



**The Abdus Salam  
International Centre for Theoretical Physics**



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**Joint ICTP-IAEA Workshop on Uncovering Sustainable Development  
CLEWS; Modelling Climate, Land-use, Energy and Water (CLEW)  
Interactions**

*30 May - 3 June, 2011*

**Uncovering Sustainable Development CLEWS:  
Modelling Climate, Land-use, Energy and Water (CLEW) Interactions**

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# **Joint ICTP-IAEA Workshop on Uncovering Sustainable Development CLEWS: Modelling Climate, Land-use, Energy and Water (CLEW) Interactions**

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**IAEA: M Howells, M Nguyen, B Newman**

**Trieste – Italy, 30 May 2011 – 3 June 2011**



# The imperative of a CLEW framework

Water, energy and food are required for survival and development but they are also integrated. A framework is thus needed to aid:

- Decision making - transparently evaluate the trade-offs reflected in different options.
- Policy assessments - provide a more complete, multi-system policy assessment.
- Facilitating policy harmonization and integration - help harmonize potentially conflicting policies.
- Technology assessments - allow a more inclusive assessment of technological options.
- Scenario development - elaborate consistent scenarios of possible socio-economic development trajectories
- Identifying synergies - considering the multiple benefits of each option will yield better estimates of the overall development potential of each.





The IAEA moves to address resource conflicts under a joint initiative

## PROVIDING “CLEWS”


### CLIMATE, LAND-USE, ENERGY AND WATER STRATEGIES

“In our work we had previously looked over issues related to other resources and focused simply on energy. When concern over biofuels arose, we began to see energy, food, and water conflicts start to enter into the equation,” notes Hans-Holger Rogner, Head of the IAEA’s Planning and Economic Studies Section after consultations with colleagues in other departments. “We realized that a different modelling approach may be needed. We could employ models for energy planning methodologies and integrate them with other resource planning, such as those for water and land, to get a bigger picture of how use of one resource impacts another.”

The systems approach: A simplified scheme of some climate, land, energy and water interactions

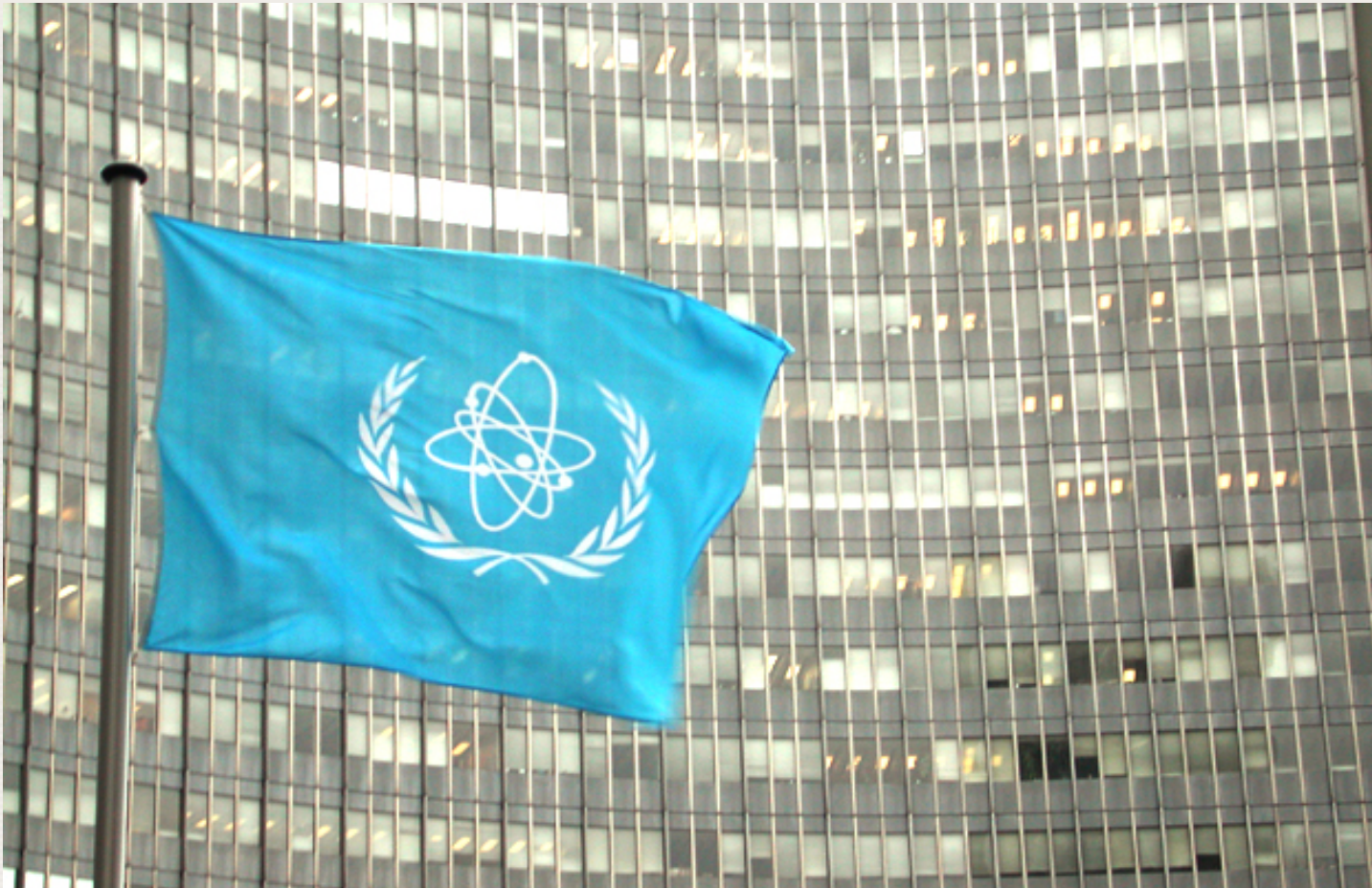


At the heart of the new IAEA approach is the system. At various points in the system there is a nexus between elements of the climate as well as land, energy and water. Communities desperately depend on all of these. But, planning and resource management activities often occur in separate and disconnected institutional entities or models. These can be contradictory, expensive and cause tensions – especially where resources are scarce. For communities who live in a world with finite resources and growing demands - finding cost effective, integrated, sustainable strategies is an urgent need.

 **IAEA**  
International Atomic Energy Agency

A JOINT IAEA INITIATIVE OF: THE DEPARTMENT OF NUCLEAR SCIENCES AND APPLICATIONS' (NSA)'S ISOTOPE HYDROLOGY, THE JOINT RADIATION DIVISION'S (NSA/R)'S SOIL, WATER AND CROP NUTRITION AND WATER MANAGEMENT, AND THE DEPARTMENT OF NUCLEAR ENERGY'S (NS/E) ENERGY PLANNING.

# IAEA



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