



Research profile from LCS-RNet member Stefan Lechtenböhmer, Wuppertal Institute for Climate, Environment and Energy, Germany Transition Scenarios for a Sustainable Low-Carbon Society

Since its foundation in 1991 the Wuppertal Institute has been working on visions for a sustainable low-carbon society. Today the Institute's four research groups all contribute to different facets of this issue.

As early as 1990, the Enquete Commission "Protecting the Earth" of the German Parliament found that an 80% reduction in greenhouse gas emission by 2050 was necessary for Germany to comply with the ultimate objective of the UN Framework Convention on Climate Change. Based on this visionary target the Wuppertal Institute has conducted several long-term scenario analyses for the German energy system which all showed the feasibility of the objective if energy use was able to become much more efficient by 2050 so that the energy demand could be met by an increasing amount by Combined Heat and Power (CHP) and energies from renewable sources. These scenarios formed a basis for the current long-term energy strategy which is annually updated by the German Federal Ministry for the Environment. Recently, long- and mid- term energy scenarios have been elaborated on behalf of WWF for the EU27, on behalf of a coalition of NGOs for the Czech Republic and together with the Iranian Energy Association for Iran.

Sustainable low-carbon societies have to be created at all levels, from the international via national to the local level. Scenario analyses also provide strategic guidance for the policy of cities and municipalities, for example, a city like Munich would be able to cut its CO2 emissions by up to 90% by mid-century. This is the result of a study conducted together with Siemens "Sustainable Urban Infrastructure: Munich – Pathways towards a Carbon-Free Future". The study shows that transforming a city into a virtually carbon-free urban settlement is indeed a major challenge – but one that can be mastered if achieving this aim becomes top priority for all stakeholders including decision-makers, representatives from utilities, urban planners and, particularly, investors and residents as well. How this common transition process can be managed successfully is the topic of numerous other research activities of the Wuppertal Institute.



Indian Institutes have joined LCS-RNet

LCS-RNet was born under the process of G8 Environment Ministers' Meeting. In addition to research institutes in G8 countries, the National Institute of Environmental Research (NIER, Republic of Korea) is also a member of the network. In February 2010, five Indian research institutes joined LCS-RNet. The Research Contact Point is Prof. P.R Shukla of the Indian Institute of Management, Ahmedabad. He has developed low-carbon scenarios for India as a whole and also one of the cities in India where his research institute is located, Ahmedabad. The results of the studies have already been introduced at the first annual meeting of LCS-RNet in Bologna and also at a side-event in COP15 in Copenhagen. They clarified the importance of back-casting for scenario making to realise the transition towards low-carbon societies and also outline opportunities of later-comer advantages by altering policies and actions that align stakeholder choices that deliver multiple co-benefits while avoiding lock-ins witnessed elsewhere.

The other four institutes are the Indian Council of Agricultural Research (Contact point: Prof P.K. Aggarwal), Indian Institute of Technology/Delhi (Prof. A.K. Gosain), Indian Institute of Technology/Bombay (Prof. K. Narayanan) and Indian Institute of Tropical Meteorology (Dr K. Krishnakumar) .

Their participation to LCS-RNet is very much welcomed.

Research Institutions in LCS-RNet

France	Academy of Technologies	Korea	National Institute of Environmental Research (NIER)
	French Environment and Energy Management Agency (ADEME)		UK
	Institute for Sustainable Development and International Relations (IDDRI)	Germany	Wuppertal Institute for Climate, Environment and Energy
Italy	Euro Mediterranean Centre for Climate Change (CMCC)	India	Indian Institute of Management, Ahmedabad
	Fondazione Eni Enrico Mattei (FEEM)		Indian Institute of Technology/Delhi
	Italian National Agency for New Technologies Energy and the Environment (ENEA)		Indian Institute of Technology/Bombay
Japan	Institute for Global Environmental Strategies (IGES)		Indian Institute of Tropical Meteorology
	National Institute for Environmental Studies (NIES)		Indian Council of Agricultural Research (ICAR)

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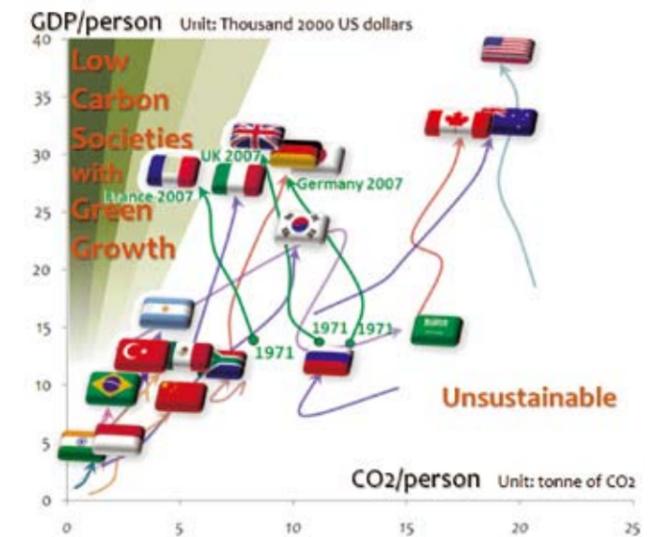
Research Topics Focused in LCS-RNet: How Can You Utilise Our Outcomes?

To move towards low-carbon societies (LCSs), we need to orchestrate diverse scientific and policy information and knowledge in an interdisciplinary manner. Designing long-term scenarios towards LCSs, and drawing roadmaps on when to develop and deploy technologies, and implementing policies to support them are necessary for all countries. For these efforts, it is also important for all countries to learn from each other to share experiences and knowledge. The evaluation methods for policy packages such as introducing carbon price to internalise external cost and tightening regulations are necessary for all countries. Cities are the proper units to materialise low-carbon societies and are thus worth analysing on this level. It is also very useful for policies and research to consider opportunities for developing countries to achieve leapfrogging toward LCSs without taking the same path of unsustainable energy use as developed countries. There is also the question of what the effective technology transfer mechanisms and cooperation are between north-south and south-south countries. In addition, we face the challenge to alter lifestyles and behaviours in the face of this great transformation which would modify the foundation of the industrial revolution. Researchers gathered in Bologna in October 2009¹ and, through the dialogue with policy-makers, expressed their will to take up the challenge of these research topics.

¹ 1st Annual Meeting of the LCS-RNet. See the following link for further information and a synthesis report of the meeting.
http://lcs-rnet.org/meetings/2009/07/1st_annual_meeting.html



Which Countries are heading towards Green Growth Paths?



Original Data: IEA (2009) CO2 Emissions from Fuel Combustion - Highlights

The figure above shows that some countries (e.g. France, UK, Germany) are heading towards the paths with lower carbon intensity (i.e. CO2/GDP).

Announcement: The 2nd Annual Meeting of LCS-RNet in Berlin, 20-21 September 2010

How to overcome the wall? Multilevel interaction toward achieving a Low Carbon Society

The Copenhagen Accord clearly demonstrates that policy-makers make ever-stronger references to scientific guidance for emission limits in our societies. Such guidance is also required for exploring the ways to overcome the "wall separating the present and the future" as German Chancellor, Angela Merkel put it. This is a challenge that needs a clear focus on how to transform our current fossil fuel based society into a sustainable one over the next 40 years, with science to serve an important role.

To provide adequate guidance, science has to develop concrete advice on suitable policies and strategies, necessary technology development, economic instruments and chances as well as advice on the way to induce social processes and behavioural changes at all levels of our societies, from international via national to local levels. The local level can be viewed as an experimental ground for developing models of a future sustainable society which does overcome the fossil based model.

Such guidance and advice lead to a widened perception of the role of science as it is constitutional to LCS-RNet. The transition to a sustainable society deserves a "transformed" "science for sustainable development" (Agenda 21, Chapter 35, UNCED in Rio de Janeiro in 1992). Such a "science for sustainability" is devoted to the dialogue with stakeholders in society and policy, as well as providing guidance on the core issues which might not yet have been assessed sufficiently in pure scientific terms, but on which we now have to undoubtedly act. This is the challenge that is at the core of the mission of the LCS-RNet's second annual conference on 20-21 September 2010 in Berlin.

History of LCS-RNet

At the G8 Environment Ministers' Meeting in Kobe in May 2008, the Government of Japan proposed an international network for the research on low-carbon societies as one of the Kobe Initiatives, and the proposal was supported by the participating ministers. The establishment of LCS-RNet was welcomed at the G8 Environment Ministers' Meeting held in Syracuse, Italy, in April 2009.

LCS-RNet **Its achievement, visions and actions for the future**

On 3-5 April 2009 in Trieste, at the High Level Forum of Low Carbon Technologies that was held under the process for the G8 Environment Ministers' Meeting (G8EMM), LCS-RNet (International Research Network for Low Carbon Societies) was officially launched, and since then its Secretariat has been diligently working over the last fourteen months.

In the Chair's Summary of G8 Siracusa Environment Ministerial Meeting, high expectations were placed on LCS-RNet, noting "The G8 Ministers and senior officials supported the innovative nature of the International Research Network for Low Carbon Societies [...] and requested the LCS-RNet to report back its outcomes periodically".

In the run up to the first annual meeting, teleconferences were held four times by the Interim Steering Group of LCS-RNet to discuss and decide overall strategies, the agenda of the meeting and organisational operations. The annual meeting was held on 12-13 October 2009 in Bologna, Italy, supported by the Ministry for the Environment, Land and Sea, Italy and attended by about sixty policy-makers and researchers. The planning and effective management of this meeting was provided by Euro Mediterranean Centre for Climate Change (CMCC) as the host of the meeting. The policy-makers and researchers spent two days enthusiastically discussing and clarifying common issues to be tackled for low-carbon societies. The directions of organisational operations were discussed and the Steering Group of the LCS-RNet was officially launched.

The outcomes of the meeting were summarised into the Synthesis Report by the Steering Group and the Secretariat, and presented at side-events at the UNFCCC's Ad hoc Working Group (AWG) meeting in Barcelona in November 2009 and at the Conference of Parties (COP15) / Meeting of Parties (MOP5) in December 2009.

The progress made during COP15 in Copenhagen to involve all countries and to foster cooperation amongst developed and developing countries indicate that the importance to disseminate low-carbon society research to developing countries is as important as ever. With this in mind, a dialogue between policy-makers and researchers on sustainable low-carbon development and green growth was held in February 2010, in Bogor, Indonesia. The dialogue was co-organised by the Ministry of the Environment, Republic of Indonesia and the Institute for Global Environmental Strategies (IGES) in which the LCS-RNet Secretariat is situated. Bogor Agricultural University and Bandung Institute of Technology, together with the LCS-RNet Secretariat worked closely to prepare the meeting. The dialogue was also attended by researchers from neighbouring countries and discussions explored areas and topics of low-carbon society research that can be a basis for the policy developments including the planning of Nationally Appropriate Mitigation Actions (NAMAs). The participants from neighbouring countries proposed to the Secretariat that they would hold similar dialogues in their own countries.

In each developed county, there has been progress made on the implementation stage to build low-carbon society. Thus, it is very important to consider the views of all stakeholders, not only the government, in designing and conducting research. The LCS-RNet Secretariat held the stakeholders dialogue in Yokohama, Japan with participants from sectors such as business, municipalities, engineering, venture capital, developing and retailing. The Secretariat also published a leaflet for the general public which explains about low-carbon society. The Secretariat also has been collecting information on LCS policy-making and research to consider the global trends of LCS research, which supplies helpful references to policy-makers and researchers.

The second LCS-RNet annual meeting will be held on 20-21 September 2010 in Berlin, Germany hosted by the Federal Environment Agency of Germany and the Wuppertal Institute for Climate, Environment and Energy, which has developed the agenda of the meeting that covers scenarios and roadmaps, green growth for developed and developing countries and issues of cities.

The Secretariat has four members: Dr. Shuzo Nishioka, Secretary General supported by Kyoko Miwa, Wataru Machida and the most recent member Takako Wakiyama. Negotiations at the UNFCCC do not always progress rapidly, but at the same time, industrialised countries are working towards low-carbon societies, and many developing countries have set their green growth strategies as a core policy of their development strategies and put much effort in maintaining a stable climate to ensure sustainable development. LCS-RNet will continue to operate as a common platform in the research community to support the LCS policies of these countries.

COP15 Side-event: Low-Carbon Asia: Visions and Actions 16 December 2009 IGES, NIES & JCCCA

This session presented visions for sustainable low-carbon development in Asia, and discussed how domestic actions and international institutions including market-based mechanisms and research networks can help realise this goal. The LCS-RNet reported its establishment and the output of its activities.



Sustainable and Low-Carbon Development in Indonesia and Asia: Dialogues between Policy-makers and Scientists on Green Growth 16-17 February 2010, Bogor, Indonesia

The two-day meeting was held in Bogor, Indonesia, co-organised by the Ministry of the Environment, Republic of Indonesia, and IGES. On the first day, a dialogue was held to familiarise researchers with current trends in LCS policies and acquaint policy-makers with what research community can offer as the scientific input in the policy-making process. Key findings of the dialogue were synthesised in a report with six headings: Low Carbon Development and Green Growth; Collaboration between Policy- and Research Communities; Focus Area for Promoting Low-Carbon Development; Technologies as Fundamental Element in Green Growth; Mobilisation of Available Financing Schemes; and Life-style Innovation for Sustainable Low-carbon Development.



Overcoming Barriers to Low-Carbon Societies: Stakeholder Dialogue in Yokohama, Japan 15 March 2010

The objective of this dialogue was to learn about efforts towards a transition to low-carbon societies that are currently being undertaken by various sectors and stakeholders, and to identify barriers and consider solutions that policy measures and research require to bring about low-carbon societies.



Annual Report: Low Carbon Society Research 2010 March 2010

This annual report covers the global trends of research for establishment of low-carbon societies, focusing on the following five issues: 1) Progress in the integration between policy and research for establishing low-carbon societies, 2) Approaches and issues of low-carbon society research, 3) Orchestration of the research: research promotion through domestic/international cooperation, 4) Added-value of the international research network and 5) Future direction of low-carbon society research.



Kick-off meeting in Trieste, Italy 1-2 April 2009

This meeting was held under the auspice of the Italian G8 Presidency through the Ministry for the Environment, Land, and Sea. Participants at this meeting acknowledged the importance of collaboration in taking forward LCS research at the interface between science and technology, society and policy. Researchers also identified important research themes and approaches for LCS. Interdisciplinary perspectives on the transition to LCS and integration of environment, energy, economic and social systems were also highlighted. The Meeting also stressed the importance of the dissemination of knowledge and building awareness outside of the scientific community.

1st Annual Meeting in Bologna, Italy 12-13 October 2010

Organised by the Euro Mediterranean Centre for Climate Change (CMCC), 22 presenters exhibited their research findings, ideas, views, analysis and strategies toward low-carbon societies over five scientific sessions: LCS and the Policy Context, Green Growth and LCS, LCS National Pathways and the Research Environment, LCS and Technology Innovation, and LCS and Behavioral Change. After the meeting, a Synthesis Report was produced as its output.

(Available at: http://lcs-rnet.org/meetings/2009/07/1st_annual_meeting.html)



COP15 Side-event: Research Community Shows Pathway towards Low-Carbon Society 16 December 2009

After reviewing key findings of LCS-RNet's inaugural meeting in Bologna, speakers presented various cases on the related topics that include LCS modelling studies and low-carbon policies in their home countries, and an active discussion followed.

