Climate Change and Sustainable Development

Presentazione del Programma di Ricerca

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CAMBIAMENTI CLIMATICI E SVILUPPO SOSTENIBILE: Overview

Se la presentazione raggiunge il suo scopo dovrebbe ispirare almeno uno dei seguenti pensieri:

-questo è quello che faccio!

-su questo tema vorrei/potrei contribuire

-ci sono interazioni interessanti tra questo tema e la ricerca che faccio

-c'è una connessione da esplorare tra temi apparentemente lontani che non è stata ancora messa in evidenza

L'attività relativa a questo programma prevede di:

- consolidare lo sviluppo delle principali aree di forza per mantenere il vantaggio competitivo
- rafforzare l'attività nelle aree di studio:
  - modelli di valutazione integrata (energia-economia-clima) per l'analisi delle politiche;
  - cambiamenti tecnologici endogeni e innovazione;
  - valutazione economica degli impatti del cambiamento climatico;
  - indicatori di sostenibilità
- estendere l'obiettivo della ricerca a temi di crescente importanza, tra cui:
  - l'impatto socio-economico delle tecnologie che consentono di assorbire CO2 dall'atmosfera;
  - finanza e iniziative di mitigazione e adattamento ai cambiamenti climatici;
  - negoziazioni sul clima: ruolo delle istituzioni e potenziale delle azioni di mitigazione locale

AREE DI RICERCA CHIAVE	Singole attività di ricerca	***Principali Progetti in corso***
Climate change integrated assessment modelling	▪ Mitigation technologies for climate stabilisation ▪ Towards a more comprehensive integrated assessment of climate impacts and policies ▪ Impacts and Adaptation ▪ The role of uncertainty for mitigation and adaptation	EU FP7: Climate Cost, AMPERE, PASHMINA, Global IQ, CIRCA, PURGE, LIMITS ERC Grant: ICARUS MIUR: CMCC
Climate change policy	▪ Economic analysis of climate policy and governance ▪ Climate and finance	EU FP7: LIMITS
Climate-related innovation and technological change	▪ Empirical work: Patents, diffusion models ▪ Electronic prediction markets on energy technologies ▪ Expert elicitations ▪ Modeling technological change	EU FP7: PASHMINA ERC Grant: ICARUS Others: ClimTech
Natural hazards and climate-related extreme events		EU FP7: EPI-WATER, CATALYST DG ENV: Water Scarcity and Droughts IWRM-net: WATER2ADAPT DG ECHO: PREEMPT
Management of natural resources	▪ Water management ▪ Forestry land use and land use cover, agriculture and food	EU FP7: Global IQ, EPI-WATER IWRM-NET:WATER2ADAPT,
Sustainability and growth beyond GDP	▪ Sustainability Indicators ▪ Local sustainability	EU FP6: SUS.DIV EU FP7: IN-STREAM, LIAISE, PASHMINA, Global IQ, LIMITS

Climate change integrated assessment modelling

1. Mitigation technologies for climate stabilisation

Negative emissions technologies

Transportation

The role of international trade

2. Towards a more comprehensive integrated assessment of climate impacts and policies

Full coupling of the two FEEM modelling tools with a global circulation model developed within the Euro Mediterranean Center for Climate Change (CMCC).

Full coupling with a forestry-land use model developed

3. Impacts and Adaptation

Impacts on fisheries, due to environmental migration, on forest net primary productivity, and on human health

Mimic adaptation investments in foreign countries

4. The role of uncertainty for mitigation and adaptation

Uncertain effectiveness of R&D

Approximate Dynamic Programing

EU FP7: Climate Cost, AMPERE, PASHMINA, Global IQ, CIRCA, PURGE, LIMITS

ERC Grant: ICARUS

MIUR: CMCC

Climate change policy

1. Economic analysis of climate policy and governance

   Analyse credible policies for a positive outcome of the climate negotiation process

2. Climate and finance

   What are the financial implications of these deep changes?

   What is the amount of resources that has to be mobilised to finance Research and Development (R&D) in new technologies?

   What role can revenues from carbon taxes or emission permit auctions play to support the transition to a low-carbon world?

   What can we learn from traditional finance?

EU FP7: LIMITS

Climate-related innovation and technological change

1. Empirical work: Patents, diffusion models

   Private versus public R&D /general purpose versus energy R&D;

   Impact of environmental policy instruments

   IPRs on the diffusion and transfer technologies

   International and inter-sectoral innovation spillovers

   Role of education and that of uncertainty on innovation and technology diffusion.

2. Electronic prediction markets on energy technologies

   Set up the first Electronic Prediction Market for energy technologies.

3. Expert elicitations of the future of energy technologies

   CCS, bioenergy

4. Modeling technological change

EU FP7: PASHMINA

ERC Grant: ICARUS

Others: ClimTech

Natural hazards and climate-related extreme events

Policy applied research to inform European efforts to reduce Disaster Risk and adapt to changing climate

1. Analysis of risk drivers and vulnerability,
2. Development of practical methods for impact and integrated risk assessment,
3. Climate-proof assessment of disaster risk reduction programmes,
4. Capacity building and networking

EU FP7: EPI-WATER, CATALYST,
DG ENV: Water Scarcity and Droughts
IWRM-net: WATER2ADAPT
DG ECHO: PREEMPT

Management of natural resources

1. Water management

   Role of decision support systems (DSS) in pursuing integrated - transdisciplinary- approaches, a principle now deemed necessary to drive the integration of sectoral and national policies for a sustainable use of natural resources.

2. Forestry land use and land use cover, agriculture and food
3. Biodiversity and Ecosystem services

IWRM-NET:WATER2ADAPT,

EU FP7: Global IQ

Sustainability and growth beyond GDP

1. Sustainability Indicators
2. Local sustainability

EU FP7: IN-STREAM, LIAISE, PASHMINA, Global IQ, LIMITS

Collaborazioni Internazionali

- Collaborazione con istituzioni di vertice sia a livello internazionale (MIT, Princeton University, Columbia University, Harvard University, Yale University, Stanford University), sia nei paesi emergenti di maggior interesse e impatto (Cina)

- Partecipazione a : IPCC, Energy Modeling Forum, Asian Modeling Exercise (Latina America next), Integrated Assessment Modeling Consortium

Comunicare la Ricerca

- Attualmente 20 WP all'anno
- Circa 1/3 diventano pubblicazioni