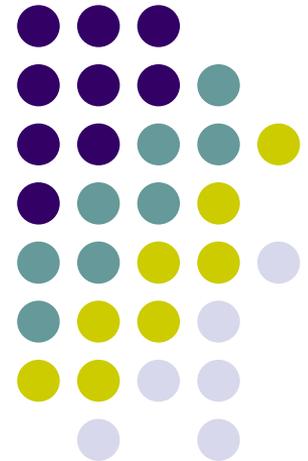


# An economist's point of view

## Fostering Collaboration for Successful Eco-Innovation

Matthieu Glachant, professor at MINES ParisTech

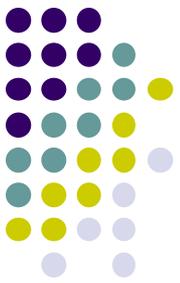




# My point of view

- An academic point of view
  - Tend to underestimate practical obstacles
- A focus on the international dimension
  - We have developed an economic research program “Technology and Climate Change”

<http://www.cerna.ensmp.fr/technology-and-climate-change>



# A short reminder

- Eco-innovation is innovation
  - We need not to reinvent everything
- (Eco-)innovation is a process  
Invention → Innovation → Diffusion
- Diffusion is an essential stage
  - The stage where innovation has an impact
  - The stage where actors derive profits from innovation, which in turn provide incentives to innovate in the first place



# 1 Technology diffusion

The example of the Chinese photovoltaic industry

- A success story:
    - More than 1/3 of world production of cells and modules, almost entirely exported to industrialized countries
  - How did they acquire the technologies?
    - Patent licensing? International trade? Foreign Direct Investments?
  - De la Tour et al. (2011) emphasizes the role of
    - An international competitive market of manufacturing equipment
    - High absorptive capacities because existing skills in semi-conductors
    - No (positive or negative) impacts of Intellectual Property Rights
- A market driven diffusion



# Competition and tech diffusion

- Most green innovations have substitutes
  - Different from pharmaceutical drugs
- Competition lower prices, thereby easing access to new technologies
- The role of governments
  1. Creating a (predictable) demand
  2. Removing barriers to international trade
  3. Removing barriers to Foreign Direct Investments
  4. Improving absorptive capacities (education and training)
  5. Facilitating standardization where necessary (electric vehicles, smart-grids)
  6. Improving patent systems
- Public – private collaboration, useful for 4 and 5



## 2 Innovation

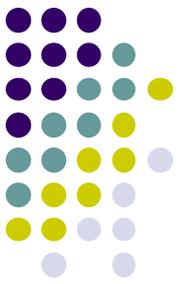
- The role of the private sector is key
  - Only 5-15% of the green patents are filed by public organizations
- Although public policies is what makes eco-innovation specific
  - Not directly profitable without public policies
- Innovation entails
  - High fixed costs
  - Knowledge spillovers (imitation)
  - Risky
- Public – private partnership in R&D and innovation project mitigates these difficulties
  - Ex: many pilot projects of Carbon Capture and Storage

# The need to coordinate « green growth » policies



- Environmental policies to achieve economic policy goals
- Example
  - Subsidizing the deployment of PV panels in order to establish technological leadership of domestic firms, thereby improving the country competitiveness
- Problem: In a globalised world, you also help foreign competitors

# Ex: Subsidisation of wind turbines on innovation



- The impact of 1 million USD spent in new turbines on domestic and foreign inventors
  - Source: Dechezlepretre and Glachant, 2011

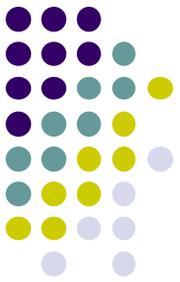
Effect of 1 million USD	Nb of patented inventions induced
At home	0.03 invention
Abroad	0.03 invention
Global	0.06 invention

- Economic globalization requires to coordinate environmental policies
  - Otherwise, protectionnism or domestic env'l policies could collapse



# Conclusion

- Diffusion is a crucial stage and public – private partnership can help in:
  - Standardization, where necessary
  - Improving technology absorptive capacities through education and training
- Innovation requires a major implication of the public sector
  - Ex: Many public – private CCS pilot projects
- Economic globalisation requires to coordinate green growth policies
  - Because cross country policy spillovers



THANK YOU

See the web page of the « Technology and Climate Change »  
research program

<http://www.cerna.ensmp.fr/technology-and-climate-change>