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DIPARTIMENTO DI ENERGIA



Enel Foundation
Energy for Knowledge



MILANO 2015
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UNIVERSITIES
FOR EXPO 2015
SCIENTIFIC COMMITTEE
CITY OF MILAN



ENERGY AND THE INTEGRATED MANAGEMENT OF RESOURCES: SYSTEM THINKING FOR TECHNICIANS AND POLICY MAKERS

25TH JUNE 2015

VENUE: EU PAVILION, EXPO MILANO 2015

Organisers: Department of Energy, Politecnico di Milano

Reference: Prof. Fabio Inzoli, Head of Department of Energy

Co-organiser: Enel Foundation, Edison

Partnerships: Universities of the EXPO Steering committee (Unimi, Bocconi)

Around a seventh of the world's population – the so called 'bottom billion' – does not have a secure, affordable food supply and has only limited access to clean water and sanitation, in addition to a lack of access to modern energy. In the perspective of an integrated approach to efficient management of resources, energy, water, food, land and climate are closely linked one to the other. The Bonn 2011 Conference, and the UN Rio+20 summit, provided evidence that improved water, energy and food security can be achieved through an integrated approach. Further research and new best practices are needed to better understand the interrelationships between natural resources and local needs, such as the energy balance of different biofuels, or the use of solar energy for increasing water resources through seawater desalination, or the sometimes competitive use of water to produce energy or crops. Natural resources share some common elements: their access is not granted to millions of people; their needs are growing; they are under constraint at a global level; they have different availability at regional level; their exploitation impacts environmental preservation; their management often operates in a regulated market; their supply has implications on global security.

Moreover, each one of the single resource affects the others, and therefore ignoring this inter-dependency could lead to policies or technological solutions with unfulfilling sustainability requirements. The need for an **integrated planning approach** is getting more and more urgent, especially if one wishes to implement solutions or policies that can be effective in promoting both equitable and sustainable exploitation and/or management of different natural resources with a high degree of efficiency. Despite this general consensus:

- Governmental structures tend to adopt separated policies still today: different ministries are usually responsible for each resource, thus decisions by one ministry can conflict with the objectives of others;
- Planning strategies and technology design procedures do not include an integrated vision: technicians and engineers are often expert in one single area and do not have enough system thinking to foresee the long term and cross-cutting implications of some scenarios.

The conference will serve as a high level platform for discussing on the integrated approach to global resource management and will address two main interlinked topics:

- **Which policies** are needed to support a new paradigm for resource integration?
- **Which technologies** may fit within an integrated and efficient approach and how can we design them?

The conference is organized in two participative sessions following a session for setting the scene and aims at producing a set of recommendations for further research activities and networking on the subject.

AGENDA:

13:30 - 14:00 REGISTRATION

14:00 - 14:30 OPENING REMARKS

Giovanni Federigo De Santi, Director of Institute for Energy and Transport – JRC, European Commission
Mariano Morazzo, Enel Foundation
Fabio Inzoli, Head of Department of Energy, Politecnico di Milano

14:30 - 15:45 SETTING THE SCENE

Vincent Kitio, United Nations Human Settlements Program, UN-Habitat
Marco Baroni, International Energy Agency
Lucilla Minelli, World Water Assessment Program UNESCO
Salvatore Vinci, International Renewable Energy Agency

15:45 - 17:00 SESSION I: ENABLING STRATEGIES AND INTEGRATED POLICIES FOR SUPPORTING RESOURCE INTEGRATION

Chairman:

Romain Murenzi, Director TWAS

Panelists:

Carlo Giupponi, Università Ca' Foscari Venezia
Ignacio Pérez-Arriaga, Massachusetts Institute of Technology and Universidad Pontificia Comillas Madrid
Edoardo Croci, Iefe Bocconi University
Cristina Rulli, Politecnico di Milano

17:00 - 17:15 PROVOCATIVE SPEECH: A PRACTICAL EXAMPLE OF RESOURCE INTEGRATION ON FIELD

James Abraham Somi and **Lilian George Mollel**, Ngarenanyuki Secondary School, Arusha, Tanzania

17:15 - 18:30 SESSION II: TECHNOLOGIES AND DESIGN METHODOLOGIES FOR SUPPORTING INTEGRATED STRATEGIES

Chairman:

Emanuela Colombo, UNESCO Chair in Energy for Sustainable Development, Politecnico di Milano

Panelists:

Antonella Santilli, Enel Green Power
Alberto Piatti, eni
Roberto Venafro, Edison
Eric Maucort, EDF
Salvatore D'Angelo, Global Water Team, GEO 6 –UNEP
Bert De Colvenaer, Fuel Cell and Hydrogen Joint Undertaking

18:30 - 18:45 MAIN ACHIEVEMENTS FROM THE TWO SESSIONS BY THE TWO CHAIRMEN

18:45 - 19:15 A PERSPECTIVE FROM AND FOR AFRICA

Crispus Kiamba, University of Nairobi, Ministry of Science and Technology of Kenya
David Otieno, Africa-EU Energy Partnership

Moderator:

Fabio Inzoli, Head of Department of Energy, Politecnico di Milano

19:15 SOCIAL EVENT

Light cocktail on the terrace of the European Pavilion