

# **A learning and innovation capability approach to social and ecological sustainability**

**Presented by:**

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# Contents:

- Development before and now
- Systems of innovation and learning capabilities
- Towards a “green techno economic paradigm”
  - What are eco-innovations?
- Innovations for learning and eco-innovations
- Policy recommendations

# Aim of the paper:

- To stress that improving the learning and innovation capability is the key to long term sustainable development and
- the focus is on how institutions and policy together may shape **social and environmental sustainable learning and innovation capability.**

# Development before and now:

- Quantitative measurement vs. qualitative improvement.
- Increase of material use vs. increase in efficiency. (ie.evolution of manufacture up to Life Cycle A.)
- Scarce resources in the past were human-made capital and now the scarcity is natural capital.
- LDCs need growth and distribution of wealth, but they also need other institutional transformations for development.

# Sustainable Development

- *“development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”*
- *“a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development and institutional change are made consistent with future as well as present needs” (WECD, 1987).*

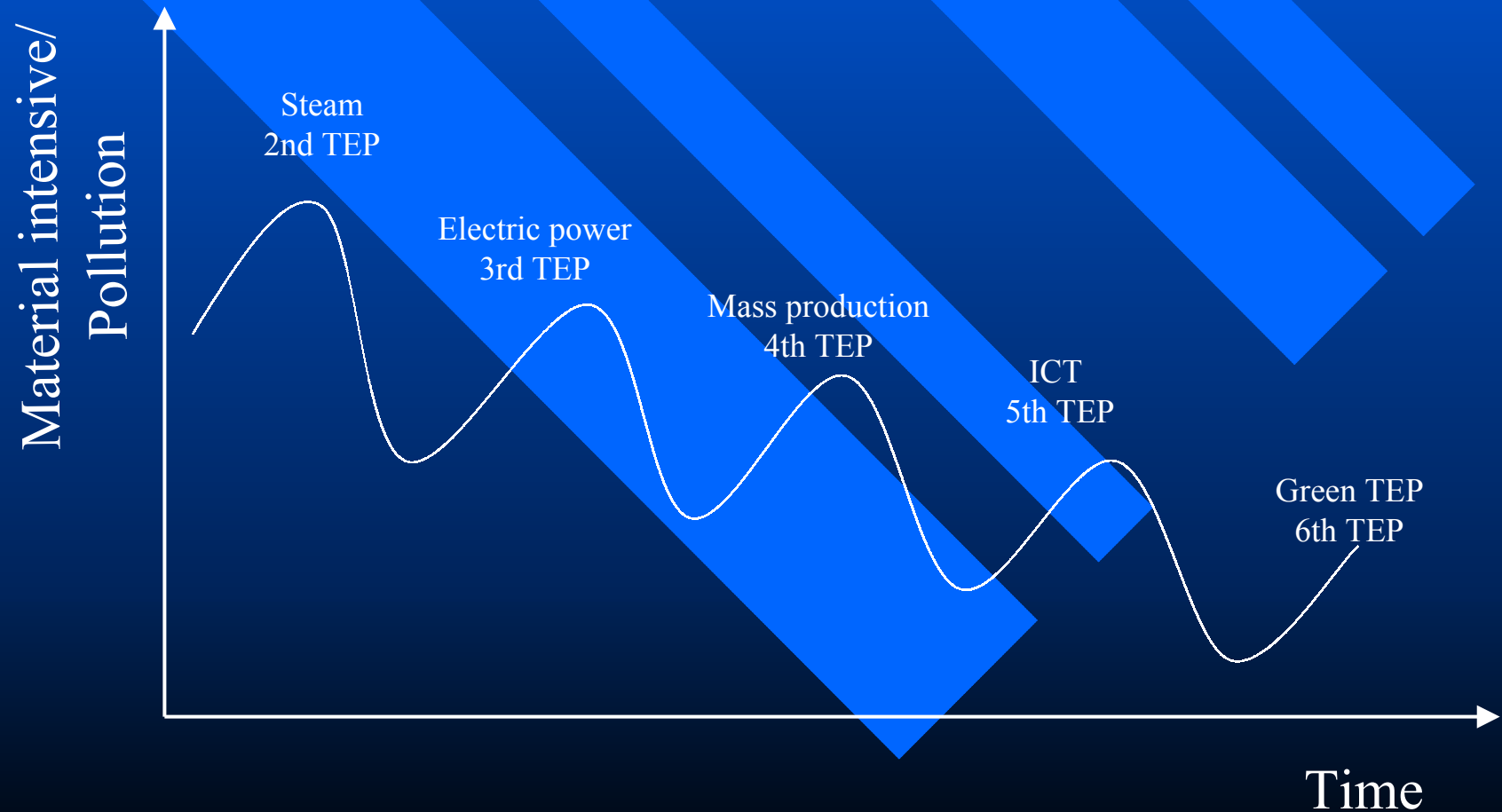
# Systems of Innovation and Sustainable Systems of Innovation

- Systems of innovation (Mark I) contribution was to clarify the role of social capital for learning and innovation,
- Systems of innovation (Mark II) contribution may be to clarify the role of natural capital.
  - This is especially true now, 11 years after the Rio Conference on Sustainable development.
- SSI “is constituted by human, social and natural elements and relationships which interact in the production, diffusion and use of new, and economically useful, knowledge”

# Is it possible to think in a 6<sup>th</sup> “Green” TEP?

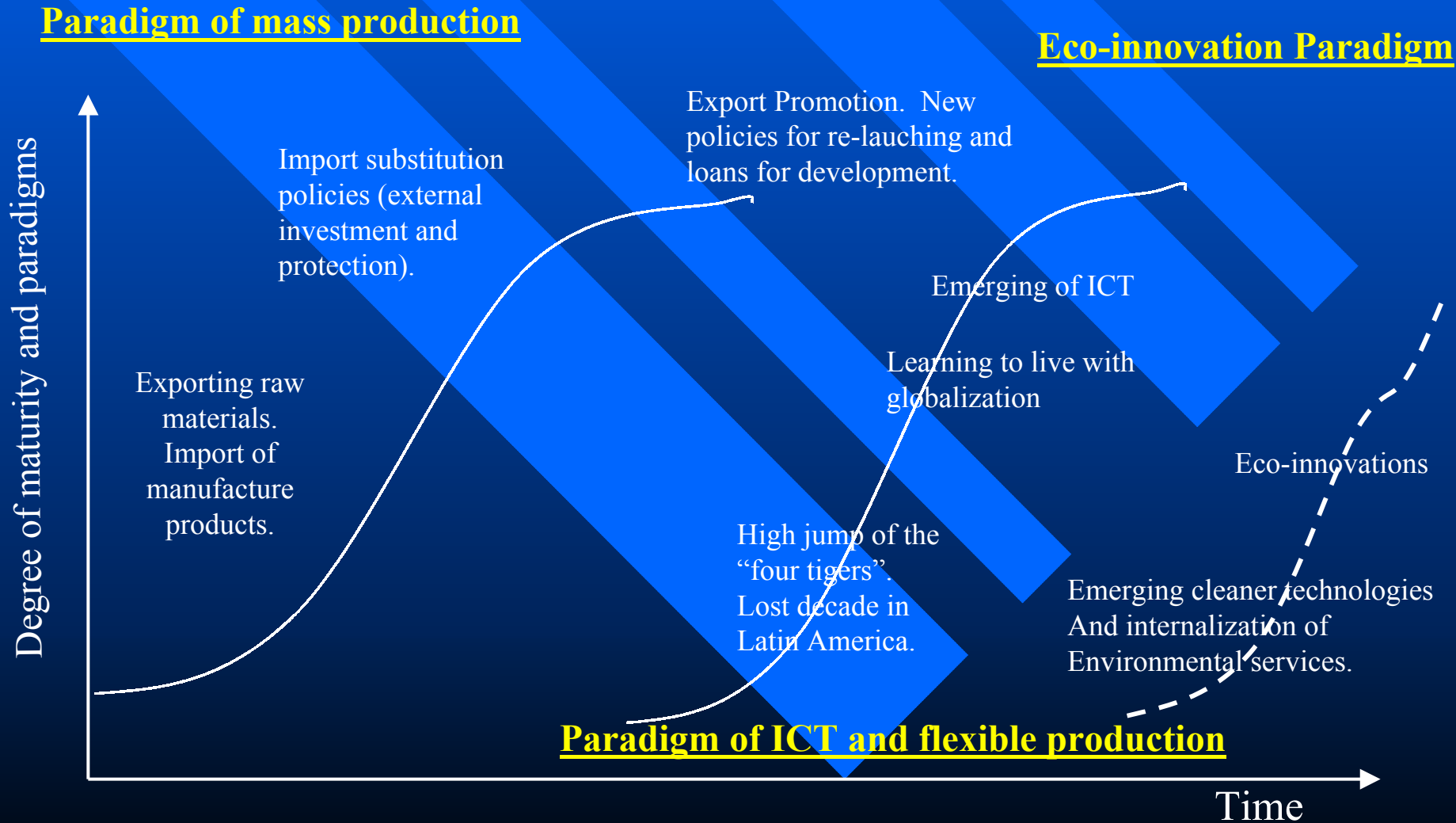
- Following the idea by Chriss Freeman (The Economics of Hope, 1992)
  - “it is therefore not too soon to start thinking about designing and building institutions and technologies which are likely to combine in a sixth (environmental) TEP”

# Is it possible to think in a 6<sup>th</sup> “Green” TEP?





# Changing Development Strategies according to the emerging phases of successive paradigms.



# Eco-innovations

- *“eco-innovations are all measures of relevant actors (firms, politicians, unions, associations, churches, private households) which:*
- *• Develop new ideas, behavior, products and processes, apply or introduce them and which contribute to a reduction of environmental burdens or to ecologically specified sustainability targets.” (Rennings, K., 1998; Segura, 2000)*

Then how to make such change towards SSI and eco-innovations?

# Special focus on the institutional set-up.

- There are several factors influencing the capability of firms to make and introduce eco-innovations; however,
- We think there are some institutions that have essential influence in determining the **rate and direction towards learning and eco-innovation**.
  - Environmental regulations and standards
  - Institutions related to knowledge infrastructure
  - Social norms supporting a learning culture
  - Institutions related to ‘creative destruction’ of knowledge
  - Labor market institutions
  - Property rights (IPR)
  - Financial institutions
  - Economic policy regime
  - Markets for new environmental goods and services

# Institutions related to knowledge infrastructure

- It contains public, semi-public, and private institutions related to the production, maintenance, distribution, and management of knowledge like the school system, the universities and research centers, the vocational training system, the system of technological service centers, research councils, telecommunication network, libraries, and databases.
- But, further...

# Bio-alphabetization



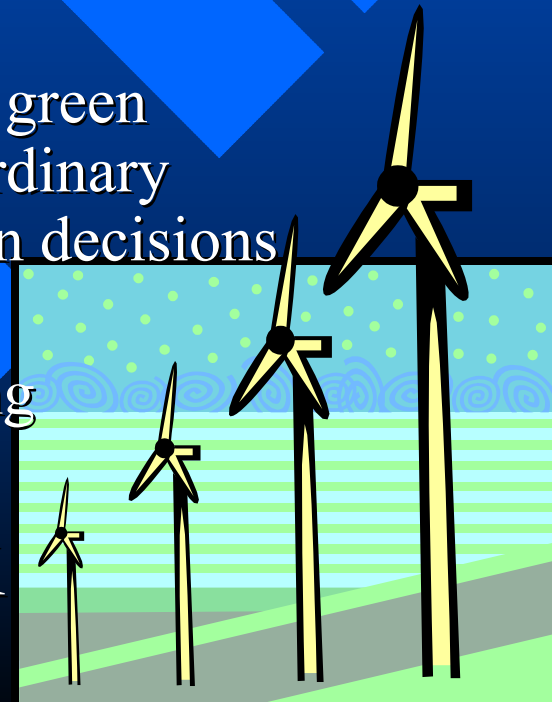
**Dissemination of  
information**

**Specialized workshops**



# Social norms supporting a learning culture

- A learning culture stimulating green learning and innovations is thus a culture where
  - green learning and innovation are valued,
  - where time and other resources for green learning and innovation are available,
  - where participation of “environmentalists”, green entrepreneurs, organic farmers, and other ordinary people is encouraged by given them voice in decisions and legitimacy, and
  - where processes for managing and allocating the value created exist.
- The emerging wind energy sector in DK is an example.



# Environmental regulations and standards

- For instance emission rates, green taxes, reforestation regulations, water preservation acts, international standards for environmental management
- strict environmental regulation should rather be seen as an opportunity for pro-active companies staying ahead of regulations to obtain, maintain and upgrade a competitive advantage rather than the reverse.

# Markets for new environmental goods and services

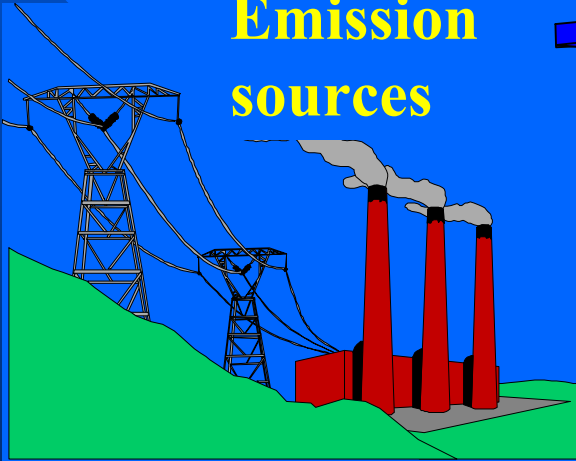
- Examples on products and services on the emerging 'eco-market' are:
  - Eco-tourism,
  - waste turning into valuable products,
  - environmental management certification,
  - carbon sequestration,
  - water resources protection, and
  - bio-diversity protection.





# Carbon sequestration:

**Emission  
sources**



**\$\$**

**“credits” for  
emission  
reduction.**

**Emission  
mitigating  
projects in  
other  
country**

# Policy recommendations (1):

- We need a holistic, coherent and long term policy to enhance learning and eco-innovation.
  - It should not only focus on technological innovation but also on organizational, social and institutional innovation.
  - It should rethink specific policies related to all institutions we are mentioning. (education, labor market, social issues, etc)

# Policy recommendations (2):

- There is need to stimulate the creation of eco-markets, for instance through:
  - Public procurement
  - Investment and Finance.
  - New patterns of consumption
- To include the Green TEP approach in all kind of R&D for new products and processes.

# Web Pages

## *What does sustainability mean?*

- <http://www.green-innovations.asn.au/sustainability-getting-orientated.htm>
- <http://www.green-innovations.asn.au/sustainability-unachievable-or-practical.htm>

## *Stretch goals - the methodology*

- <http://www.green-innovations.asn.au/stretch-goals/Stretch-goals-resources.htm>

## *Biodiversity*

- <http://www.greenhouse.gov.au/yourhome/technical/fs35.htm> (building and the management of indirect biodiversity impacts)
- [http://www.envict.org.au/pdf/LCA\\_Do\\_For\\_Biodiversity.pdf](http://www.envict.org.au/pdf/LCA_Do_For_Biodiversity.pdf) (life-cycle assessment and biodiversity)
- <http://www.green-innovations.asn.au/green-purchasing.zip> (biodiversity and green purchasing)
- <http://www.green-innovations.asn.au/LCA-paper-notes-the-Australian-environment-1b.zip> (implications of the Australian environment for life-cycle assessment)

## *How far and how fast?*

- <http://www.green-innovations.asn.au/how-far-how-fast-greenhouse-case.htm>

## *Can an ecologically-sustainable economy be successful?*

- <http://www.green-innovations.asn.au/tmcp.htm> (transformed market conforming planning)
- <http://www.green-innovations.asn.au/econ-mdl.htm> (new economic model)
- <http://www.green-innovations.asn.au/growth2.htm> (economic growth)

## *Sustainability-promoting organisation*

- <http://www.green-innovations.asn.au/tapsmrkt.htm> (tapping the sustainability market)
- <http://www.green-innovations.asn.au/spf.htm> (sustainability-promoting firm)
- <http://www.green-innovations.asn.au/spf2.htm> (more on the sustainability-promoting firm)
- <http://www.green-innovations.asn.au/iso14001.htm> (sustainability-orientated application of ISO 14001 Environmental Management Systems)

## *Transformative funds*

- <http://www.green-innovations.asn.au/transformative-funds.htm>

## *Imagining (modelling) the future*

- <http://www.green-innovations.asn.au/Imagine.htm>

## *A strategy for creating an ecologically-sustainable economy in Australia*

- <http://www.green-innovations.asn.au/strategy-ecologically-sustainable-economy.zip>



# Thanks!

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