EVENT PROGRAM

3:00 pm – 3:15 pm

Welcoming Remarks:

THE RENEWABLE READINESS PLAN AND THE ROLE OF RENEWABLE ENERGY IN WATER AND FOOD SECURITY IN MENA

Dr. Rabi Mohtar, Dean and Professor, Faculty of Agriculture and Food Sciences, AUB

3:15 pm – 3:55 pm

ENVIRONMENTAL PLANNING FOR THE ENERGY TRANSITION IN GERMANY 2050

Prof. Christina von Haaren, Chair of the Institute for Environmental Planning at Leibniz Universität Hannover, Germany

3:55 pm – 4:10 pm

RENEWABLE ENERGY BASED MICRO-GRIDS as Transitional and Sustainable Options for Lebanon

Dr. Riad Chedid, Professor, Department of Electrical and Computer Engineering, AUB

4:10 pm – 4:25 pm

RENEWABLE ENERGY AND SUSTAINABILITY CONSIDERATIONS FOR LEBANON

Dr. Hassan Harajli, Lecturer, Department of Economics, AUB

4:25 pm – 4:35 pm

STRATEGIES FOR AN ENERGY TRANSITION IN LEBANON

Dr. Nirza Fabiola Castro Gonzales, Lecturer, Energy Studies Program, AUB

4:35 pm – 5:00 pm

Q&A

5:00 pm

RECEPTION

3:15 pm – 3:55 pm

ENVIRONMENTAL PLANNING FOR THE ENERGY TRANSITION IN GERMANY 2050

The transition to energy supply from renewables is one of the central challenges of the 21st century. It is a major component of any strategy for achieving the goals of the Paris climate protection agreement. However, energy transition must not be realized at the expense of other sustainability goals. A sustainable reorganization of the energy supply system should therefore be balanced and made compatible with nature and landscape protection and take into account other human demands.

The aim of the study "Naturally compatible energy supply from 100% renewable energies 2050 (EE100)" was to investigate whether and how the goals of the energy transition could be combined with those of nature conservation. Included was also the protection of the people from noise pollution and from impairments to the quality of the landscape. Furthermore, an information base and modeling tool for a nature-friendly design of the energy transition process should be created.

METHODOLOGY

In the study three scenarios or snapshots of 2050 have been projected, that allow a look into the future. Naturally, these snapshots are subject to uncertainties - but they clarify what is possible and point out possible options for action. All three scenarios could be labeled as extreme scenarios, taking as a starting point an efficient use of the scarce space in Germany and a very consequent protection of nature and humans against possible impairments by wind turbines, photovoltaic or energy crops. In Germany the area is claimed by many interests at the same time and is thus taken as the limiting factor in the exploration of the energy transition process. The ambitious assumptions serve as a reference and guideline for the direction, which political action should take. Furthermore, realistic additional options for energy generation or saving have not yet been included in order to be able to maintain a reserve that enables flexible development.

The scenarios differ in terms of the assumed RE technology. It was explored whether the high protection demands could be reconciled with a successful energy transition in 2050. The challenges of this process are manifested in the overlapping of the land-based calculated energy generation potential with the areas that are important for the protection of humans and nature.

The scenarios contain the following assumptions: The total energy demand in 2050 was calculated under ambitious assumptions concerning technical development and their use. Changes in behavioral or consumption patterns in electricity consumption are only indirectly taken into account. For the protection of humans and nature from noise emitted by the wind turbines and for protecting beautiful landscapes safety distances between vulnerable areas and wind turbines are implemented in the model. Productive agricultural area is spared for food production. In residential areas, photovoltaic systems are implemented on all reasonably usable roofs (according to exposure and inclination). The outdoor area is initially only used for wind power generation.

CHRISTINA VON HAAREN

RESULTS

The project has shown for Germany that energy supply can be secured sustainably, without the use of fossil fuels in Germany and without breaching the requirements of protecting nature and human needs. As a result of the comparison of sustainable generation and demand, it becomes clear in the scenarios which scenario assumptions lead to a potential energy supply gap or to an energy surplus. The potential for generating electricity that can be activated in a nature and landscape friendly way, with already existing and foreseeable technology, is sufficient to meet the estimated demand in 2050, for both electricity and remaining fuel demands. This target can also be met by taking into account transmission and conversion losses during electricity storage - albeit under the condition of ambitious reductions of energy demand until 2050. In 2050, the area used for wind power plants in the scenarios is only about 0.5% of Germany's land area. Excluded from energy production will be around 355.8 tsd. km². Finally, it has been demonstrated, that the established energy generation paths and instruments are not yet sufficient to meet the challenges of such a human and nature-friendly energy supply. Energy transition requires ambitious political frameworks for the planning of the energy system and rapid implementation of energy technology innovations.

Prof. Dr. Christina von Haaren has been a full-time professor for landscape planning and nature conservation at the Institute of Environmental Planning, Leibniz University Hanover Germany since 1998. She has worked on projects about supporting planning using IT and on ways how to model biodiversity on agricultural land in order to engage land users in environmentally sound practices.

Her work also focuses since more than decade on renewable energies in particular their spatial allocation. C.v. Haaren was member and Vice Chair of the German Advisory Council on the Environment from 2000 to 2008. She has been Dean of the Faculty from 2010 to 2013. At present, she is working i.a. on research projects about nature compatible Renewable Energy supply for Germany in 2050, uncertainty in planning and ecosystem services in decision processes.

RIAD CHEDID

Dr. Riad B. Chedid is a university professor, an administrator and an energy specialist. He received his PhD degree in electrical engineering in 1992 from Imperial College, University of London. Upon graduation, Dr. Chedid joined the American University of Beirut (AUB) as a professor of electrical engineering and since then he has been active in teaching and research in the areas of electromagnetism, renewable energy, and energy systems modeling and planning. Professor Chedid carried out, for more than 10 years, numerous consulting activities in the area of energy and climate change for international agencies such as UNDP, ESCWA and UNFCCC. In 2002, he was appointed a member of the Board of Directors of the Lebanese Electric Utility (EDL) and in 2007, he was nominated as advisor to the Minister of Energy and Water in Lebanon. In 2008, professor Chedid was appointed President of Fahd Bin Sultan University in Saudi Arabia, and in 2010, he was selected to lead a team of around 60 experts for developing the American University of Abu Dhabi, UAE. During 2013-2017, Professor Chedid was appointed President of Rafik Hariri University in Lebanon. Professor Chedid published more than 80 publications in energy related topics in refereed journals and international conferences.

3:55 pm – 4:10 pm

RENEWABLE ENERGY BASED MICRO-GRIDS AS TRANSITIONAL AND SUSTAINABLE OPTIONS FOR LEBANON

Lebanon electricity crisis continues to escalate. Rationing hours still apply across the country but with different rates. To mitigate this situation, private diesel generators distributed without licenses all over the country are being used to bridge the gap in power supply. These generators together with their private networks form incomplete and ill-designed and managed micro-grids (MG) but can be further developed to become renewable energy-based MG operating in island- or grid-connected modes. This presentation will analyze the potential of introducing MG to help resolve the energy crisis in Lebanon both as a transitional and a long term solutions. It will investigate the usefulness of developing MG under the prevailing situation of existing private power supply service providers and in light of the developed national energy policy that supports renewable energy development. Policy recommendations regarding MG development in Lebanon will be presented on the basis of the accumulated experience in private generation and the privatization and public-private partnership laws.

HASSAN HARAJLI

4:10 pm – 4:25 pm

RENEWABLE ENERGY AND SUSTAINABILITY CONSIDERATIONS FOR LEBANON

Dr. Harajli will be discussing the latest information on Lebanon's renewable energy sector, such as:

- Wind power plans: current wind power location
- Solar power plans: current and projected solar power locations
- Processes of Environmental Impact Assessment and its role in landscape protection (and other environmental protection objectives)
- Overview of the Strategic Environmental Assessment on RE (study undertaken by UNDP in 2014)

Hassan Harajli is the manager of the UNDP-CEDRO project and UNDP Energy Advisor since 2009. He is a holder of a PhD from the University of Bath in renewable energy policy and economics, an MSc from Imperial College in Environmental Technology (focus on environmental economics) and double undergraduate degrees from the American University of Beirut and the London School of Economics in Political Science and Environmental Policy with Economics, respectively. He has several peer-reviewed publications and several years of experience in environment-related consultancy. Mr. Harajli also lectures, part-time, at the American University of Beirut (AUB) in energy economics and policy and environmental economics.

4:25 pm – 4:35 pm

STRATEGIES FOR AN ENERGY TRANSITION IN LEBANON

Developing as well as developed countries should work for the same worldwide environmental goal to reduce greenhouse gas (GHG) emissions immediately. Although Lebanon is a small country with only six million habitants, its CO2 emissions from cars have serious negative impacts to the health of the people as well as to the nature and environment.

A strategy to reduce the CO2 emissions could be the efficient use of energy and the development of more sustainable energy like replacing oil by gas and renewables. Lebanon has a huge potential for renewables like solar energy as well hydro and the use of biomass, but the development of renewables in Lebanon requires a more strategic approach and suitable solutions. In a first step the economic, environmental, social and technical obstacles for a more efficient energy use, environmental awareness and education, the promotion of renewables, and learning from international experiences, among others, need to be identified. Hence, the research question is: Under which conditions CO2 emissions in Lebanon can be reduced and the gradual process of an energy transition in the country can be initiated?

The paper is organized as follows: It starts with the presentation of the current GHG emissions from conventional energy and its impacts on Lebanon. In the second section the state of the art of renewable energy in Lebanon is discussed. The third section addresses the obstacles for the development of renewables in Lebanon and takes into consideration environmental, economic and social criteria. Finally, the paper will conclude with some closing remarks and recommendations.

Meaningful strategies like learning from experiencies on energy transitions in Germany, Sweden, California, among others, but also from the few successful projects in Lebanon have to be developed for a successful energy transition in the Mediterranean country. The energy transition in Lebanon requires the strong participation and environmental awarenes of people at all level.

NIRZA FABIOLA CASTRO GONZÁLES

Nirza Fabiola Castro Gonzáles is a lecturer for energy studies in the Department of Mechanical Engineering at the American University of Beirut. She earned her Ph.D. at Leibniz University of Hannover, Germany, at the Institute of Environmental Planning.

Her specialization is on renewable energy, particularly in developing countries. The dissertation was on the subject of “Potential of Jatropha curcas cultivation for a sustainable production of biodiesel in Bolivia”. During her dissertation, Dr. Castro was twice a Visiting Researcher at Harvard University in fall 2014 and summer 2015. She earned a Master’s degree at the Institute for Geotechnique and Infrastructure at the Leibniz University of Hannover. She wrote her Master thesis on the topic "Design and Dimensioning of Foundations for Off-Shore Wind Parks in Consideration of Cyclic Load". Dr. Castro earned her BA at the Technical University of Oruro, Bolivia, in civil engineering.