UNITED NATIONS UNIVERSITY

UNU-WIDER

World Institute for Development Economics Research

Sustainability & Development

Opportunities and Tensions

Tony Addison

DFG/UNU Conference:

'Measuring Sustainable Development: How Can Science Contribute to Realizing the SDGs?'

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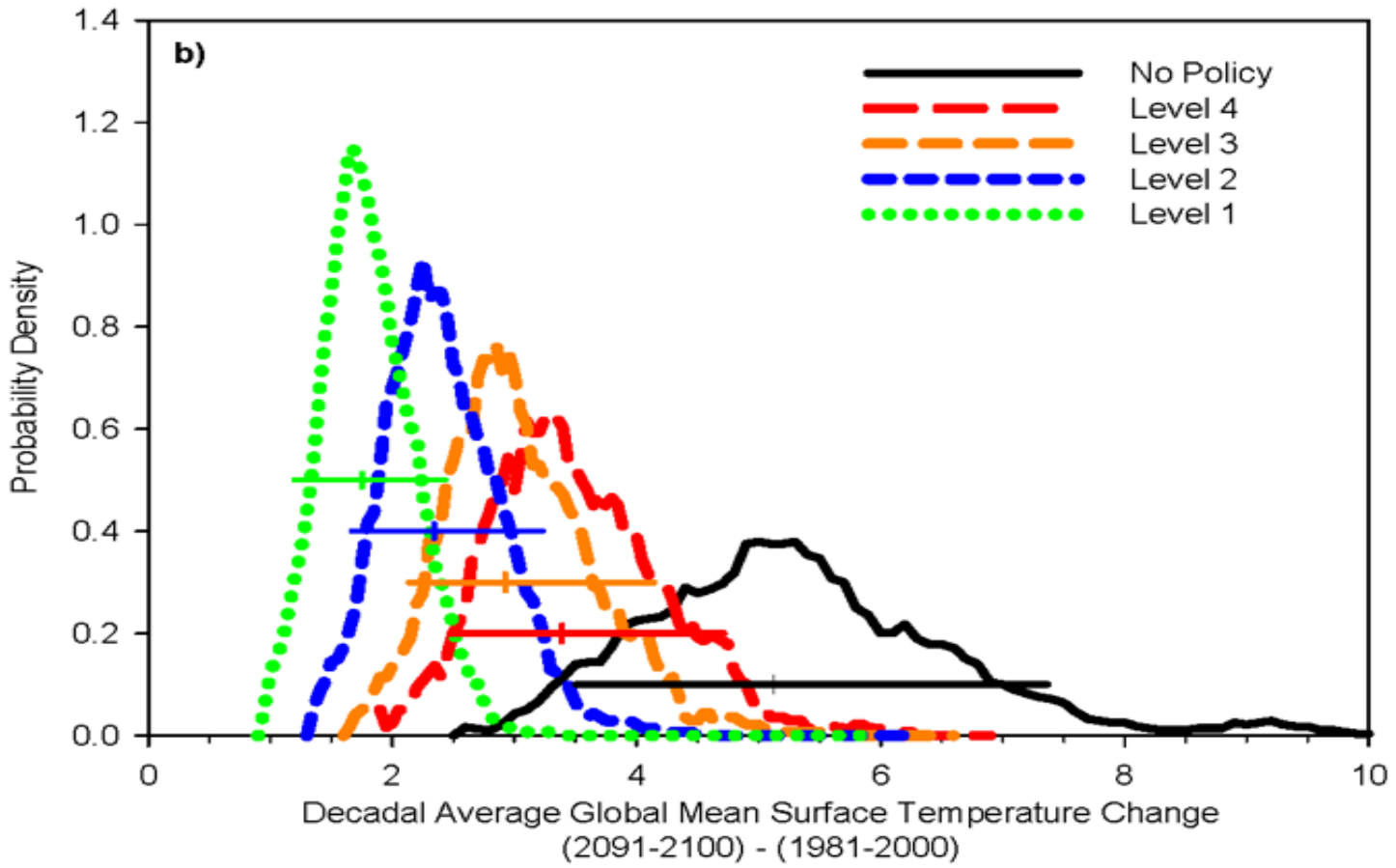
Introduction

- Development: structural transformation of the economy to yield higher living standards
- Especially for the poor
- Cannot achieve this if we destroy 'natural capital' (or the planet)
- Sustainable development: transformation in ways that protect & secure the natural environment
- Climate change adds huge **uncertainties** – making development choices by national actors more difficult

Shifting means and variation

Change in global average surface temperature



Source: MIT Joint Program Report #180
Webster et al. (2010)

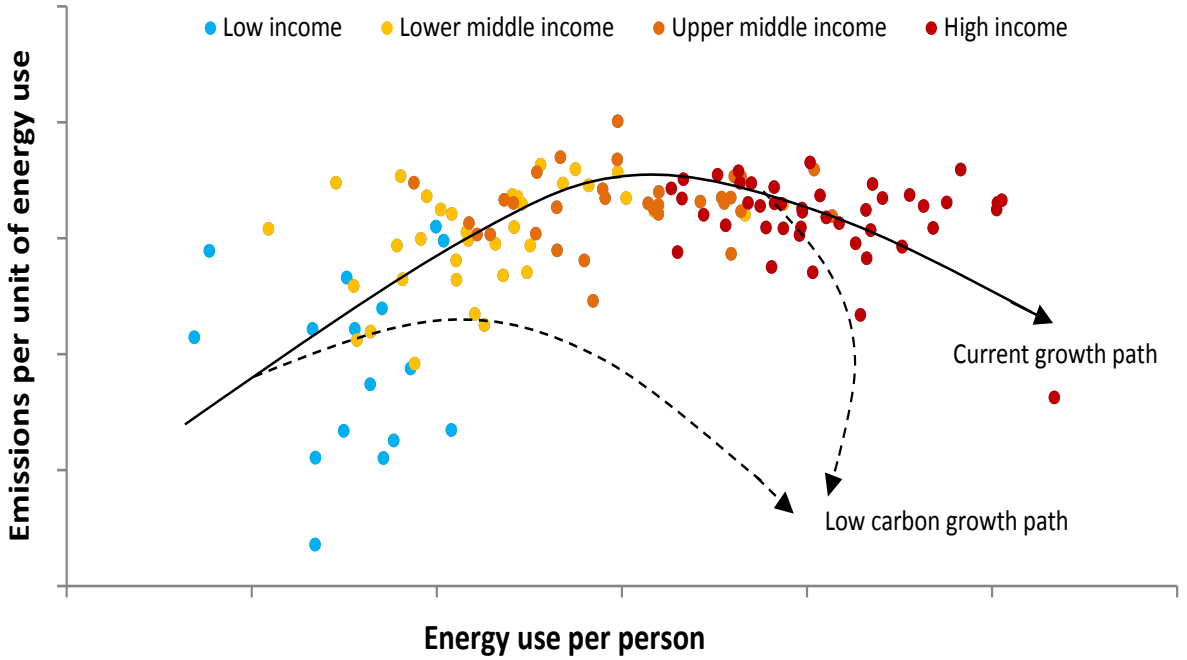
Three basic questions/topics

- What does “low-carbon” mean for development?
- How should we approach new “green technologies” in developing countries?
- What does green growth mean for existing development objectives?

1. Low carbon development

Finding a new growth path

- Economic development means that global energy use will definitely rise
- A key emphasis must be on clean energy options for low-income countries



Source: WIDER "Green Growth in Development" (Davies et al., 2011) Note: Energy Use and Emissions are deviations from mean logged values.

1. Low carbon development
Challenges

- We are asking developing countries…
  - To use cleaner energy early in their industrialisation process
    - BUT this has expensive start-up and opportunity costs
  - To rely on imported technology
    - BUT this raises cost of operations and maintenance
    - Countries have to generate the foreign exchange to pay for this and/or aid & other finance has to cover it
  - Not to use natural resources such as coal
  - Not to pursue some of their comparative advantages
  - Introduce carbon taxes: these have distributional (& political) impacts

Adjustment: Southern Africa examples

	Current strategy	Green Growth strategy	Short-term costs	Losers
South Africa	Invest in coal-fired electricity to support heavy industries	Shift to renewable energy sources	Higher electricity prices Job losses in mining and heavy industries	Poor consumers Unionized workers Mining and metals industries
Malawi	Promote agricultural intensification based on fertilizer input subsidies	Shift to conservation farming, organic fertilizers, micro-dosing, and inter-cropping	Falling production while smallholders change farming behaviors Loss of handouts to rural voters	Politicians Private suppliers of fertilizer Poor smallholders who cannot adapt
Mozambique	Agricultural extensification based on cultivation of feedstock crops for biofuels.	Reduce land clearing by either shifting towards plantation-based production or promote smallholder agricultural intensification	Fewer rural employment opportunities	Poor rural farmers

2. Green technologies

New opportunities

- Green technologies are already supporting development efforts in many low-income countries

- There is scope to scale-up cost saving green technologies in ways that complement development

2. Green technologies

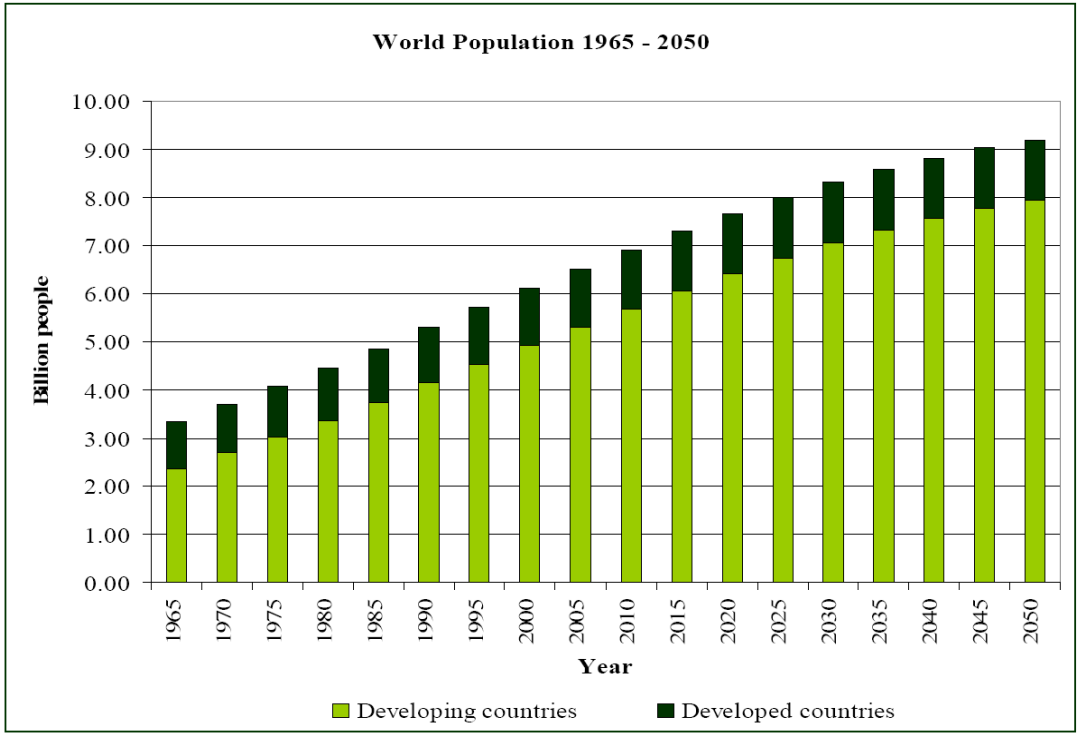
Way forward

- Need to engage the private sector to limit public sector costs & promote local industries and employment
- Fostering local innovation will be key: how?
- Foreign aid/climate finance role:
  - Compensate countries for not using their own natural resources
  - Facilitate knowledge transfer when helping finance clean energy investments

3. Trade-offs with development

Food security

- Food security is a major goal for developing country governments
- Population growth and urbanization are increasing food demand
- Agricultural production must double by 2050 to feed the world
- BUT agriculture generates a third of global emissions



Source: UN-DESA (2007)

3. Trade-offs with development

Food security vs. Green Growth

Food security strategy	Advantages for food security	Disadvantages for Green Growth
Using **fertilizers** to enhance soil fertility	Raises crop yields (e.g., "Green Revolution".)	Accounts for a third of agriculture's GHG emissions
Using **irrigation** to manage water resources	Doubles crop yield relative to rain-fed agriculture.	Worsens water scarcity if water is used beyond replenishment.
Promote **high-value exports** (e.g. horticultural and floricultural products)	Higher incomes for smallholder farmers.	Requires refrigeration and irrigation, and produces large emissions when exported to developed countries by plane.

3. Trade-offs with development

Achieving food security without compromising Green Growth

- We can try to address these trade-offs through technology and incentive-based mechanisms
- But these often just create additional trade-offs…
- E.g., Genetically Modified crops (GMOs) may reduce the need for pesticides and irrigation, BUT…
  - They may limit developing countries' sovereignty over their seed stocks
  - Developing countries may lack bio-safety legislation and regulation capacity

Conclusions

- Finding greener growth paths for LICs is essential: to continue poverty reduction
- Green growth requires us to rethink traditional development economics.
- LICs will not adopt green strategies if political cost is too high
- There is a strong case for international assistance to innovate & help adjustment

Our future?