

Technology Transfer under the Climate Change Challenge

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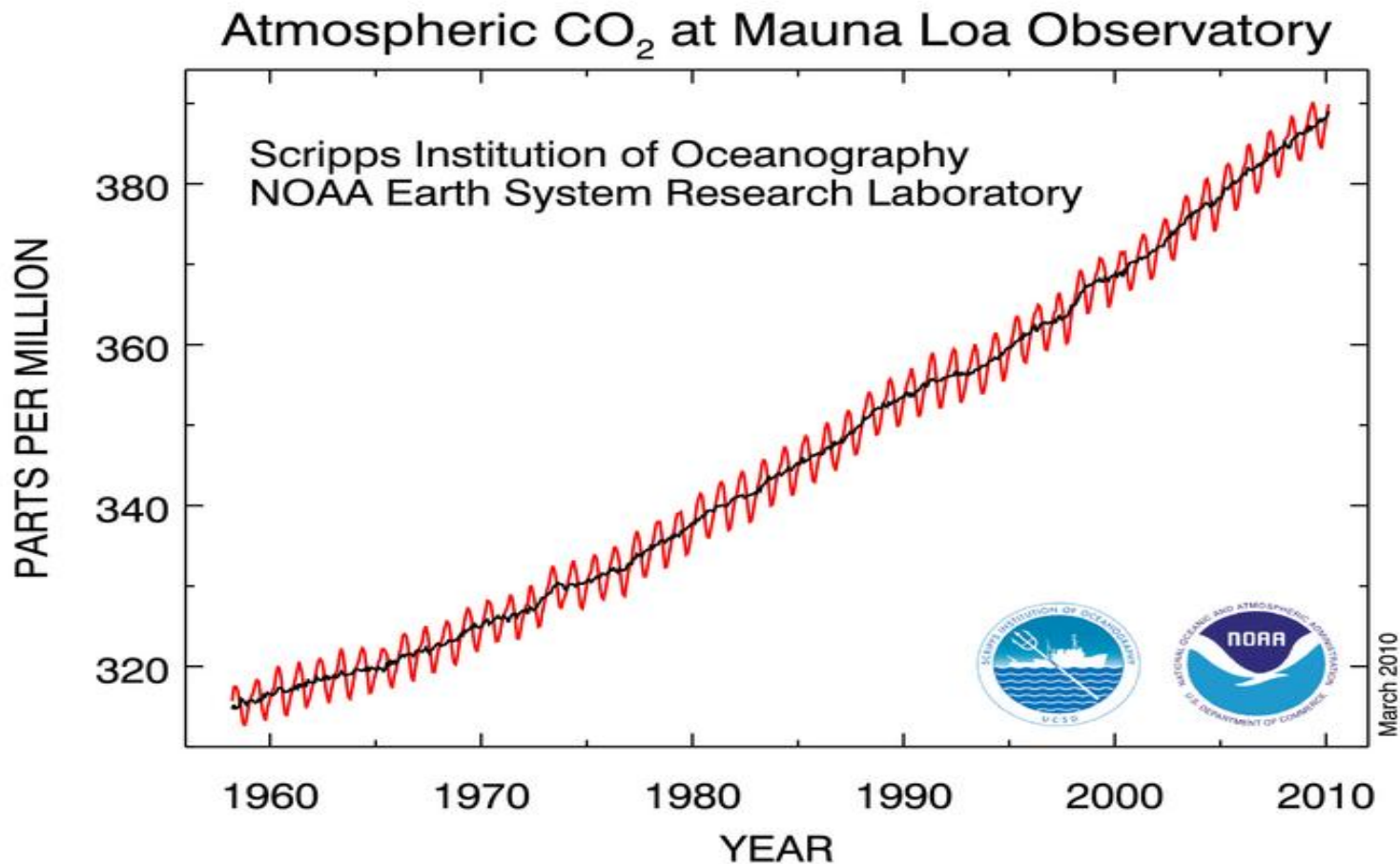


Overview

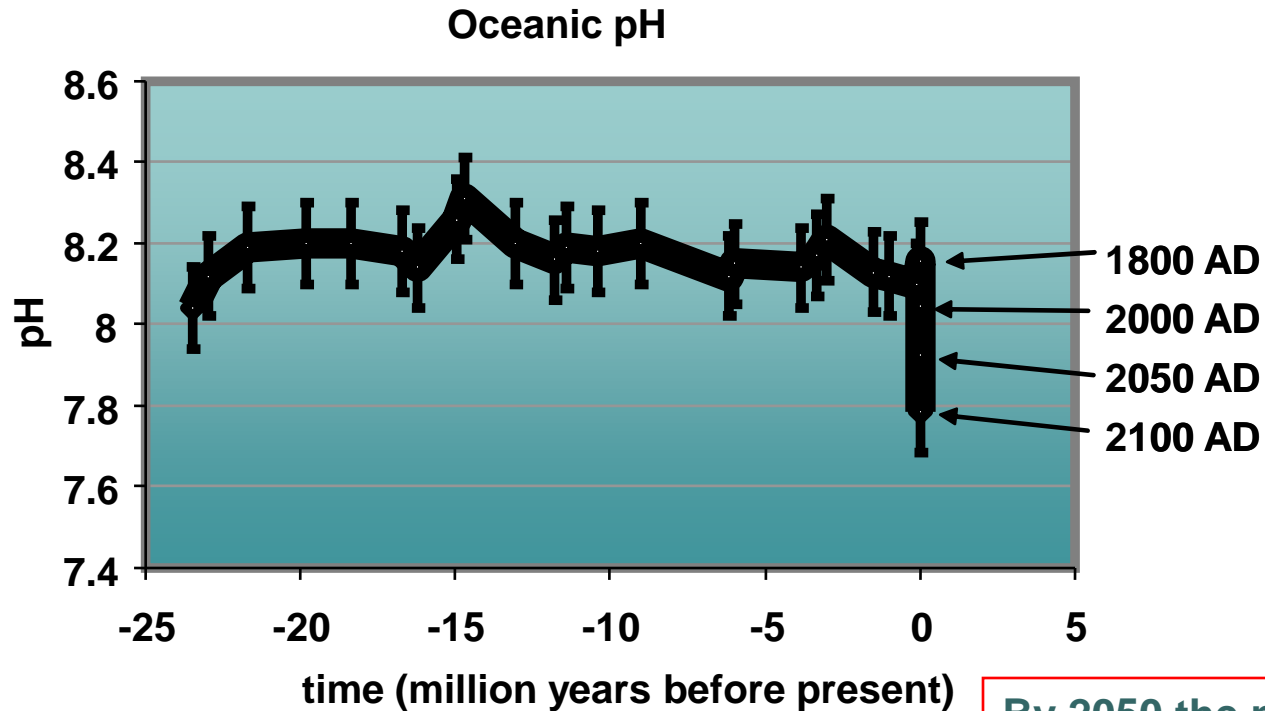


- The Climate Challenge Energy demand and Developing countries
- What is technology transfer?
- Innovation for development
ENTTRANS
- How technology transfer is treated in international climate negotiations
- Challenges and rewards for Business
 - Investment opportunities
 - Sustainable futures

The Climate Challenge



Ocean Acidification: Learning from the Distant Past

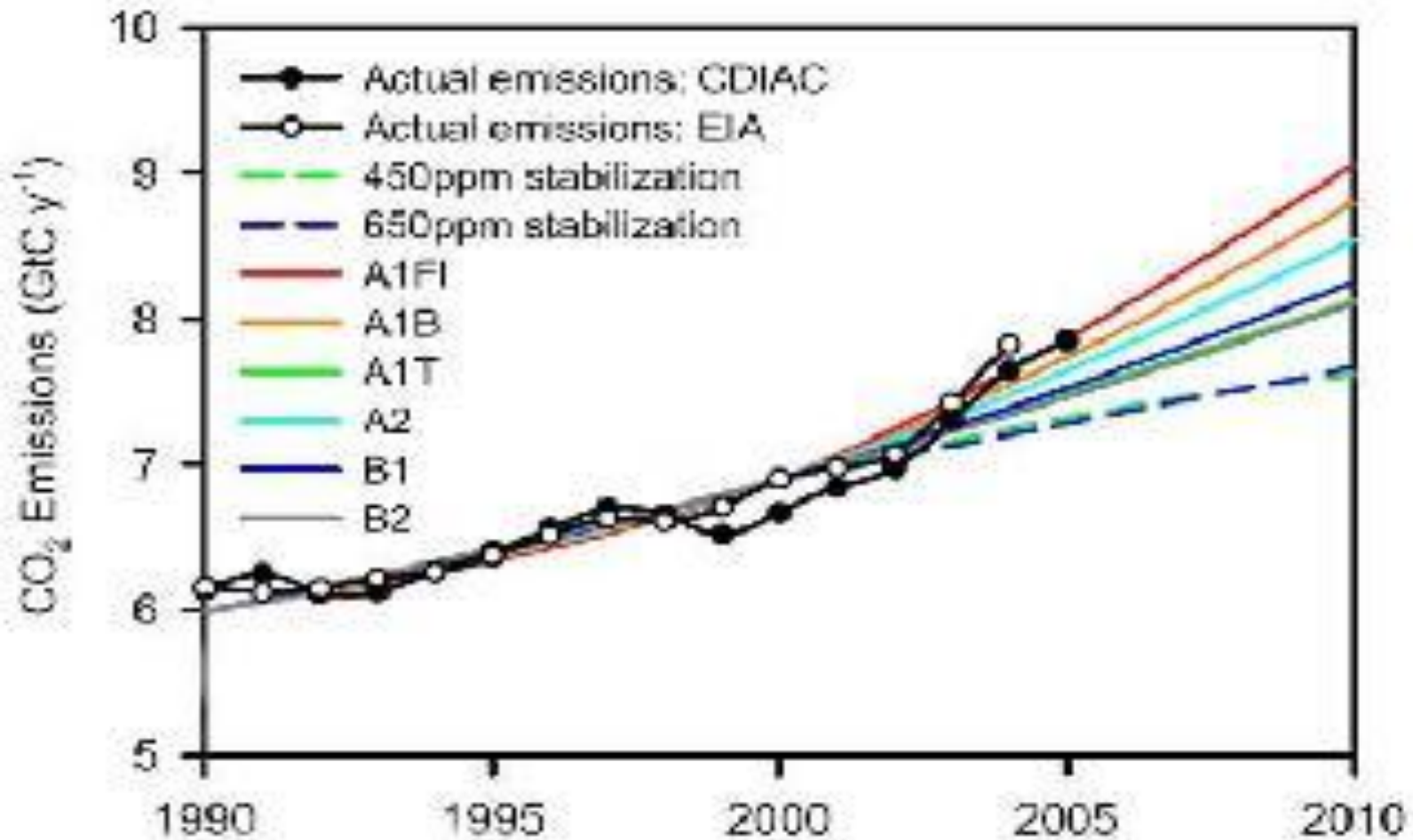


Past (from Pearson and Palmer, 2000:) and predicted (from Turley et al. 2006) variability of marine pH. Future predictions are model derived values based on IPCC mean scenarios. The error bars indicate the likely seasonal scale variability in pH.

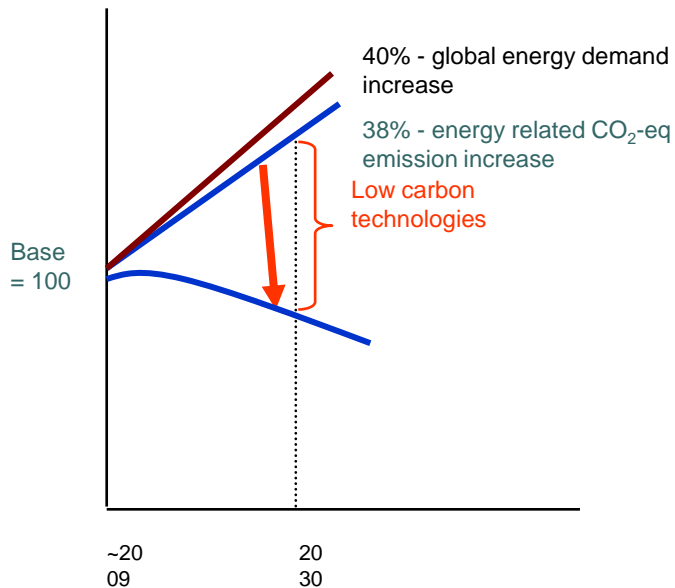
By 2050 the pH range will be discrete from the pre-industrial pH range. We will be in unknown territory.



CO₂ emissions world trend: May 07 New Scientist on CSIRO research



Energy demand and related emissions



- The International Energy Agency (IEA) estimates that in 2030 world primary demand will result in 40Gt CO₂ i.e. about 40% higher than in 2007.
- **90% of this increase is expected to take place in non-OECD countries.**
- To reach the 2°C target, these emissions need to decline to 26.4 Gt in 2030.
- 77% of the worldwide energy demand increase will be based on using fossil fuels.
- At the same time 1.5 billion people still lack access to electricity today.


IEA, 2009. World Energy Outlook 2009
www.worldenergyoutlook.org .



How avoid risks (Stern/Metz)

- Must demonstrate low emission growth possible through new environmentally sustainable technologies (ESTs) and share with Developing Countries (DCs)
- Help and support for DCs for Low emission growth and for impacts through adaptation.
- **Innovation by private sector to drive transition for progress and prosperity**
- India to boost solar to 20GW by 2020 and aiming to be competitive to fossil by 2030

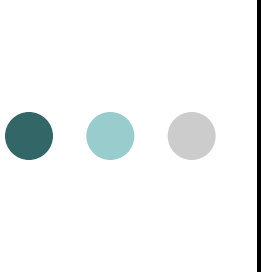




Estimated additional financing for mitigation

- USD 262–670 billion per year,
- This is around three to four times greater than the current global investment levels.
- Of this increase, 40–60%, or an additional **USD 105–402 billion per year**, is projected to be needed in developing countries.





Technology Transfer is more than the hardware

Technology Transfer:

‘A set of processes covering flows of know-how, experience and equipment for mitigating and adapting to climate change amongst different stakeholders such as governments, private sector entities, financial institutions, NGOs and research/education institutions’

IPCC 2000



Technology Transfer includes



- Innovation and Diffusion of technologies
- Technological cooperation across and within countries and involves SS/SN/NS
- Learning to understand, utilise and replicate the technology
- Including ability to decide which technology to transfer, adapt to local conditions and integrate with indigenous technologies



Technology Innovation

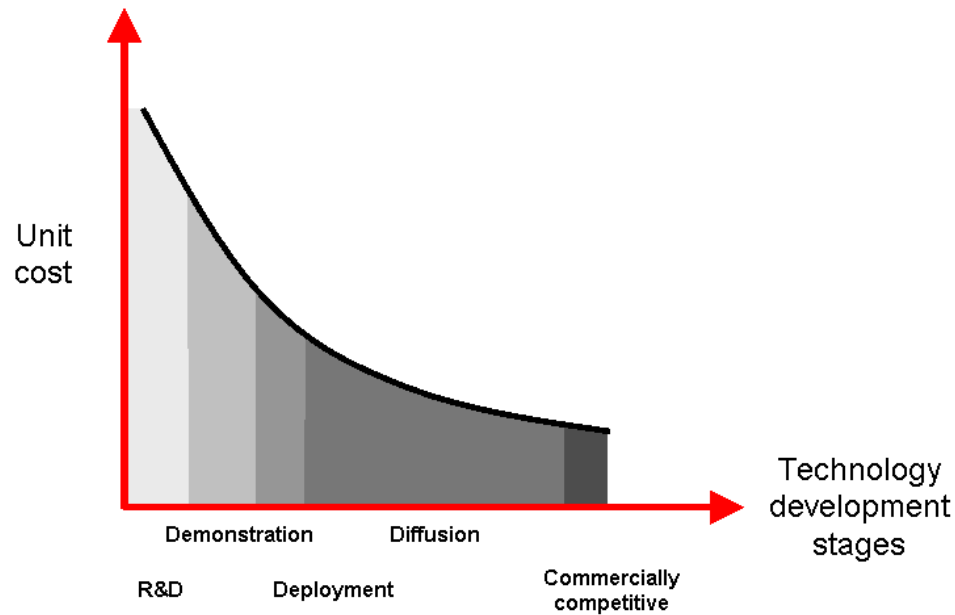


Figure 5-1. Learning curve for technology innovation

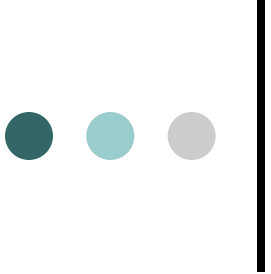
Source: FCCC/SB/2009/INF.2



Issues for current transfer process and development stage of innovation (WB)

- Usually new technologies emerge from OECD countries and are transferred to developing countries.
- the traditional technology commercialization process is inherently multi-stage and lengthy.
- it produces technologies that are made for conditions in industrialized countries.
- it fails to use the emerging innovation potential in middle and low income countries.





Multi Polar World of Innovation (WB)

- Developing Countries should be Partners in technology innovation process by involving them from the outset in design and innovation through a networked iterative process until a product emerges.
- Achieve the new innovation paradigm through enhanced innovation capacity in developing countries as well as through partnerships in industrialized and developing countries.
- Many countries already possess the conditions such as highly educated workforces to allow entry of new products to “leapfrog” existing technology paradigms.





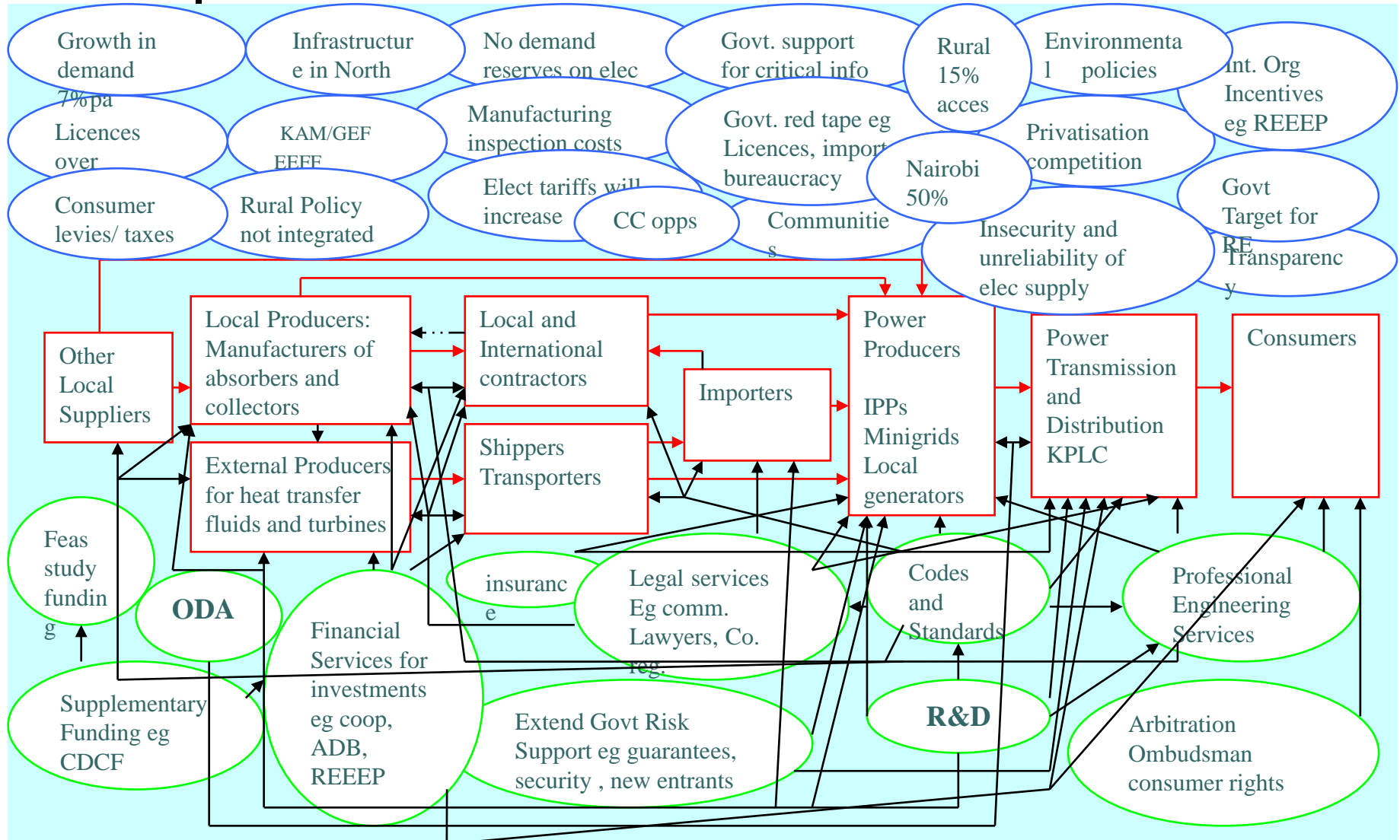
ENTTRANS Project

<http://www.jiqweb.org/images/stories/articles/ENTTRANSd2.pdf>

- EU funded for studies in Kenya China Thailand, Chile and Israel
- Explored energy service and technology priorities
- Innovation system mapping for selected countries
- Identified blockages and opportunities
- CDM improvements



Group 1 Kenya : Market map for Concentrating Solar power






Main Blockages for transfer of technologies (Market Chain)

- Identify main blockages eg Market Chain
 - Lack of technology transfer network
 - Cost of new technologies and no accounting for externalities
 - Availability of cheaper high carbon alternatives
 - Need to demonstrate unfamiliar and adapt to local conditions
 - Blocking behaviour by existing players
- Actions to overcome
- Opportunities






Main Blockages for Transfer of Technologies

Enabling Environment

- Weak policies, standards and procedures and lack of integration across government with poor infrastructure
- Lack of Financial investment sources and new criteria to offset risk





Main Blockages for transfer of technologies

Support Services

- Lack of R&D, market information, Quality control
- Local skills/technical capacity and expertise
- Risk support
- Language and cultural support





Issues for market actors for low emission technology transfer

“Organisations operate in embedded socio-technical networks and tend to re-invest in established competences: disruptive technologies [e.g. renewable energy technologies] rarely make sense to incumbents so their development tends to be left to small outsider organisations.”

Source: Winskel 2006

This leads to tension between need for private investment for innovation and corporate inertia and blocking behaviours



Technology transfer development under the UNFCCC

- UNFCCC Article 4.5 requires developed country Parties 'to promote facilitate and finance the transfer of or access to environmentally sound technologies and know-how to other Parties particularly DC parties'.
- COP7 Marrakech Accords 2001 Decision on a Framework for actions on Article 4.5 with **Expert Group on TT** to facilitate transfers and called on Technology Needs Assessments (TNAs) to determine mitigation and adaptation priorities and GEF
- Included in Bali Action Plan COP13 2007
- Poznan COP14: Strategic programme on Technology Transfer (GEF strategic programme 50mUSD)



Copenhagen Accord (initially few countries eg US, China, Brazil, South Africa)

- Now 110 countries signed representing 80% GHG emissions
- Accord: Agree deep cuts are required and Annex 1 countries commit individually or jointly to targets for 2020 to be submitted by end January 2010
- Adaptation financial resources, technology and capacity building will be provided by developed countries to support implementation of adaptation action in developing countries
- Non Annex 1 countries will implement mitigation actions. Least developed and SIS voluntary and supported actions. Actions subject to domestic measurement.
- Nationally Appropriate Mitigation Actions seeking international support will be recorded in a registry with relevant technology finance and capacity building support. Supported actions will be subject to international MRV.
- Reducing emissions from deforestation and degradation through REDD plus to provide financial incentives.



Copenhagen Accord

- Incentives to continue to develop on a low emission pathway for low emitting economies.
- New funding (30bn (2010-12) (up to 100bnUSD/y by 2020)) for developing countries for enhanced mitigation action for REDD-plus, adaptation, technology development and transfer and capacity building.
- Allocation balanced across adaptation and mitigation and prioritized adaptation for most vulnerable
- **Copenhagen Green Climate Fund** will be the financial mechanism for the Convention to support projects programmes policies and other activities related to mitigation including REDD-plus, adaptation, capacity building, technology development and transfer.



Specific Technology development and Transfer Action from AWG-LCA draft decision

Technology Mechanism

- Legally binding/under COP?
- Technology Executive Committee (TEC)

Will replace EGTT at cop16 and report annually to SBSTA


- Climate technology centre to be established: virtual & composed of existing centres?



Issues set aside

- To whom Technology Mechanism accountable
- Legally binding
- IPR none or no limit to DCs to act on M&A
- Who TM funded by ? The financial arrangement? Including New and additional resources for full incremental costs Article 4 para 3
- MRV modalities
- Capacity building details
- Full mandate and composition of TEC and CTC for cop16
- Further development of barriers, adaptation technologies, modalities for TAPs and maps, incentives for TD&TT and R&D objective of TM






High Level Advisory Group on Climate Change Financing

- 19 members of the High-Level Advisory Group on Climate Change Financing were named by the United Nations Secretary-General on 4 March 2010.
- Dominique Strauss-Kahn, the Managing Director of the International Monetary Fund, announced that his staff are working on a 'Green Fund' which would have the capacity to raise US\$100 billion per year by 2020 to assist climate change mitigation and adaptation in developing countries (March 8th 2010).





How identify which technologies to be transferred?

At the international level

- Nationally Appropriate Mitigation Actions
- (Technology) Capacity Building needs Assessments for mitigation and adaptation?

and

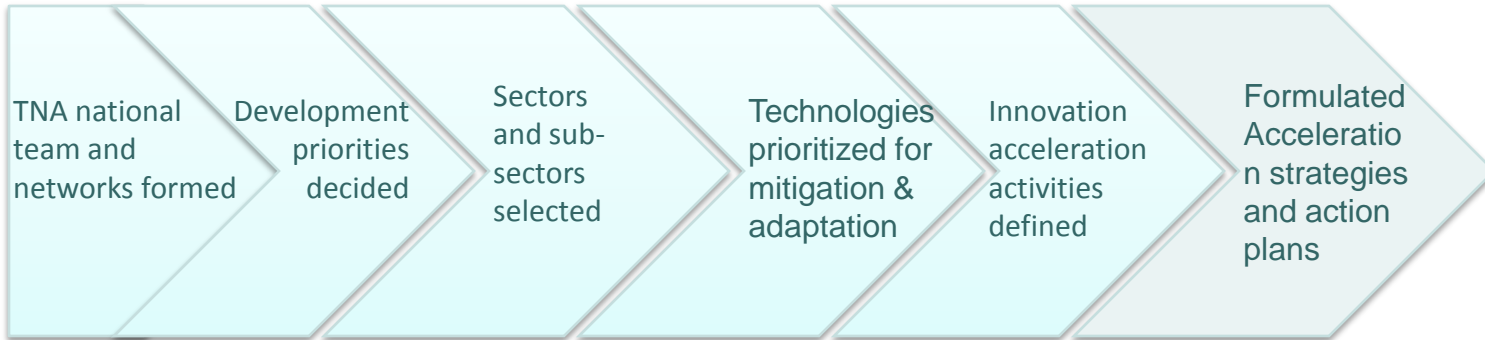
- National Adaptation Plans of Action



Overall Goal

Sustainable development with low emission technology

Total time duration 8 – 24 months depending on resources



Decide responsible ministry
Select TNA team
Identify stakeholders
Create Networks
TNA reporting

Identify development priorities
Prioritize sectors
Select technologies
Familiarize with new technologies
Categorize for availability & size

Select criteria for assessment
Prioritize technologies using:
a) simplified tool or
b) full multi-criteria assessment

Identify stakeholder networks
Identify type of technology transfer
Characterize Markets
Identify barriers
Identify activities to overcome barriers

Combine accelerating activities for strategies
Prioritize activities for strategy
Form action plans with timeline and responsibilities
Fund and implement

Outputs

Accelerating **strategies** for low emission technology development and transfer

Action plans for a low emission future

Projects for demonstration

Financial flow plans for projects and strategies

Capacity building for institutions and stakeholders

Supporting tools: *TNAAssess*, *ClimateTechwiki*, *Reporting Aid*

Implications for business

Challenge to accelerate innovation

- **Accelerate R&D and use new multi polar world of innovation model.....** 'By exercising the power of collaborative innovation, companies can ensure a consistent and sustainable framework for global engagement that adds value for both the companies and the global space in which they seek to nurture their businesses.'

Klaus Schwab Founder and Executive Chairman of World Economic Forum

- **Form new networks** internationally (eg climate techwiki) and nationally for all stages of innovation and transfer
- **New opportunities available**
 - Familiarize with new technologies and developments and ways of working
 - New markets in ICs and DCs (through FDI, Technology mechanism etc)
 - Move business into low carbon services and products



Implications for business

- Change traditional practices and own organisation to be more sustainable
 - Decrease own and supply chain resource use and GHG footprint
 - Avoid blocking behaviours
 - Support adaptation for DC applications for diffusion of existing technologies
 - Create Opportunity for market development and demand through capacity building, awareness raising and participatory approaches to implementation
 - Adapt investment criteria for new context





Implications for business: Rewards

- Cost savings
 - lower energy
 - Increased efficiency: resource use
- More productive engaged employees
- Contribution to sustainable future
- Visionary companies tend to do better

Books and reports to support change:

Doing Business in a new climate (David Suzuki Foundation report
2010)





Implications for Business

Long term change to a Sustainable low emission Future

- Climate Change is a symptom of unsustainable living
- Finite planet with limits to ecosystem services
- Population increasing, inequity and poverty
- Direct result of cultural paradigm consumerism and consumption levels that are unsustainable
- Long term effort to change traditions, social movements and business, media, governments, and education to make sustainable living natural
- **State of the World 2010: Transforming Cultures from Consumerism** Erik Assadourian WWI
- **Prosperity without Growth** Tim Jackson SDC

