an philosopher with a PhD in environment sciences; Vincent Kaufmann, head of the Lausanne Polytechnic’s Laboratory of Urban Sociology; Pierre Radanne, who has been President of the ADEME, France’s Environment and Energy Management Agency; Christian Licoppe, professor of the sociology of information and communications technologies; Benoît Lefèvre from the Institute of Sustainable Development and International Relations, with responsibility for urban issues; Pierre Velz, a specialist in business organisation and spatial dynamics; and Niels Albertsen, head of the Department of Landscape and Urbanism in the Aarhus School of Architecture. As you can see, these specialists all come from very different backgrounds and they will hopefully present conflicting views making for a rich discussion.

Cleantech: the “Hot” Area for Innovation Capital and New Companies

Richard Youngman

Managing Director, European Operations, Cleantech Group

Since 2002, Cleantech has been engaged in monitoring companies that are in the process of developing new technologies. We believe that this is the next wave of technology that will last for the next few decades, in much the same way that the information technology revolution emerged in the 1950s and 1960s and is still accelerating rather than slowing down some 40 to 50 years later.

Cleantech is a much a broader concept than just energy; it is fundamentally an economic productivity question – we are interested in technologies that will allow us to do more with less. This spans a wide range of technologies and industries. The Cleantech Group company provides news, research and conferences to track upcoming companies that are developing new technologies. This is done for the benefit of investment communities and, increasingly, for the benefit of buyers of technology such as large corporations and public authorities. We monitor and interact with this community, which we believe will make a contribution to addressing climate change and the way we consider mobility over the next 5, 10 and even 50 years.

I. 2008: The End of the First Cleantech Boom

In the past seven years, we have seen a massive increase in venture investment. In the world of capital, venture capital has grown from a small, niche area to one that is worth hundreds of billions. By region, the US has dominated the investment figures at a time when the presidential administration was relatively environmentally unfriendly. This demonstrates the disconnect between the business opportunities and public policy.

While energy generation technologies are dominant (60% of funds being invested), there are many other areas of interest. Solar technology accounts for about 30% of investments in next generation technologies. This is followed by biofuels, which represent 10-15% of investments. In this area we have seen a switch from biofuels based on feed stocks to second generation biofuels based on waste and other sources. Another key area is advanced batteries and fuel cells, which addresses the key challenge of energy storage. Finally, transportation remains a steady area of interest for venture investment.

II. Key Messages

The first Cleantech boom occurred in 2006-2008 and it is now completed. The long term drivers however remain intact, despite the short term impact that can be expected from the current economic crisis. 2009 will therefore be a transition year. While it can be expected to remain depressed due to the credit crunch and recession, the stimulus packages that have been announced will definitely have an impact. This is an opportunity that is like no other given the amounts of money that governments are

saying they will spend to stimulate their economies. About \$400 million of this has been earmarked for “green” investments, with about 50% of that amount to be invested in 2009. When one considers what the private sector has invested in the past five years, and what the public sector has announced that it will spend, it becomes clear that a dialogue between the public and private sector is critical. Only in that way can we ensure that the funds are spent as intelligently as possible. Decentralisation of energy is a key issue here, particularly through the smart grid concept for electric vehicles.

III. Conclusion

Investment levels are high for the next generation technologies, and we are only at a very early phase in this market wave. Is it merely a bubble or a fad? We are very much at the experimentation stage of clean technologies. Of the significant R&D investment being undertaken today, some is being carried out in a smart way and others not. There will be a key moment in the coming years where high levels of tax payers’ and private money will be invested for the benefit of consumers, cities, and companies. It is our role to try and ensure that those investments are made as intelligently as possible.

IV. Discussion

Nicolas Chaudron

I have been working for the past eight years with investors in the sustainable development area. Develop a Cleantech company is not the same as developing an IT company, for example. What are the dangers and problems that we need to be aware of when developing a Cleantech company today?

Richard Youngman

Companies in this area come in many shapes and forms. Some companies are fundamentally software companies even though their applications will be used in some kind of efficiency process. Developing solar cells or electric vehicles is a long and very capital intensive process, which may not necessarily be suited to the classic US venture capital model. Much innovation will therefore be required in the world of finance to better adapt to these requirements. The main problems arise in getting these technologies to market: it is quite a challenge to develop a prototype but a much greater challenge to get it out into the world. Small Cleantech companies will therefore probably have to work with larger companies that can provide them with the necessary scale.

Thomas Lagier

Which emerging technologies are you seeing in the field that are of particular interest to the market?

Richard Youngman

Solar has been huge in recent years, and spans a number of different technologies. Biofuels have seen a switch to so-called second generation biofuels, such as algae-based biofuels.

Nicolas Chaudron

Solar energy production enjoyed a major investment wave in 2007 and 2008. We are now seeing investment in wind energy, and in second generation biofuels. Another challenge lies not only in producing clean energy but in being able to store it.

Thomas Lagier

Who are the potential customers for these clean technologies: municipalities, the private sector, households?

Richard Youngman

All of the above! A small company manufacturing solar cells needs a fully developed supply chain to get those cells to market. The challenge for these small companies is to take their small innovation and integrate it with the GEs and Siemens of the world. That supply chain of integrators and distributors of technology needs to mature.

Benoît Lefèvre

What differences are there between US and European companies when it comes to the way they are structured and the way they approach their respective markets? Can we indeed refer to the existence of different markets? Are there major differences in the development mechanisms for Cleantech companies between the US and European – or more correctly speaking, national – markets?

Richard Youngman

Our aim is to identify the next “Google”. We believe that companies will emerge out of this world that, in 30 years’ time, will be global leaders. We believe that energy, as a business, will change radically. Today, it is a centralised business dominated by a number of companies around the world, based on grids that are controlled by utilities. We believe that a radical transformation is possible in the way business works. Today we consider our cars as *consumers* of energy. In the future, we may come to consider them as *generators* of energy. The dynamics of who is a buyer and who is a seller will change. This kind of transformation is considered as a threat by some, and as an opportunity by others. In the past two years, we have had major companies from the widest and most surprising range of industries asking us what is going on and whether or not they should be involved.

In the US, companies are developing technologies for a global market. Policies are not being developed on a federal basis just as it is not possible to speak about a European market. California, for example, has been pursuing policies that are very different from those of Massachusetts. Similarly, in Europe, Denmark has been committed to wind energy for the past 30 years. The developments we will see are therefore occurring state by state, country by country, and even region by region.

Nicolas Chaudron

There are cultural differences between Continental Europe and the UK, the latter being closer to the US in terms of its preparedness to take risk; Continental Europe is much more risk adverse. Nevertheless, developments in Europe are not necessarily of less interest than developments in the US. The driver for Cleantech is not a technological one but a regulatory one.

Christian Licoppe

Does the Cleantech label apply to a company or to a technology? Who decides whether something is Cleantech or not? Is there any international consensus on what clean technology is and what is not? Are there any ratings mechanisms available in this area?

Richard Youngman

In terms of what we are doing, this probably does not matter. How clean or effective something is, is less of interest than what customers or markets decide. Somewhere along the line, however, it does matter, for example, with respect to the supply chain, with the larger buyers of technology under pressure to prove their carbon footprint. We do not have the relevant standards today that would enable us to determine this. Standards will in fact become a major issue in the future if some of these markets are to develop, but we are still in the relatively early stages of this process.

Nicolas Chaudron

I believe that a definition of Cleantech does exist, although it may not be being used properly. We are still learning in this area and we are still making mistakes, but we do know when something is Cleantech or not. We try to consider both the economic aspects but the environmental ones.

Richard Youngman

There is a generally accepted core area of what is Cleantech, but this becomes quite grey around the edges. Some people, for example, consider nuclear to be a Cleantech; others do not consider electric cars as being Cleantech. Individual views will differ depending on whether you are sitting in Paris, New York or Abu Dhabi.

Climate Change Insurance in the US

Peter B. Meyer

Professor Emeritus of Urban Policy and Economics, University of Louisville

Our discussions so far have all been centred on risk, something that the insurance industry is all about!

I. The US Market(s)

There is no national insurance market as such in the US, as indeed is the case for many other products and services. Similarly, there are no national regulations that apply to the whole of the insurance industry. With 50 US states, this leads to an incredibly high level of complexity. In addition, the US states have much more political autonomy and power than the German *Länder*, for example.

Individual states dictate minimum coverages and terms, and they set permitted prices for different coverages. As a result, insurers can pick markets across the states. Surplus lines or excess coverages are offered in all states by many different underwriters. In addition, captive insurance firms are used by many large firms to comply with requirements that they carry insurance. Each state has its own captive rules, and companies can pick the states in which to incorporate their captives. In this context, competition among the states shapes the insurance sector, with Vermont being the preferred home state.

II. The Environmental Exclusion

Commercial and general liability (CGL) coverage was once written for all risks on the basis of occurrence. That is, if the accidental problem arose during the period in which the coverage was written, the claim could be filed at any time afterwards. Today, the rise in claims under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) has led to the total exclusion of environmental claims under CGL coverages. CGL and environmental cover is now available on a claims-made basis that covers only the year in which payments are made.

III. State Level Regulations

The states want to assure access to coverages, and assure the financial reliability of insurers. They want to hold down costs in parallel to the offering of lower taxes. The states also require insurers to participate in state risk pools for high-risk policy holders.

The National Association of Insurance Commissioners is attempting to provide some coordination across states. As of March 2009, large insurers are required to disclose their climate change risks and responses. The investments being made in risk management relate to attempts to avoid significant economic losses. States insure against rising energy costs by investing significantly in increasing the efficiency of state-owned buildings. This is not a result of a “green” mentality but a desire to save costs.

IV. Discussion

Taoufik Souami

Have insurance companies developed specific products in response to climate change?

Peter B. Meyer

Insurance companies have a range of products that are applicable to the climate change situation, but these are generally extensions of existing products rather than new products. In addition, during the Bush administration, which denied the existence of climate change, these products were not marketed under any reference to climate change. That will probably now change.

Taoufik Souami

Are any insurance products being developed that are directly related to mobility?

Peter B. Meyer

Regarding transportation, pay-as-you-drive car insurance is now being promoted in various states. Insurance costs are determined on the basis of how many miles are driven by a policy holder: the less they drive the less they pay. This could have a major impact by “driving down” the amount of car driving in the US. It is estimated that in California pay-as-you-drive insurance could drive the state 7-9% closer to reaching its CO₂ gas reduction targets for 2020. This is seen as a promising development in terms of changing driving behaviours.

Vincent Kaufmann

Are we not simply trying to give ourselves a good conscience about climate change with these new products? Would you provide further detail on the clients who take this type of coverage out? Can the smaller companies also benefit from this?

Peter B. Meyer

This depends on the type of insurance you are talking about. A small company that holds an event during the Summer is able to buy insurance that will cover losses sustained due to bad weather. The concern about climate change has led to the development of products that could in fact be more useful for small companies than those available in the past. As to whether or not we are simply making ourselves feel better about climate change, insurance companies are indeed aggressively trying to establish their green credentials, in a process known as “greenwashing”.

Edwin Zaccai

Green technology was very popular in France at the end of the 1980s, and it would be interesting to identify the new developments that have occurred since then. The insurance industry obviously has to take into account many different events. Insurance companies – and re-insurance companies in particular – have begun to take part in the climate change debate because the damages due to environmental disasters have greatly increased. These large companies are now realising they have to deal the climate change issue. How do you think insurance companies will evolve in the future? Will they move towards stronger or weaker climate policies?

Peter B. Meyer

Paradoxical as it may seem, during the Bush administration, the insurance and re-insurance companies were the only ones to talk about climate change in the US. In that sense, they had a serious business interest in climate change, clearly related to their desire to control their losses. The insurance industry is recognising that climate change and the concern about it has become a real market opportunity. They are looking to provide environmental cover, but only if they can make money on it and I suspect that it will be quite expensive to obtain that cover. The insurance sector's movements are an indication of the extent to which there is a large and growing market resulting from the demand for more green performance on the part of companies in the US. Whether they will be full honest about it is another question, and one that is not unique to the US.

Taufik Souami

Are the insurance companies doing any work in the area of environmental performance assessment?

Peter B. Meyer

Absolutely. The US insurance industry is investing in the development of improved assessments, whether it be environmental performance assessment, auditing, calculation of the carbon footprint, etc. The insurance industry has a clear interest in this as it represents another parameter against which they can provide insurance. In that context, the insurance industry is probably pushing this forward rather than resisting it in any way. They want to know what the companies they are insuring are doing in terms of environmental performance. If they cannot measure that, they have a real problem in underwriting the risk.

General Discussion

Taoufik Souami

What changes do you see emerging in our economies? Is a new economic cycle or a new organisation of the economy on the horizon?

Richard Youngman

Making such predictions is always a difficult task. The predictions that were made in the 1960s did not come even close to reality. Even institutions like McKinsey were extrapolating on ATT figures, a world leader at the time which is completely unknown today. Given that the problem we are facing is a shared, global issue, government intervention is necessary to help the new markets emerge. If we want to solve the climate change issue, we need some radical transformation. What could that transformed world look like? From an energy point of view, there will not be much change; we will continue to use the same energies as today. However, I would hope that certain technologies will be on a radical trajectory to change in the same way that computers and semi-conductors transformed our lives in previous decades.

Regarding mobility, if we consider where populations and CO₂ emissions are located today, the problem is situated in the developing world where the rise in population – a driver of energy demand – is occurring. We therefore need to think about India and China, and how they will handle the issue of mobility. They are still developing old technologies, which will exacerbate the problem even further.

We have a fascinating 2-year period ahead of us, where we will be spending so much money on transforming our economies. This can be done in a way that either protects the status quo or moves to a whole new way of doing things. 70-80% of our capacity for energy generation in 2030 has not yet been built; nor has the bulk of the building capacity that will be required at that time. This represents an incredible opportunity to transform the world. However, I am fearful that we will lock in to a very different form of technology.

Taoufik Souami

Can we expect to see a major transformation in the US economy?

Peter B. Meyer

We already have seen a number of transformations as a result of the crisis. When petrol prices peaked last Summer, the figures for car use dropped significantly and public transportation systems were overloaded. While oil prices have now gone back down, the volumes of car travel have returned to former levels. Something has therefore changed in the way we see the world. In addition, we have the investiture of a new President, and the massive amounts invested in alternative energy, mass

transportation and energy efficiency. We have now acknowledged, at the federal level, that climate change is real after eight years of denial. The states are beginning to realise how badly damaged their economies were by the oil price rise in the Summer. They are now looking for ways to insulate against that type of vulnerability, for example, by diversifying their energy sources.

Edwin Zaccai

The UN's post-Kyoto Climate Change Conference will be held in Copenhagen on 7-18 December 2009, and can be expected to have a significant Cleantech component. There is a difference in approach to climate change between the US and the Europe. The US tends to focus on the issue of oil dependency as the main problem to be solved. In Europe, the focus is much more on climate change than on oil dependency.

Taufik Souami

I will now open up the floor to questions from participants.

From the floor

US investments are not being made for the purpose of fighting against climate change; they are not looking at the end result but at the means. In contrast, Europe has adopted a package that has a clear horizon in 2020. With respect to the emerging clean technologies, are we progressively moving towards a genuine breakthrough or should we expect business as usual with a few niche changes?

Richard Youngman

We have not had a globally valid breakthrough yet. Much of the money being invested today is going into technologies that are not fundamentally new but "resurrections" of older technologies. Many would not consider electric vehicles as being fundamentally new as they draw off the existing grid. Various initiatives or examples are available around the world that are successful but none could be considered as radical breakthroughs.

Peter B. Meyer

The technological pathways followed by richer countries will not necessarily be the same as those followed by poorer ones. Solar installations in India, for example, have been placed on the roofs of thatched houses that are nowhere near power lines. In the same way, the use of mobile phones has bypassed the need to develop landline infrastructures in developing countries.

From the floor

I am reasonably sceptical about the assertion that habits and behaviours have really changed. The economic crisis means that we are using our cars less, but is that what really changes our behaviour. How do we become more civilised in our relationship with the environment? We perhaps need more psychological input to understand this issue of behaviour change.

Vincent Kaufmann

Various European studies and surveys show that there was a decline in the use of cars, even before the hikes in petrol prices. This is linked to the fact that people in urban areas are using cars less. It is not necessarily a positive thing, as it could be the result of declining incomes and inability to afford a car. Habit is an important notion, but it is something that evolves, and people's daily habits are changing with respect to their use of cars.

There has been a radical change in lifestyle among certain parts of the population, with some having greater respect for the environment. It is not simply a fad but is in fact more deep rooted than that. We need to think carefully about our non-green lifestyles and that requires both technology and a change in behaviour.

Christian Licoppe

In the telecoms world, we have seen a major change in the amounts and kinds of technologies that are being used. We are more and more technology-aware, and we use more portable and visible technology. Awareness of climate change is growing both on the demand and supply side. This can also relate to green buildings and green IT.

Peter B. Meyer

The fact that US levels of car use have not returned to pre-Summer levels indicates a slight change in habits. People have realised that they can use their cars less by using them more efficiently and effectively. This comes back to a question of urban planning. Our suburbs are built in such a way as to make people dependent on cars. Older people are therefore moving back into the cities, which will result in a lower use of cars and will drive better mass transportation. We are also seeing a new focus on reducing the energy consumption of buildings, with construction codes for new builds changing in response.

Benoît Lefèvre

People's behaviour is changing for a number of reasons. However, certain facts such as urban planning or high public transport costs mean that we are still dependent on cars. To achieve a radical change in

our greenhouse gas emissions, we need to look at emerging countries. Cleantech is important but will it be sufficient to respond to the problems? What other solutions will also need to be brought to the table?

Richard Youngman

Technology is clearly not the answer; it is an enabler. The Copenhagen conference will provide an important signal of whether or not there is a desire on the part of our leaders to change. The technology part of this equation is actually the least important element; we need to create the conditions that will enable technology to help us change. Economic crises tend to make people close in on themselves and become more conservative. If we want to achieve real change, it would be necessary to stop supporting old technologies.

From the floor

Is there a cultural dimension to Cleantech? Does the answer to climate change require both a change in technology and a change in people's behaviour? Is Cleantech bringing about a new way of thinking or a new way of innovating? Is it based on laboratory research or market research?

Richard Youngman

It varies between lab-based research and market research. Much change is occurring but it is relatively incremental and we have therefore not seen any radical transformations yet. Hundreds of clean technologies are already being used: lighting, wind farms, solar cells. Nevertheless, this still represents only a small percentage of the world's economy. It is difficult to say whether markets change culture and consumer behaviour or whether they simply respond to them.

Edwin Zaccai

The Cleantech concept covers a huge field, and breakthroughs are an important issue. However, there are already many new technologies already available that provide part of the solution. 3M, for example developed a programme in the 1970s, based on the principle that the company could make money by polluting less.

Christian Licoppe

It is not a question of opposing supply and demand; it is a matter of re-organisation that links technological change to behavioural change. The electric car is not a *substitute* for the internal combustion engine. Rather it is about transforming towards a multi-modal transport grid. It is not an answer in itself, but a way of moving towards a new way of thinking.

Taoufik Souami

I would like to thank our two keynote speakers, Peter B. Meyer and Richard Youngman, who helped us have a much clearer picture of the issues at stake. I would also like to thank our specialists for this rich discussion. Our next public hearing, which will be focused on California, is scheduled for 10 June, and I hope to see you all again at that time.