

Interdisciplinarity and Energy



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The Spirit of Enterprise.

Unsustainable patterns of production & consumption

Facts:

- Energy is at the core of every major economic, environmental, security and developmental challenge we face
- Current levels of access to energy services and patterns of energy use are unsustainable
- Fundamental changes in the way societies produce and consume are essential for achieving global sustainable development

Unsustainable patterns of production & consumption

Answer:

Re-link economic growth and environmental impact in energy
production and consumption

- ! Technologies to address energy access and energy efficiency already exist → issue of *technology transfer and diffusion*

Resource sustainability

Four steps:

- Cleaner production processes
- Continued reuse and recycling
- Shifting to renewable sources of energy
- Changing the emphasis from selling products to supplying services

Source: UNIDO

Accelerate Energy R&D

Key challenges:

- To identify technologies needed to address (primarily) climate change and energy access
- To monitor developments, especially best policies and practices
- To recommend new areas for government support

Multidisciplinary challenge = Multidisciplinary response

Facts & Figures

R&D is the driving force behind innovation yet...

- share of global public R&D on energy = 0,02% of global GDP per annum
- half in nuclear energy –rest shared by energy conservation/efficiency, renewables
- R&D on energy access virtually non-existent
- falling trend over the last two decades –across both public and private sectors

Re-focus R&D

Away from new technologies and products, into...

- *policy-oriented* R&D
- the *economics* of energy production and consumption
- *finance/risk*: innovation in the financial system to develop creative financing of energy solutions
- *social research*, to understand patterns of consumer energy demand and use and acceptance of new technologies
- *technology* transfer & diffusion → capacity building/'tech lock-in'
- *global focus* yet adapted to *local conditions*