



### Transition to Low Carbon Societies: Beyond Trade-off

In 2007, the G8 Heiligendamm Summit discussed the goal of halving global emissions of greenhouse gases by 2050; likewise, the transition towards low-carbon societies was one of the key issues during the Second LCS-RNet Annual Meeting.

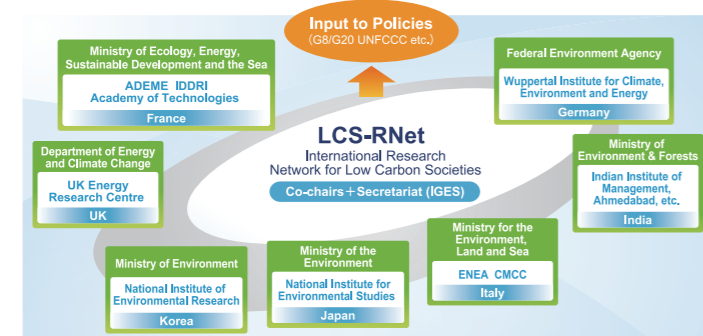
Prof. Paul Ekins (University College London) pointed out the importance of inter-linkage between several goals in the UK. He also mentioned that the transition towards a low-carbon energy system, cost efficiency and increased security and resilience of the energy system are the primary goals of energy policy. Dr. Mark Winskel presented multiple scenarios & trade-offs necessary for a low-carbon resilient society in the UK (UK Energy Research Centre's report, *Energy 2050*), showing that a key trade-off is the speed of reduction in energy demand versus the decarbonisation of energy supply. Mr. Nafees Meah (Department of Energy and Climate Change, UK) clarified that science, technology and innovation are at the heart of the transition to a low-carbon future which requires informed decision-making and innovative new solutions; we need 'synthesis' as well as 'analysis' to achieve the transformational change. These are not things that the DECC can do alone; they can only be achieved through close collaboration with academia, industry and communities.

From France, Prof. Jean-Charles Hourcade and Dr. Frédéric Ghersi (Centre International de Recherche sur l'Environnement et le Développement, CIRED) showed that second best fiscal systems create opportunities to combine massive GHG reductions with efficiency and equity improvements, by surveying LCS policy advocacy to derive a challenging research agenda for the energy-economy-environment modeling community. They insisted on the modeling of second-best economic conditions, where imperfect markets, distortive fiscal systems, the inertia of capital stocks, imperfect anticipations, etc., challenge the conclusions of first-best theory. They presented results from their IMACLIM-R and -S models to highlight the efficiency gains from adapting the policy signal to second best conditions, compared to a theoretically optimal simple GHG-pricing strategy. They also reported about the THREEME model developed by ADEME, a neo-Keynesian disequilibrium model with qualitatively similar results.

From Germany, Mr. Harry Lehmann (German Federal Environment Agency, UBA) presented UBA's most recent report, "Energy Goal for 2050". UBA has succeeded in demonstrating that a 100% renewable electricity system can satisfy total electricity consumption and specific load demands at any time of year. Mr. Lehmann pointed out that clearly defined renewables targets, in addition to binding 2050 mitigation targets, are necessary for this transition.

From Japan, Prof. Masanobu Ishikawa (Kobe University) gave a presentation on a government-funded social empirical research project entitled "Promotion of Dialogue for Policy Making: Case of the Long-term significant reduction in Green House Gases emissions", to develop and propose a forum and public tool in which stakeholders can engage in intense deliberation and dialogue with one another, while consulting with scientists and experts so that the conclusions derived can ultimately be communicated to the public. These conclusions will be implemented in real life, providing a solution for actual social and political needs.

These presentations furthered the transition towards low-carbon societies: issue-linkage and synthetic dialogue between policy makers and researchers have been promoted; economic models can logically go beyond the traditional trade-off between economy and environment; concrete visions (e.g. renewables targets) must be set in addition to measures to create economic incentives (such as a cap and trade system); and stakeholder dialogues have evolved. All of these messages could be described by a single remark by Dr. Derk Loorbach (Dutch Research Institute for Transitions, Erasmus University Rotterdam) "Transitions are inherently ambiguous and uncertain, but also inevitable". This meeting shed light on the transition towards low-carbon society and helped create certain paths towards it.



#### History of LCS-RNet

At their meeting in Kobe in May 2008, G8 Environment Ministers recognised the need for countries to develop their own visions towards low-carbon societies, and supported the establishment of the International Research Network for Low Carbon Societies (LCS-RNet). In the G8 Environment Ministers Meeting (G8EMM) held in Siracusa, Italy, high expectations were placed on the LCS-RNet, and the network was asked to report back its outcomes periodically. Currently this network is composed of 15 research institutes from seven countries.



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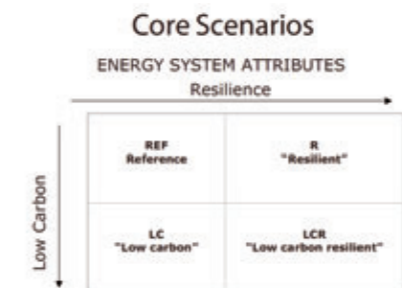
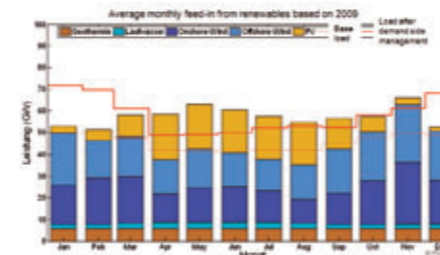
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## Science for Making the Transition towards Low Carbon Societies

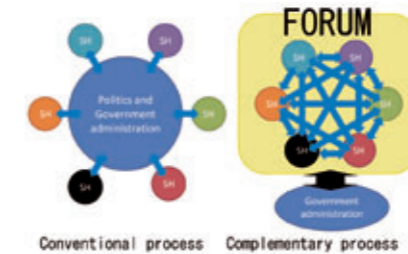
"There are diverse visions and multiple paths towards low-carbon societies."

Dr. Mark Winskel  
(UKERC)



"A 100% Renewable Electricity System is possible."

Mr. Harry Lehmann  
(German Federal Environment Agency)

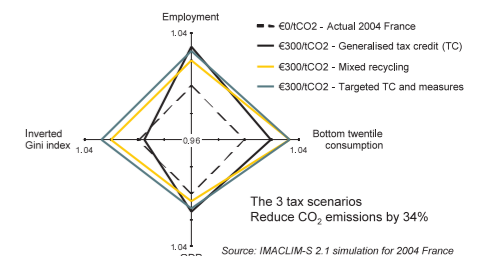


"Decision-making involving multiple social actors has created a negotiation process that favours low-carbon societies."

Prof. Masanobu Ishikawa  
(Kobe University)

"Second best fiscal systems create opportunities to combine massive GHG reductions with efficiency and equity improvements"

Prof. Jean-Charles Hourcade  
(CIRED)



"Transitions are inherently ambiguous and uncertain, but also inevitable."

Dr. Derk Loorbach  
(Dutch Research Institute for Transitions, Erasmus University Rotterdam)

### Second Annual Meeting of LCS-RNet in Berlin



Hosted by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) and the Federal Environment Agency Germany (UBA) with support from the Wuppertal Institute for Climate, Environment and Energy (WI), the Second Annual Meeting of LCS-RNet was held in Berlin, Germany on 20 and 21 September 2010. The themes of the meeting included: national roadmaps on green development for industrialised and developing countries; models of green economies; leapfrogging; sustainable consumption and production; and the role of cities. Key aspects of the synthesis report from this meeting, and features on the "transition to low-carbon societies", are reported in this newsletter.

Further info (e.g. agenda, abstracts, presentations) is available in our website: <http://lcs-rnet.org>

#### Key Findings (see pp.2-3 for details)

- Using the significant progress that has been made in LCS research and policy design, it is time to craft measures for implementation.
- All stakeholders need to be made aware that short-term costs are countered by longer-term benefits.
- Inter-linkages among society's components must be understood in the effort to devise feasible and effective policy.
- Technologies and R&D alone cannot attain LCS.
- Modeling implications and limitations must be correctly understood.
- Multi-level governance in a multi-level world is necessary for promoting LCS.
- International cooperation is central to the LCS transition.
- Mobilising private sector investment in a desirable direction is a key to achieving LCS.
- Civil society participation is crucial to mobilizing acceptance for LCS actions.
- "Science in transition" can forge inter-linkages among issues, and more importantly, can be an agent of change.



## Key Findings from the Synthesis Report of the second annual meeting



### Using the significant progress that has been made in LCS research and policy design, it is time to craft measures for implementation.

Developed countries have devised methodologies, analyzed scenarios, and identified priority areas for policy -- they are already in the implementation stage. Many emerging and developing countries are currently undertaking efforts to establish targets and policy measures, which vary depending on country-specific developmental and geographic factors. In both contexts, sharing knowledge and good practices of policies, institutions, and financial and technical instruments is desired. Supporting the advancement of scientific knowledge is crucial for such efforts.

### All stakeholders need to be made aware that short-term costs are countered by longer-term benefits.

Raising stakeholder awareness about costs and benefits is a prerequisite to gaining their support and participation. This, in turn, requires transparency in policy making and recognition of long-term, non-monetary, welfare benefits. Policy-makers and scientists need to effectively explain the impacts of policies, including costs. However, in explaining such costs, an emphasis should be placed on the trade-off between the short-term pain due to action and the loss of longer-term welfare from zero or inadequate action.

### Inter-linkages among society's components must be understood in the effort to devise feasible and effective policy.

The real world comprises inter-linkages among various factors that cut across different sectors. Some examples are: land use for bio-energy, agriculture and forests; urban design and transport. A conscious effort is required by the scientific and modeling community to understand and explain such inter-linkages. Analysis of these inter-linkages would help to better coordinate top-down visions and policies with bottom-up actions.

### Technologies and R&D alone cannot attain LCS.

The barriers to diffusion of new technologies are embedded in the systems of society, economy and the market. These barriers must be identified and removed in order to make progress. Examples of such barriers are: low awareness of consumers, producers, and policy makers; inertia of existing institutions and infrastructures that inhibit penetration of new technologies; prevalence of mechanisms that incentivize high carbon technologies and lifestyles; and inertia of existing cultures.

### Modeling implications and limitations must be correctly understood.

Short-term economic models would evaluate options based on several simplified assumptions about the behaviour of decision makers and the dynamics of a market. In reality, a multitude of factors – a migratory labour market, particular land use policies, infrastructural inertia, informal economies – affect behaviours and outcomes that may not conform to those predicted by many models. Results of economic models must be interpreted with clear understanding of these limitations.



### Multi-level governance in a multi-level world is necessary for promoting LCS.

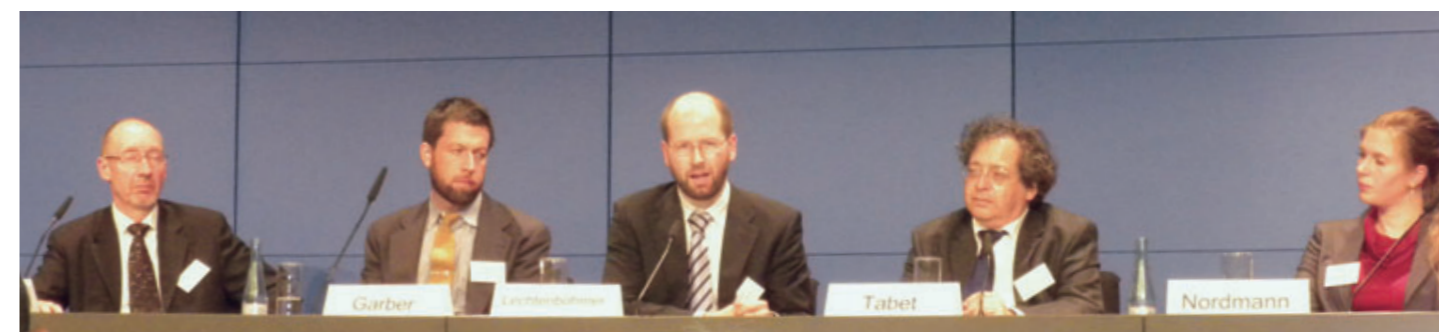
A new role of government is required in a world of multi-level governance, one that is characterized by multiple actors from business, communities and individuals. Stakeholders' participation in the decision-making process, as well as the government's active role as a facilitator and enabler, is crucial for the social acceptance of LCS. This change is exemplified by many cities around the world. Cities are acquiring an important role in promoting LCS, representing experimental sites for designing and implementing innovative policies and programmes.

### International cooperation is central to the LCS transition.

Cooperation among countries is essential for designing tax policies, preventing carbon leakage, accelerating technology R&D and exchange, and reducing pressure on global natural resources. At the same time, international climate policies and frameworks of cooperation must recognize specific domestic goals, for example, challenges for sustainable growth in developing and emerging countries.

### Mobilising private sector investment in a desirable direction is a key to achieving LCS.

Careful examination is required in promoting investment in existing technologies and industries that are expected to undergo rapid transition to achieve LCS. Financing existing technologies may cause future "lock-in". Therefore standard policy instruments may not be sufficient for LCS financing. The inter-dependence of political, economical and societal needs must be taken into account while evaluating investment options. Policy can play a role by linking investments with incentives, building competitive advantage of industries in the areas of energy-efficient and sustainable development based innovations.



### Civil society participation is crucial to mobilizing acceptance for LCS actions.

Civil society organizations are among a country's major stakeholders. They represent domestic development issues such as poverty reduction, sustainable development, local environment and climate change adaptation. They can play constructive roles, forming 'pressure groups' to mobilise mass awareness, acting as 'participants' in the target-setting process, in the designing and implementation of low-carbon projects, and as 'watchdogs'. These roles for civil society organizations need to be mainstreamed in international and domestic climate policies.

### "Science in transition" can forge inter-linkages among issues, and more importantly, can be an agent of change.

In promoting transformative change, the inter-linkages among inherently complex issues must be clearly explained by scientists. Scientists have the responsibility to fill in the gaps that exist between policies, knowledge, and actors. In such a global transition, there must be mechanisms that use our wisdom to turn risks into opportunities. Timely delivery of knowledge that is needed by policymakers and reaching out to the target audience and helping them to understand risk management during a complex, but necessary, transition are crucially important roles of science.