Low Carbon Societies Network

October 5, 2010 Low-Carbon Scenario Network Seminar Centre for Alternative Technologies (CAT), Wales

This seminar will be a unique opportunity to learn about and to discuss scenarios as well as strategies for a transition to the future low-carbon society to which we need to move. Topics include:

- New scenarios for Germany and France, overview and selected highlights of new scenarios from the Low Carbon Societies Network Project
- How do assumptions of the global development (the global vision) impact the results of the national scenarios? Based on results of research of CIRED, France
- The new Zero Carbon Britain Scenario, an overview and highlights
- How is it possible to compare scenarios elaborated with different models? Based on results of the RECIPE project that shows with three models how to limit greenhouse gases to 450 and 410 ppm
- How fast societies can change? What limits this speed? - in a planned manner or in a crisis/urgency manner
  a. Technical limits
  b. Political limits
  c. Economic limits
  d. Social acceptance of the changes/ behavioural limit
- Further development of the Low Carbon Societies Network. Which activities should get top priority? How do we strengthen cooperation between civil-society organisations and NGOs in this field? How do we build a better European network?

Registration for the seminar, and for the Low-carbon Society Network: See: www.lowcarbon-societies.eu .

The Venue of the event: The Centre for Alternative Technology (CAT) is one of Europe's leading eco-centres based in Wales. CAT receives around 60,000 visitors a year and runs environmental courses ranging from weekend solar PV installation to MSc academic courses from its Graduate School for the Environment. CAT recently published an Alternative Energy Strategy for the UK: Zero Carbon Britain 2030 .

Project Team meeting in June, 2010 in Denmark.

(from left to right): Ruben Bibas, Gunnar Boye Olesen, Jan Burck, Birgitte Knopf, Meike Fink, (down) Sandrine Mathy, Eva Schmid, Judit Szoleczky

Read on Projects' Workshops in Brussels, Frankfurt, and Paris on April 28, May 5 & June 22-23, 2010

This newsletter is published by the *"Low-Carbon Societies Network"* project, financed by the European Commission's 7th Framework Program for Research (FP7). The project's official name is *ENCI-Low-Carb* or *"European Network Engaging Civil Society in Low-Carbon Scenarios"*. The project period is 2009-11.

The aim of the creation of a European network on energy scenarios is to facilitate information flows between Civil Society Organizations (CSOs) and research institutes in Europe about low-carbon energy scenarios and technologies.
We want to establish a lively exchange concerning existing scenarios and examples of best practices already in place today that will be indispensable in meeting the requirements of a low-carbon society.

If you want to join our network, please contact the Project Team.
Alternatively, you can register on the web site, as well as subscribe to this newsletter.

Our Project Team will build ambitious energy scenarios for 2050 for Germany and France. In the process we will meet with stakeholders to build support for the scenarios and to identify measures that might counter negative social and economical impacts.

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Three Paths for a Fossil-Free Future for the EU

Stakeholder Meeting, April 28, 2010, Brussels

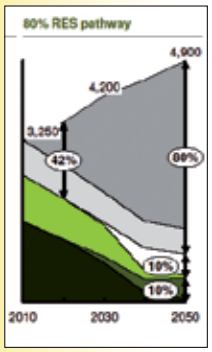
By Meike Fink, RAC-France

As mentioned in the last issue, on April 28th, the Low Carbon Society Network project team organized an EU stakeholders' meeting in Brussels. The aim was to discuss what electricity production could become in a low-carbon future and what kind of grid will be needed for these visions.

Three European scenarios were presented and discussed. They had different visions on the way the grid has to evolve and on the general evolution of the electricity demand.

"Roadmap 2050" - European Climate Foundation (ECF):
This scenario actually describes several scenarios, all with a nearly completely decarbonized electricity sector (95-100%) but with renewable-energy shares ranging from 40 to 100%. The emission reductions of these scenarios eliminate about 80% of CO_2 emissions by 2050.

The overall electricity demand is rising from 3250 TWh in 2010 to 4900 TWh in 2050. To avoid the construction of backup capacities necessary to counterbalance the intermittency of wind and solar electricity production, the scenarios develop in an extreme way the European HVDC transmission lines, primarily in Southern Europe. This stems from the idea that the RES diversity can replace backup capacities. For the 80% renewable energy source (RES) scenarios, transmission lines have to be built between France and Spain for an extra capacity of 45 GW. Today there is a 1GW connection and due to the geographical situation, the development of these lines is expensive and technically difficult.



Power supply development by technology with 80% RES pathway for forecasted power demand, TWh. By ECF.

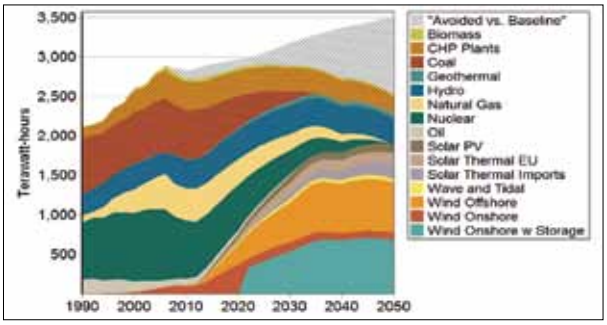
"Transition to Renewable Energy by 2030–2050 in the EU" - INFORSE-Europe This scenario targets a 98% CO_2 reduction by 2050 in Europe.
Efficiency and sufficiency measures reduce the energy demand. An increase in energy efficiency by a factor of four in end-use sectors will be achieved in 2050.

The transport sector will be decarbonized by a transition to electric and hydrogen transport. The electricity demand decreases to 2500 TWh in 2050 and will be nearly 100% renewable.

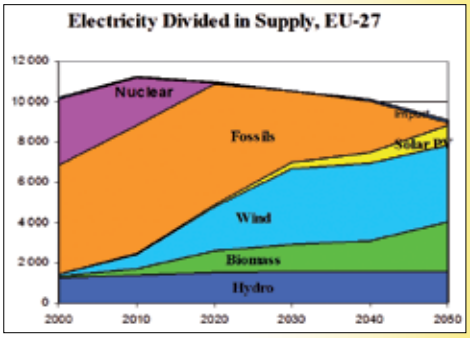
In contrast to the Roadmap 2050 scenarios, fewer additional international transmission lines, if any, need to be constructed. That does not mean that existing lines will be abandoned, but the equilibrium has to be found on a regional level among diversity of energy sources, demand-side management, and storage.

"Europe's Share of the Climate Challenge - Domestic Actions and International obligations to protect the planet", Stockholm Environment Institute (SEI), Friends of the Earth Europe (FoE):
This scenario aims at a GHG reduction of 40% in 2020 and a 90% reduction of the European emissions in 2050 versus 1990 levels. As requested by Friends of the Earth Europe, certain mitigation options were excluded: no nuclear power generation, no carbon capture and storage (CCS), no biofuels, no offsetting.

Electricity demand decreases slowly to 2500 TWh, the level in 2005. The electricity supply is 100% RES, including Desertec. A mix of solutions will counterbalance the intermittency of these energy sources: batteries of electric vehicles will be used as electricity storage on the local level, CAES (compressed air underground storage) using wind energy, demand-side management, geographic balance, and resource diversity. The 100% RES goal will also require a major upgrade of the electric transmission system to link the high renewable potentials in the south and the north.



Switch to Renewables for Electric Generation by SEI and FoE.



INFORSE's scenario for EU electricity supply, PJ.

Open Discussion: What kind of grid do we need for a 100% renewable electricity future in Europe?
Multiple answers are possible, consistent with general visions underlying the energy system: centralized vs. decentralized energy production; development of a high-voltage transmission grid vs. researching the balancing of renewable intermittency on the local level using multiple local solutions. Finding valuable solutions will be easier if the electricity demand does not increase, controlled by efficiency and sufficiency measures.

The basic questions address the future: *how will the electricity demand evolve, and how can demand and supply fit together while reducing emissions as much as possible?* In a highly decarbonized electric world using a high share of intermittent renewables like solar PV and wind energy, the need for non-regulating baseload power plants like nuclear power plants will decrease. All utilities, storage and transmission elements have to be capable of reacting to variations in supply from wind, sun, waves, etc.

What grid do we need for a future with 100% renewable energy? This is not only a technical and economic but also a political question. Should energy production and consumption be organized corresponding to a bottom-up approach (development of competencies at the local and regional level combined with a regulation on the national and European level) or is a top-down approach with development of highly concentrated renewable-energy productions and a super grid more suited to the problem?

The aim of the seminar that we held in Brussels was not to find answers but to open the discussion. This objective was reached but now we have to continue the discussion to find a solution that is consistent with a low-carbon renewable electricity future, respecting the needs and wishes of European citizens!

Local and Regional Energy Scenarios

Workshop, June 22-23, 2010, Paris, France

By Meike Fink, RAC-France

A workshop on local and regional energy scenarios was held on 22-23 June in Paris within the framework of the Low Carbon Society Network project.

This workshop represented the starting point for a longer project that will end in November this year with the specification of guidelines for the elaboration of local and regional energy scenarios for NGOs, research institutes and local authorities.

There are many opportunities for local and regional scenarios, but obstacles must be overcome:

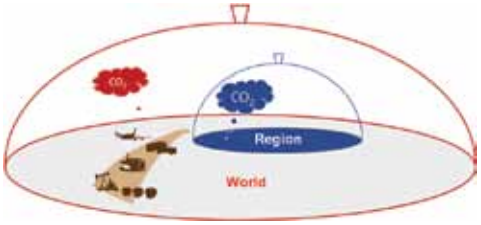
Many cities, like those that have signed the "Covenant of Mayors" initiative from the European Commission, already have fixed emission-reduction objectives.

The problem is that often this objective is not linked with the emission reductions that are achievable with the action plan.

A scenario is missing! Numbers for energy consumption and emission reduction potentials are a beginning, but are incomplete without an overall vision of how the city has to change its shape and how the daily life of citizens will evolve.

Sub-national scenarios have certain advantages and inconveniences:

- Local and regional specificities are known and can be highlighted to find locally adapted solutions.
- Knowledge of the local situation makes it possible to evaluate more precisely the RES potentials as well as the local social, technical and economic barriers.
- Proximity to the local level generates better opportunities to create ownership of the climate and energy strategy among stakeholders and citizens.
- Local data can be difficult to collect.
- Decisions must be made as to which emissions are to be considered. One may choose to count only the emissions of the territory, or the emissions due to the accounting of embedded energy. Emissions of the national average for electricity may be included, or simply the local mix. Many such considerations must be weighed.
- The structure of national emission inventories does not fit with the needs of local authorities; local authorities need emission information relevant to local fields of action (for example public streetlights).
- A city or a region is not an island and will evolve in reaction to national, European and worldwide developments.
- Every city or region is different: the specific composition of emissions has to be analyzed and represented straightforwardly in an emission inventory.
- Local and regional authorities lack the competencies required to act on emissions of each sector.



Territory principle or life cycle assessment: How to frame regional or local emission?

What we have learned during the workshop is that already a wide range of tools exists to help local authorities develop an emission inventory and to monitor their climate and energy policies.

Approximately 300 cities in Germany are already using the inventory tool ECO-region, while hundreds of other cities are using other tools. This variety of tools leads to difficulties in obtaining comparable data on local emissions and on the impact of climate strategies.

Three different sub-national scenarios were presented, developed by 3 different actors:

- "Energy for the future in Nord-Pas de Calais" (France) - association Virage énergie
- "What temperature will we have tomorrow?" - City of Paris
- "Towards a 2°C future - emission reduction scenario for Wales" - Tyndall Centre

The objectives of these scenarios diverged according to the respective specific objectives of the developing organisations.

Virage énergie wanted to show that a reduction of the regional emissions by 4 times by 2050 was possible while maintaining heavy steel industry in the region, coupled with a nuclear phase-out. The scenario was then used to influence the local government.

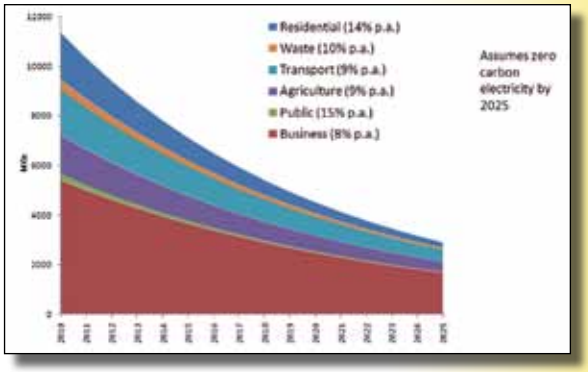
The scenario for Paris does not cover all sectors but is mainly focused on the development of local renewable-energy installations.

A local climate and energy plan was developed for the local government with objectives for the city emissions (-25% by 2020 and -75% by 2050) and even 5%-higher emission reductions (30% by 2020). The equation between the emission-reduction objective and the emission-reduction potential of the different measures in the action plan is not fully established.

The scenario from the Tyndall center analyses what it would mean for Wales in terms of sectoral effort if emissions decreased annually by 3,6 or 9% by 2025. 100% renewables in the electricity sector will also be achieved by 2025.

In the transport sector, for example, the additional effort is only accomplished by a reduction of private vehicle use.

The work on methodologies, best practices and tools for the elaboration of local and regional scenarios will continue. It will also be part of active discussion within our Low Carbon Society Network.



9% p.a. pathway for Wales, scenario by Tyndall center

"What is the Energy Policy of our Future?"

Workshop, May 5, 2010, Frankfurt, Germany

By Jan Burck, Germanwatch, and Brigitte Knopf, PIK

Under this heading, German and European experts from institutes, businesses and civil-societal groups in the field of energy policy gathered at a workshop that was hosted by Germanwatch to discuss the implications of reaching the ambitious goal of reducing greenhouse-gas emissions in Germany by 95 % by 2050.

Turbulent Debate Time in Germany

The workshop took place in a time of very turbulent debate about the transformation of the German energy system.

In 2000, the government of the Social Democrats and the Green Party formulated a consensus with the operating companies about a phase-out of nuclear power by 2023. This was accompanied by a law in 2002 that included a moratorium on building new nuclear power plants.

The government of Christian Democrats and Liberal Democrats that was installed in September 2009, decided to develop a new energy concept for Germany by October 2010, including targets for renewable energies and climate protection. At the same time, they considered withdrawing the law about the nuclear phase-out and to go for an extension of the operating times for nuclear power plants.

This has the effect that the required debate about a sustainable energy system for Germany is now overshadowed by the debate about a possible revision of the decision of the phase-out of nuclear power. The effect was noticeable during the stakeholder workshop.

Discussion to Influence

The expert discussion was part of our *Low Carbon Societies Network project* and the Germanwatch campaign *"100 Per Cent Future"* which is looking at influencing the long-term energy concept to be introduced by the German government in the course of the coming months. The aim of the workshop was to identify possible means of reaching the target of a 95 % reduction, steps that need to be taken immediately, as well as areas of consensus and issues on which consensus is still far from being reached.

Comparison & Assumptions

The focus of the first part of the workshop was a comparison of four energy scenarios that model a low-carbon energy supply in Germany until 2050; these were presented by Jan Burck from Germanwatch.

The four scenarios elaborated by the German Ministry for Environment, the WWF, Greenpeace, and the four major German electricity suppliers, all come to the conclusion that strong emission reductions are possible while still assuring security of energy supplies and keeping costs at a moderate level or even achieving economic benefits. However, switching to renewable-energy technologies must be accompanied by increases in energy efficiency and by a reconstruction of the infrastructure of the power sector. As was pointed out during the discussion afterwards, carbon capture and storage (CCS) could be the only technology available to cut down emissions in some industrial processes and therefore further research on this technology should not be restrained.

The presentation of the comparison was followed by two specific presentations of low-carbon scenarios. One, given by Brigitte Knopf of Low Carbon Societies Project, presented the first results from the REMIND-D Germany model that was developed within this project. The presenter pointed out that there is not just one single scenario but that the model *outcomes crucially depend on assumptions*, such as future fossil-fuel prices or assumptions of storage capacity for CCS.

Measures to Implement

The second part of the workshop focussed more on the political implementation of measures identified in the first part.

In this context, the campaign *"100 Per Cent Future"* was presented and followed by a panel discussion.

According to the panellists, the biggest barriers to 100 % electricity generation from renewable energy in 2050 are the scarcity of specialists across all sectors and issues involved; the reconstruction of the electricity grid; and finding the right balance between extending the grid and increasing storage capacities for electricity. Consensus was reached on the urgency of these measures and on the necessity of re-routing capital flows in the right direction.

Another point that was raised is the enormous importance of increasing energy efficiency. Stimulus policies play an important role in inducing efficiency, primarily in heating and housing. Top-runner systems and stronger guidelines in the mobility sector were discussed as further measures that should be applied to promote efficiency in the industry.

However, participants criticized the fact that the costs of increasing efficiency generally are neglected, even within the scenarios presented in the first part.