Climate Change and Green Economy: Law As Driver of Change and Engine of Sustainability

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STRUCTURE OF PRESENTATION

- Climate Change
- Green Economy
- The Role of Law
- Challenges facing Law
- Conclusion

Evolutionary Perspective

Years Ago	
• 4000 million	The earliest forms of living organisms, single celled bacteria, were in existence.
• 2800 million	Micro-organisms capable of photosynthesis were in existence.
• 600 – 700 million	Multicellular organisms came into being.
• 400 million	The colonization of land by plants and animals began.
• 250 million	The most severe of the mass extinctions in the history of life (more than 90 percent of all species wiped out).
• 160 million	The emergence of the first flowering plants.
• 65 million	A mass extinction bringing an end to many forms of life; including all the dinosaurs and flying reptiles.
• 60 – 1 million	Great diversification among birds, mammals and flowering plants.
• 1 million	*Homo erectus* in existence.
• 180 000	*Homo sapiens* in existence.

The Four Ecological Phases

- *Phase 1*
  The hunter-gatherer phase (180,000 years);
- *Phase 2*
  The early farming phase (10,000 – 12,000 years ago);
- *Phase 3*
  The early urban phase (9,000 years ago);
- *Phase 4*
  The high consumption phase (about 200 years ago – ushered in by industrial revolution)

Climate Change - Definition

"…a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods".

- UNFCCC Definition.

"Greenhouse gases are accumulating in Earth's atmosphere as a result of human activities, causing surface air temperatures and subsurface ocean temperatures to rise."

Climate Change V. Global Warming

- *Global warming* is an overall warming of the planet, based on average temperature over the entire surface;

- *Climate change* is changes in regional climate characteristics, including temperature, humidity, rainfall, wind and severe weather events.

Which Are The Greenhouse Gases (GHGs?)

- Global warming is thought to be linked to the emission of the following GHGs among others:
  - *Carbon monoxide and carbon dioxide:* power stations, industrial processes and transportation;
  - *Nitrous oxide:* livestock production;
  - *Methane:* decomposition of organic wastes in landfills, herds of cattles;
  - *Chlorofluorocarbons (CFCs):* aerosol sprays, solvents, refrigerants, freezers; air conditioners;
  - *Sulphur – dioxide:* burning fossil fuels that contain sulphurs.

Consequences of Climate Change

- Climate change is predicted to lead to a variety of negative effects including:

  (i) Melting (and possible disappearance) of glaciers and mountain snow caps that feeds the world's rivers and supply a large portion of the fresh water used for drinking and irrigation;

  (ii) A rise in sea levels with many islands and coastal areas more exposed to storm damage (coastal flooding);

  (iii) Increasingly costly "*bad weather*" events such as heat waves, droughts, floods and severe storms;

Consequences of Climate Change…

(iv) Lowered agricultural productivity due to less favourable weather conditions, less available irrigation water, increased heat stress to plants, and an increase in pest activities due to warmer temperatures (food security – as much as 50% yield decline by 2020 in some African countries);

(v) Increases in vector-borne diseases like malaria;

(vi) Large numbers of extinction of higher-level species and social dislocation due to their inability to adapt to rapidly changing climate and habitat conditions.

The Serious Concerns

- Developing nations are more vulnerable and at risk in meeting the challenges of climate change for reasons of "*funding*", "*lack of technology*", "*poverty*" *and* "*population pressures*"

- No more than one or few decades remain before the chance to avert the threats that we now confront will be lost and the prospects for humanity immeasurably diminished.
  - (Union of Concerned Scientists).

Adaptation And Mitigation

- There are two responses to global climate change:
  (i) *Mitigation* - intervention or policies to reduce the emissions or enhance the sinks of greenhouse gases;

  (ii) *Adaptation* - response to the changing climate (e.g. acclimatization in humans) and policies to minimize the predicted impacts of climate change (e.g. building better coastal defences).

- While mitigation primarily involve reduction in the concentration of GHGs either by reducing their sources or increasing their sinks, adaptation involves acting to minimize the effects of global warming;

- Mitigation policy helps reduce future increases in climate change while adaptation policy deals with the unavoidable impacts of climate change

Adaptation And Mitigation…

Sector	Key Mitigation Technologies available now	Key Mitigation Technologies projected to be commercialized by 2030
Energy Supply	Efficiency; fuel switching; nuclear power; renewable energy (hydropower, solar, wind, geothermal and bio-energy); combined heat and power; early applications of CO2 capture and storage (CCS)	CCS or gas, biomass and coal-fired electricity generating facilities; advanced nuclear power; advanced renewable energy (tidal and waves energy, concentrating solar, solar and solar PV).
Transportation	More fuel efficient vehicles; hybrid vehicles; bio-fuels; modal shifts from road transport to rail and public transport systems; cycling; walking; land-use planning.	Second generation bio-fuels; higher efficiency aircraft; advanced electric and hybrid vehicles with more powerful and reliable batteries.
Buildings	Efficient lighting and daylighting, more efficient electrical appliances and heating and cooling devices.	Integrated design of commercial buildings using intelligent meters, Solar integrated buildings.

Adaptation And Mitigation…

Sector	Adaptation Option	Underlying Policy /Legal Framework	Constraints and Opportunities to Implementation
Water	Expanded rainwater harvesting; water storage and conservation techniques; water re-use; desalination; water-use and irrigation efficiency.	National water policies and integrated water resources management; water related hazards management.	Constraints: Financial, human resources and physical barriers; Opportunities: integrated water resources management; synergies with other sectors.
Agriculture	Adjustment of planting dates and crop variety; crop relocation; improved land management e.g. erosion control and soil protection through tree planting.	R & D policies; institutional reform; land tenure and land reform; training; capacity building; crop insurance; financial incentives e.g. subsidies and tax credits.	Constraints: Technological and financial constraints; access to new varieties; markets; Opportunities: longer growing season in higher latitudes; revenues from 'new' products.

What Is A Green Economy

"A Green economy is one that results in human well-being and social equity, while significantly reducing environmental risks and ecological scarcities" - UNEP 2011.

(i) Economy that is low in carbon emission and pollution;

(ii) Enhanced energy and resource efficiency;

(iii) Socially inclusive (prevent the loss of biodiversity and ecosystem services).

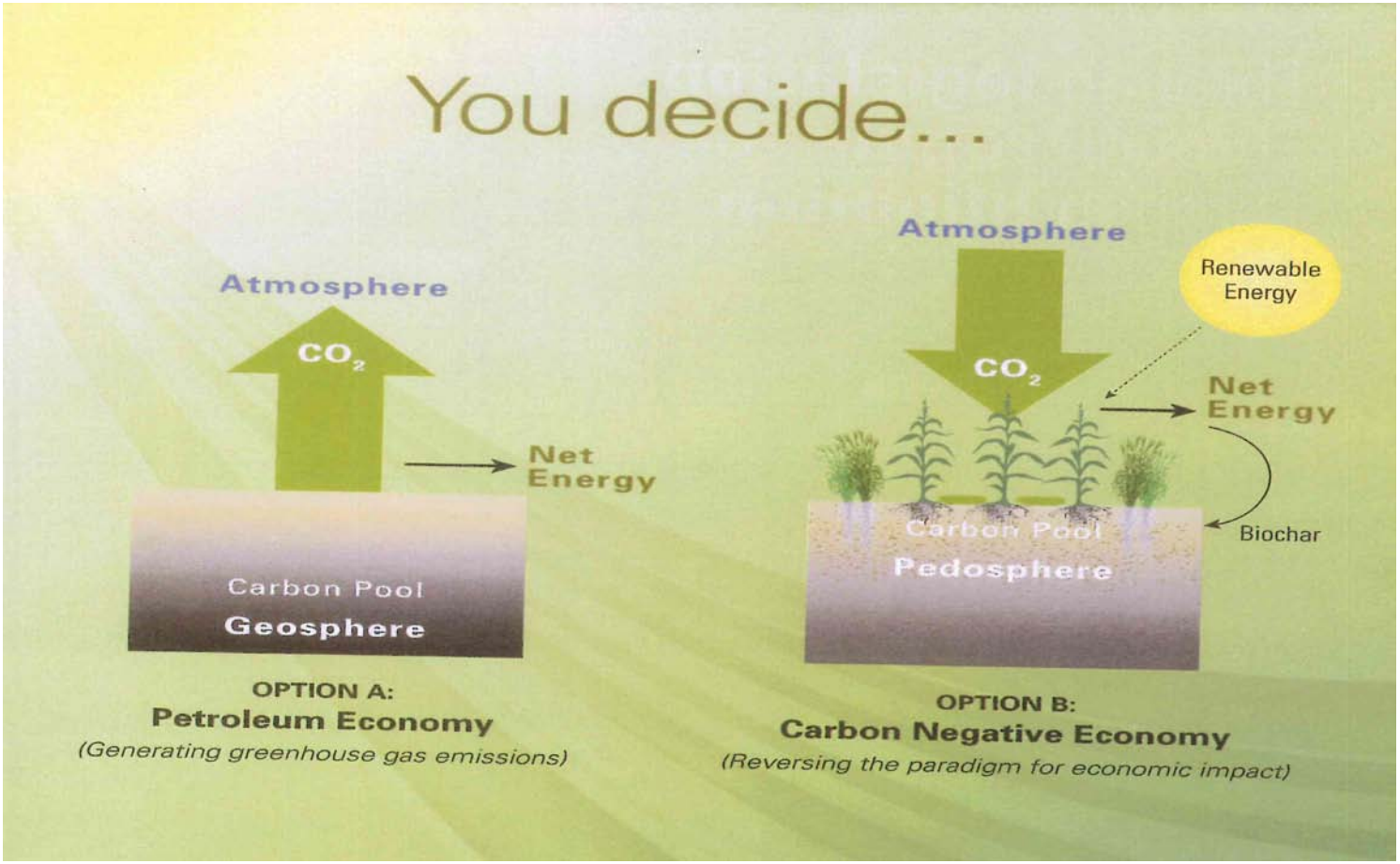
Decades of Wealth Through Brown Economy

- Largely dominated by fossil fuel energy – oil, coal and unclean technologies;
- Have not substantially addressed social marginalization and resource depletion;
- Will not deliver on sustainability and the Millennium Development Goals;
- Deepening of poverty and marginalization.

Transition To A Green Economy

- Transition to the use of renewable energies and low-carbon technologies;
- Promoting green cities (green buildings, transportation etc);
- Sustainable urban living;
- Maintaining and restoring natural capital;
- Greening businesses (public and private partnerships); and
- Adopt a system of environmental and economic accounting.

Transition To A Green Economy…



Mainstreaming The Enablers - The Role of Law And Policy

- Law is that which must be obeyed and followed by citizens subject to sanctions or legal consequences. Law clearly will be central to restructuring and re-orientating conducts and activities that were hitherto accepted as safe, but, now found to be contributing to climate change.

- Catalyst for targeted public expenditure, policy reforms and regulation changes.

- There are four broad modes through which the law can play a role in meeting the challenges of climate change:

  – self governing mode with focus by government on itself and its activities (“*leading by example*” *or “getting your own house in order”)*;

Mainstreaming The Enablers - The Role of Law And Policy

- control and compliance mode through the use of traditional forms of authority such as regulation and planning;
- governing by provision, in which emission reductions are achieved through the delivery of particular forms of service and resources (BRT/Green Houses);
- mode of enabling, where governing takes place through facilitating, coordinating and encouraging action through partnership with private and voluntary sector agencies, and in the form of various types of community engagement (Interfaith initiatives, Clinton Foundation).

The Challenges For Law

- International Environmental Law and Multilateral Efforts
  - Sustainable Development (Stockholm Conference 1972; Rio Conference, 1992; Stockholm + 40 Conference, 2012); Rio+20 Conference, 2012);
  - Climate Change (Adoption of the United Nations Framework Convention on Climate Change – UNFCCC – at the Rio Conference); subsequent annual Conference of Parties);
  - Division into:
    - ❖ Annex I Parties – (Industrial countries that were members of Org. of Economic Co-op & Dev. (OECD) and economies in transition);
    - ❖ Annex II Parties – (OECD members of Annex I but not economies in transition. Required to provide finance to developing countries for emission reduction);
    - ❖ Non-Annex I Parties – (mostly developing countries);
  - Annex I countries to limit emissions to 1990 levels;
  - Emphasis on Common but differentiated responsibilities.

The Challenges For Law…

- Kyoto Protocol
  - Adopted in December 1997 Kyoto with a goal of achieving the stabilisation of greenhouse gas concentrations at a level that would prevent dangerous anthropogenic interference with the climate system;
  - Flexible mechanism for implementation – "*Emission Trading*", "*Clean Development Mechanism*", "*Joint Implementation*".
  - By 2007 when COP met in Bali, China had become the largest annual GHG emitter;
  - Issues with the United States and Canada among others – USA refused to ratify the protocol while Canada renounced same in December, 2011;
  - None of subsequent COPs (Copenhagen, Durban) have been able to achieve a consensus on significant cuts in emission.

The Challenges For Law…

- In the words of George Bush, former President of the United States of America:

  "*… I oppose the Kyoto Protocol because it exempts 80 percent of the world, including major population centres such as China and India, from compliance and would cause serious harm to the US economy …Kyoto would've wrecked our economy. I wouldn't in good faith have signed Kyoto".*

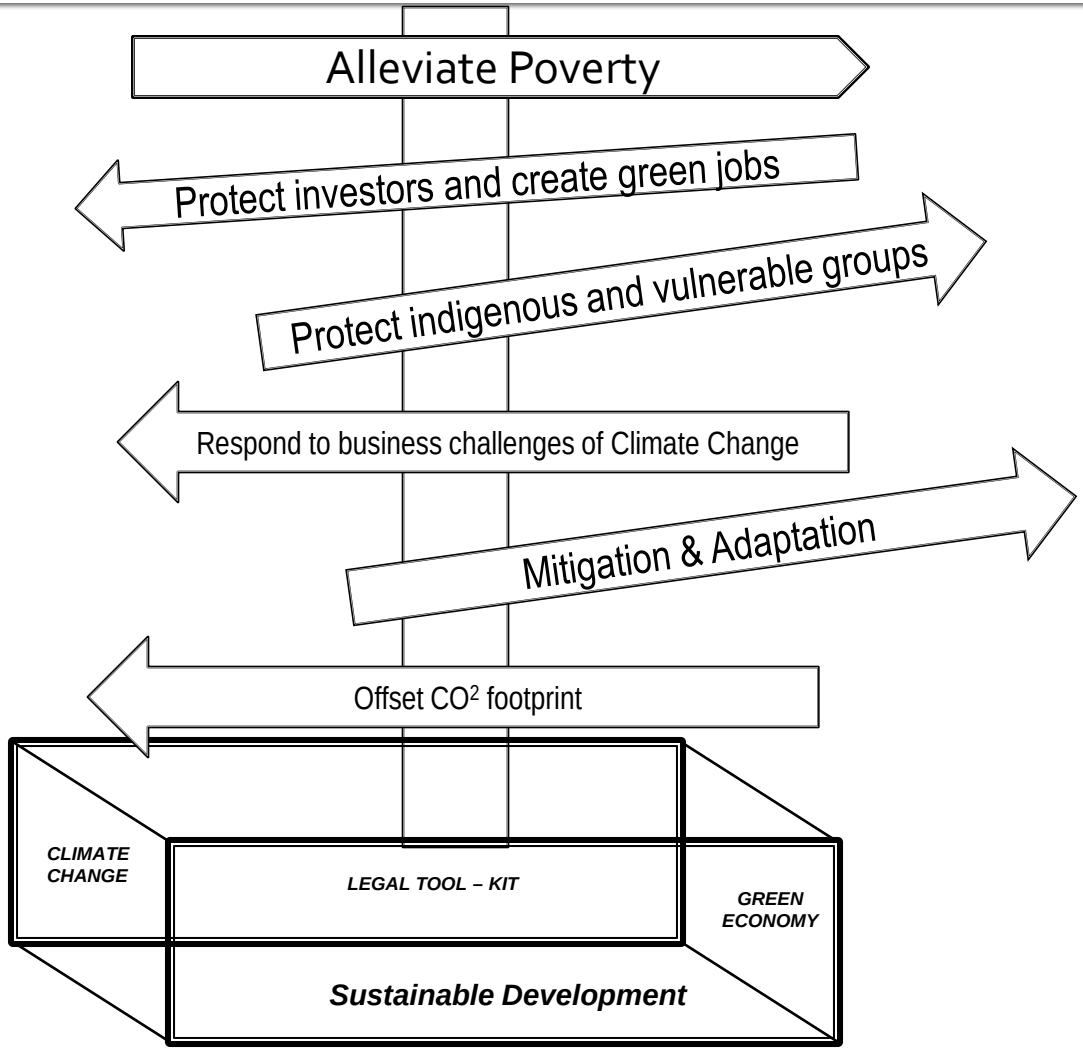
The Challenges For Law…

- Facts vs. Fiction; Myth v. Realities?
  - Sustainable Development and the crisis of interpretation;
  - Issues with Inter-Governmental Panel on Climate Change (IPCC);
  - Trade-off between environmental sustainability and economic progress is inescapable;
  - Green economy is a luxury for the wealthy countries and a ploy by developed countries to constrain developing countries;
  - Renewable energy infrastructure and the problem of competition;

The Challenges For Law…

- Future threats of climate change vs. current threats of poverty;
- Global politics, diversity of problems, interests, power, information and beliefs;
- Language of communication (Science and Intuition);
- Human nature and the problem of change; and
- Real problems with alternative options e.g. bio-fuel.

The Challenges For Law…



Conclusion

- National governments must constantly and continuously reflect on a coordinated and coherent cross-sectoral legal infrastructure that will deliver regulations, policies, subsidies and incentives that can effectively mainstream a GREEN ECONOMY;
- No alternative to a green economy;
- We as individuals must also recognise that we have critical roles to play;
- Green Economy … Does it include you?

Thank You.