

Drivers of infrastructure dynamics

how to prevent carbon intensive lock-in in
developing countries?

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Today's topics

- Characteristics of infrastructure
- Transition of technology and developing countries behaviour
- Linkage of Climate change policy and development
- Conclusion

Characteristics of Infrastructure

- Provide fundamental services for economic and social development



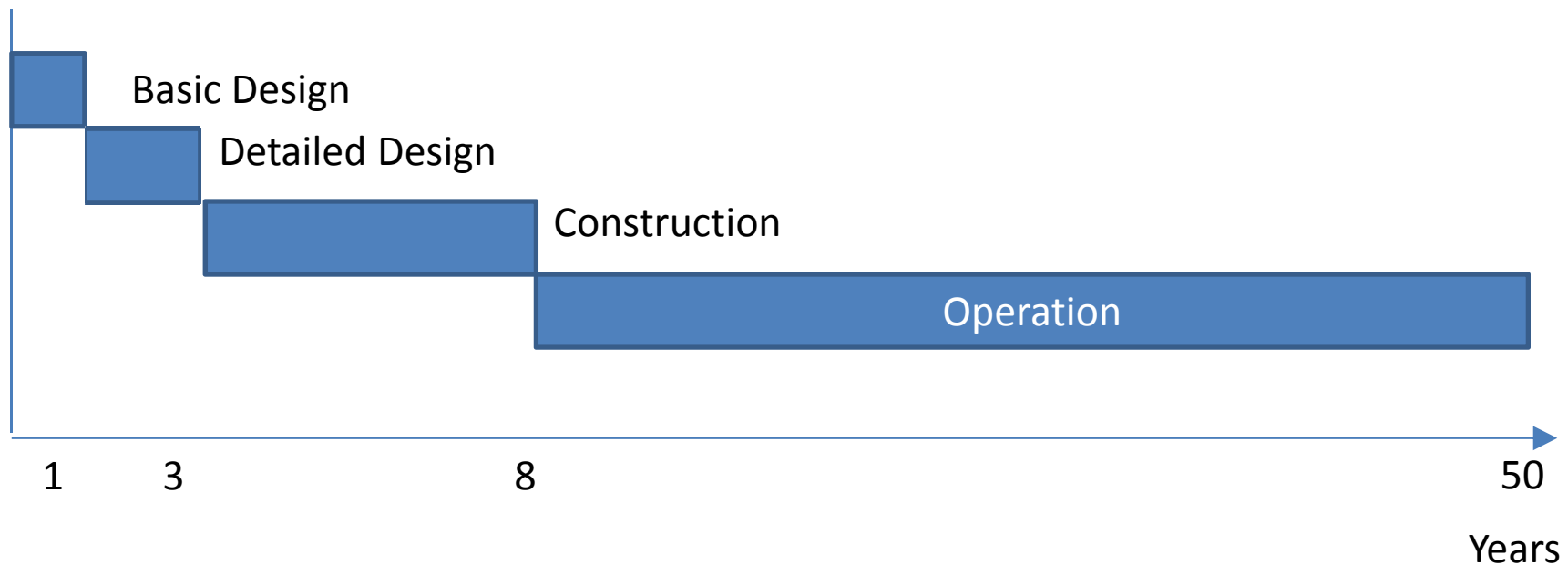
Characteristics of Infrastructure

- However, Infrastructures in Developing countries are still limited...Further infrastructure development is necessary for economic growth and poverty alleviation.



Characteristics of Infrastructure

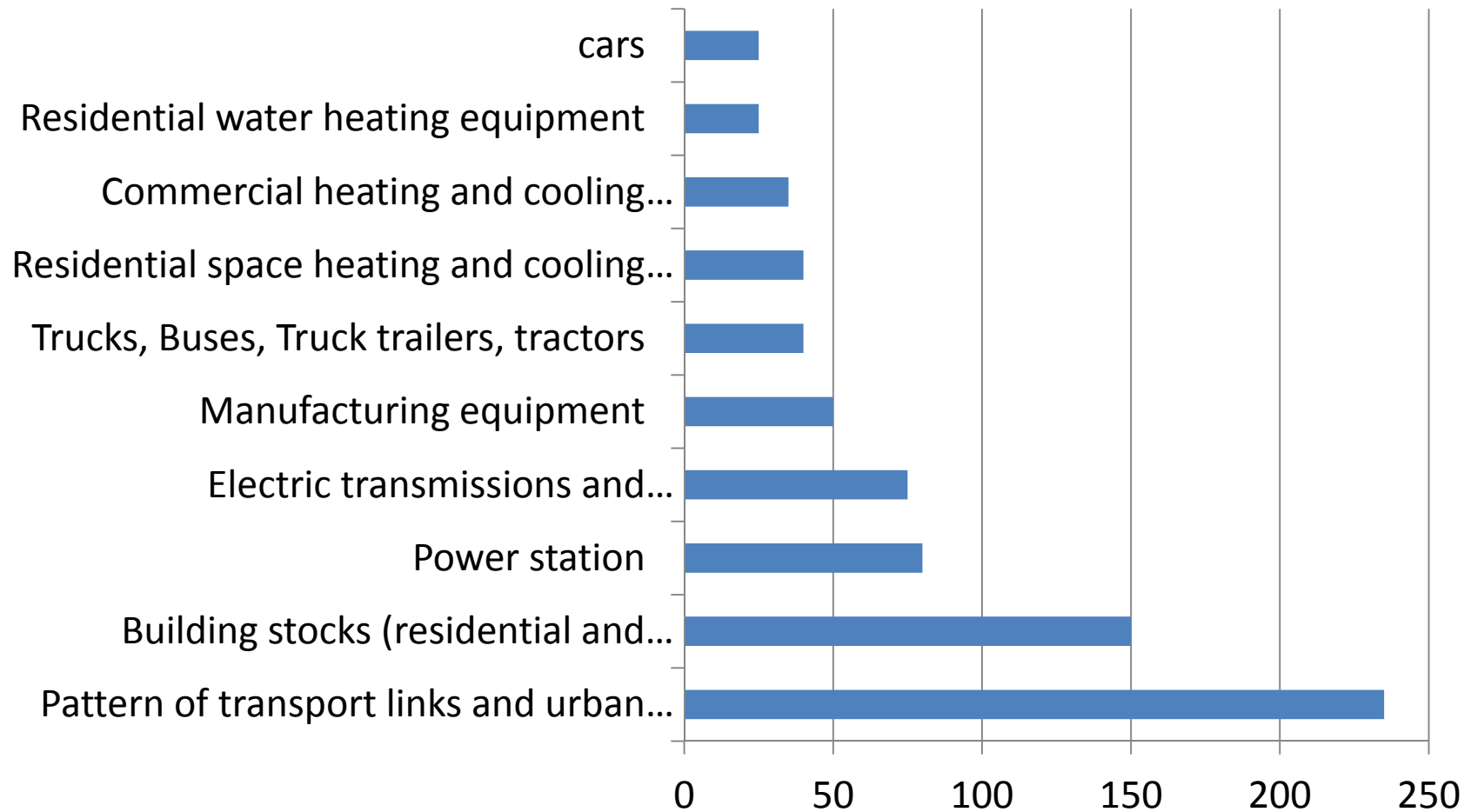
- It takes long preparation period, and its operational life is very long.



Long term vision is “must” for infrastructure development

Infrastructure's life is long...

Lifespan of capital investment



Source: OECD (Forthcoming) Green Growth Studies: Energy

Infrastructure Demand for Development

Huge Infrastructure Demand for Development

-Asia: \$800 BILLION/ year (2011-20)(ADB, 2009)

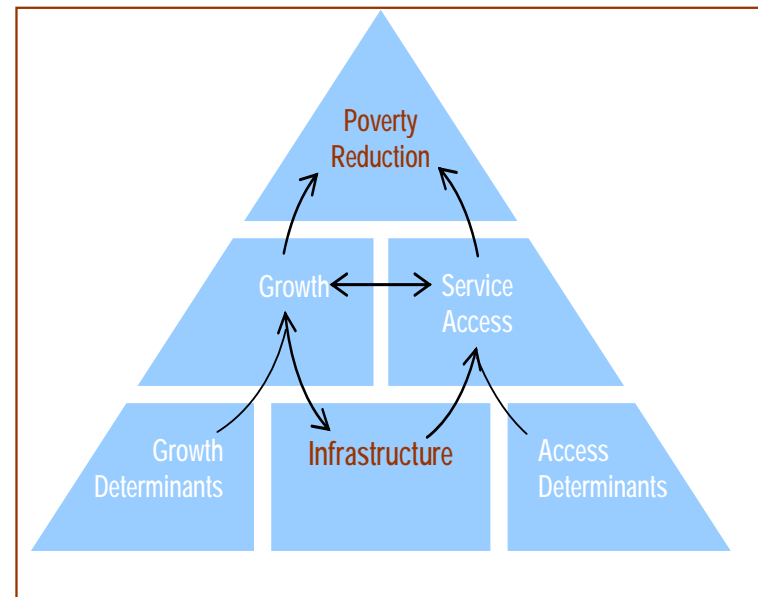
-Africa: \$20 BILLION/ year (An Africa Action Plan, WB, 2005)

Implication from East Asian Economic Growth

led by Private Sector Development, encouraged by Infrastructure Development, supported by Public Finance

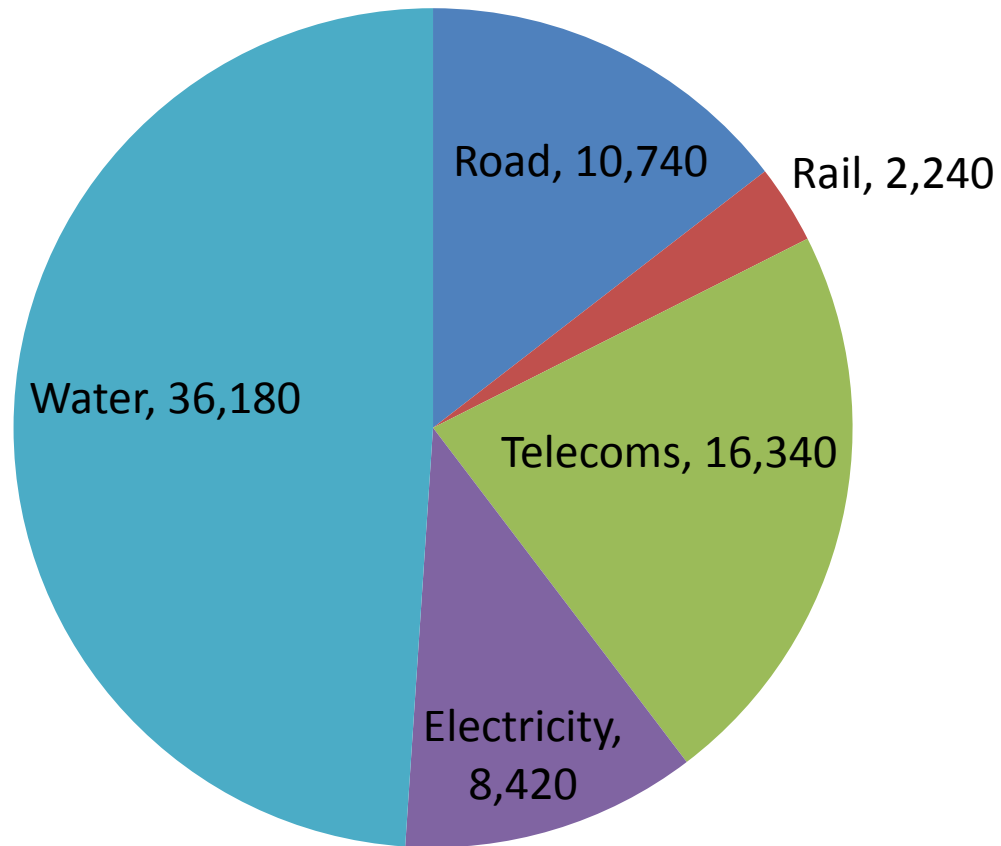
Inclusive Development Model

(“Connecting East Asia” (ADB/JICA/WB flagship study))

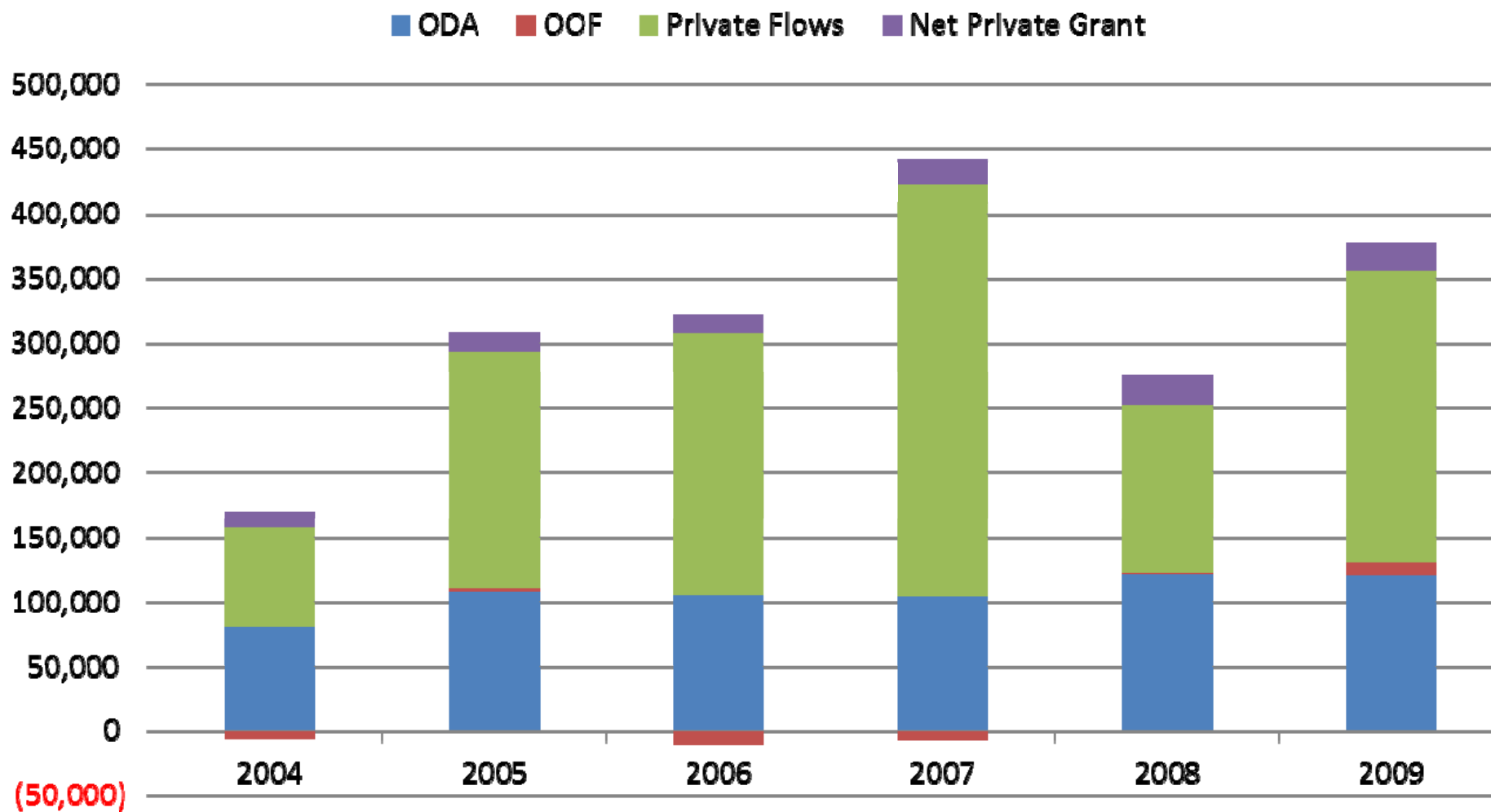


Infrastructure Investment

Global Investment 2010-2030 (USD millions)



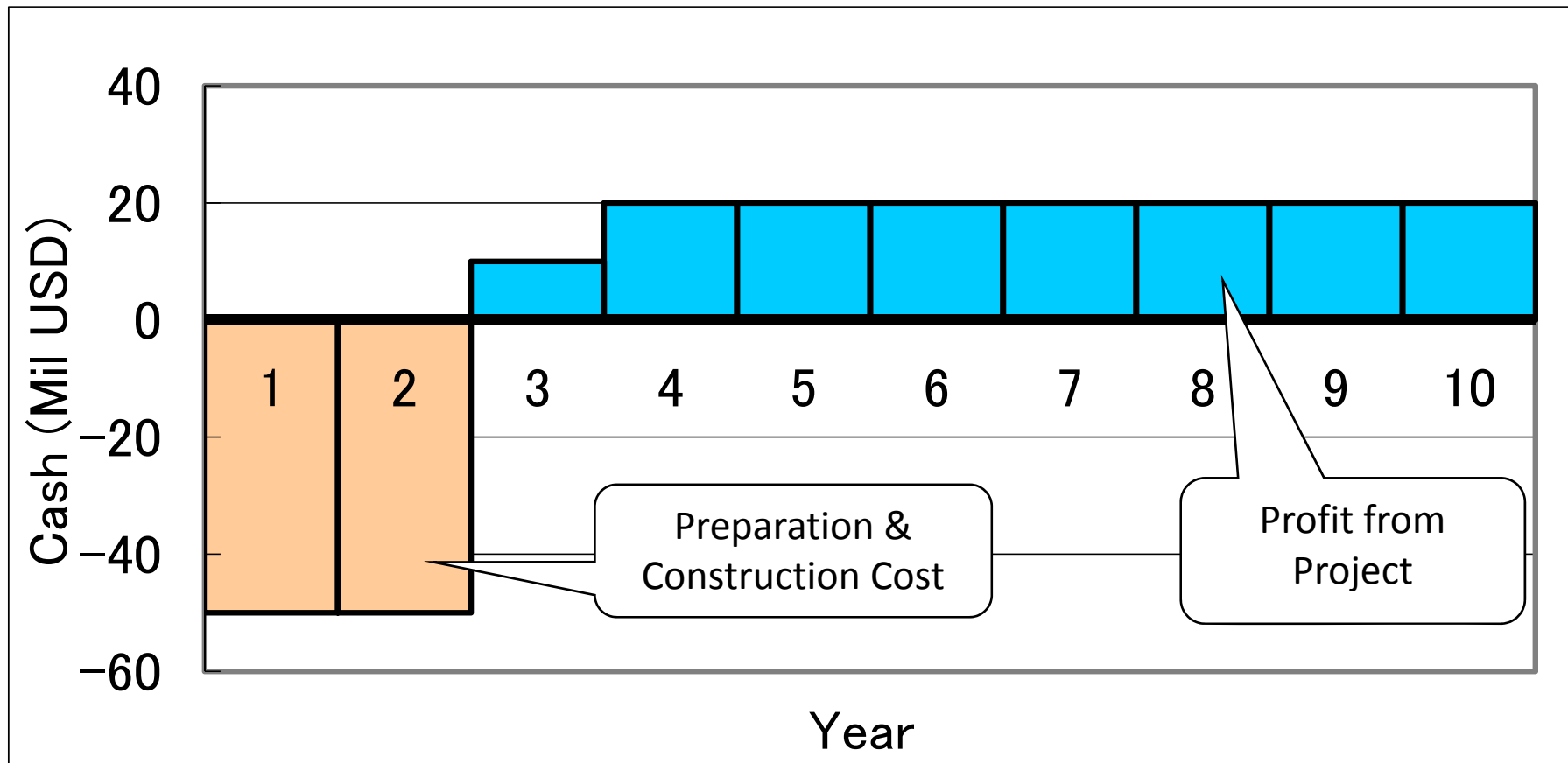
Financial Flows to Developing Countries



Source: OECD. Stat Extracts, DAC1 Official and Private Flows, 2011

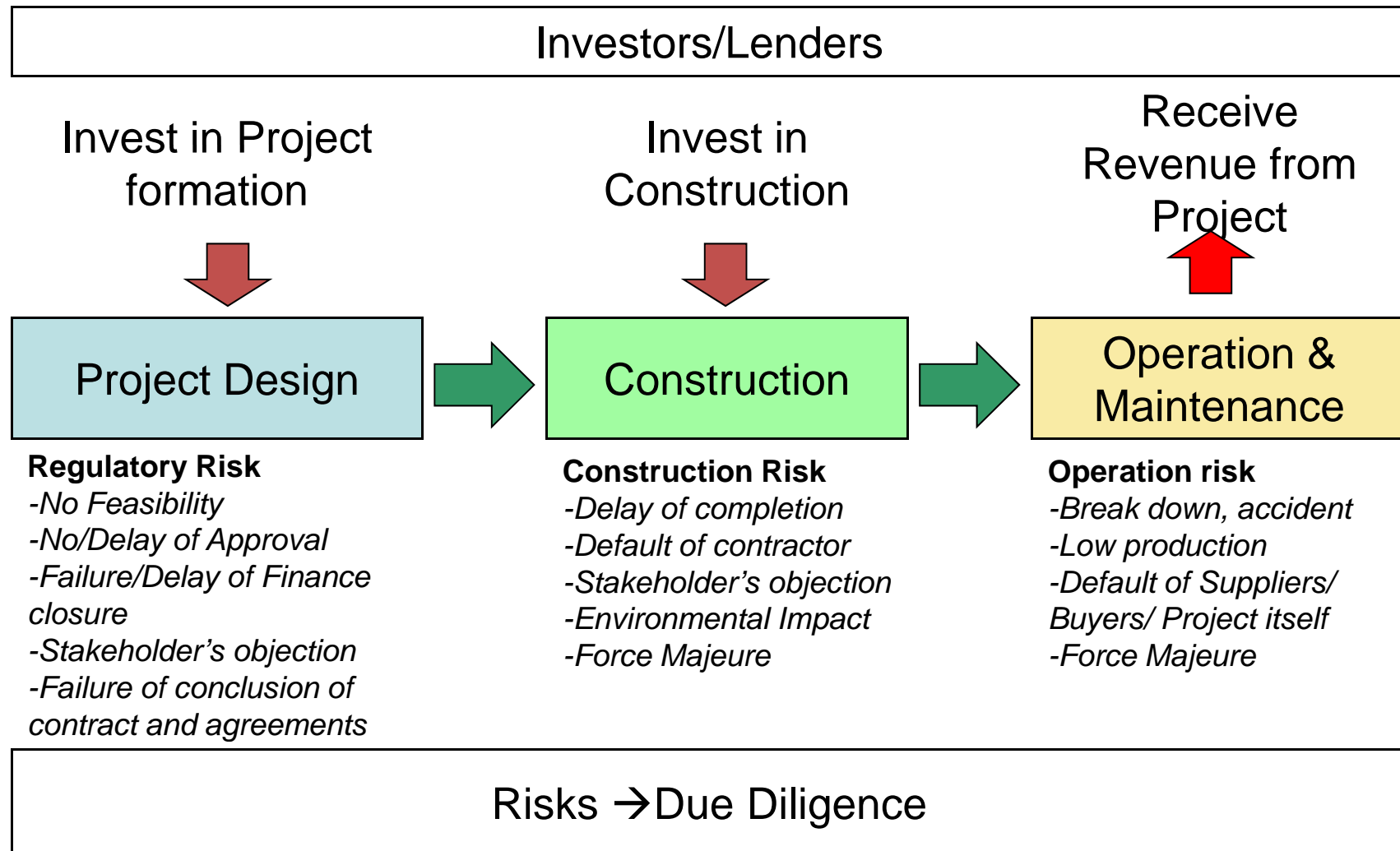
Financial projection of Infrastructure

- It needs high initial cost for preparation and construction, but it takes long time to recover the cost.

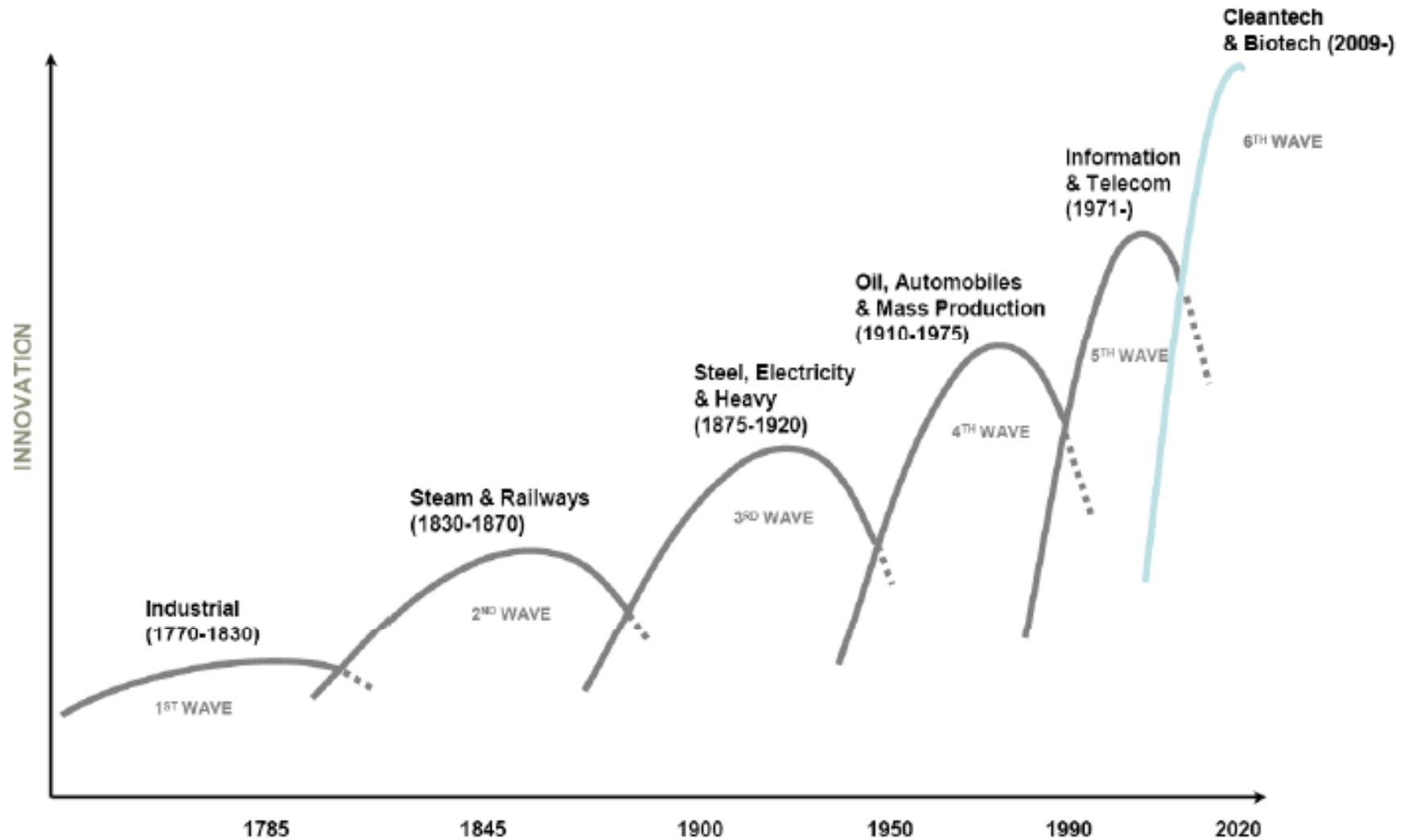


Role of Finance

- Reallocation of Resources (Cost & Benefit and Risks) Between Players and Generations

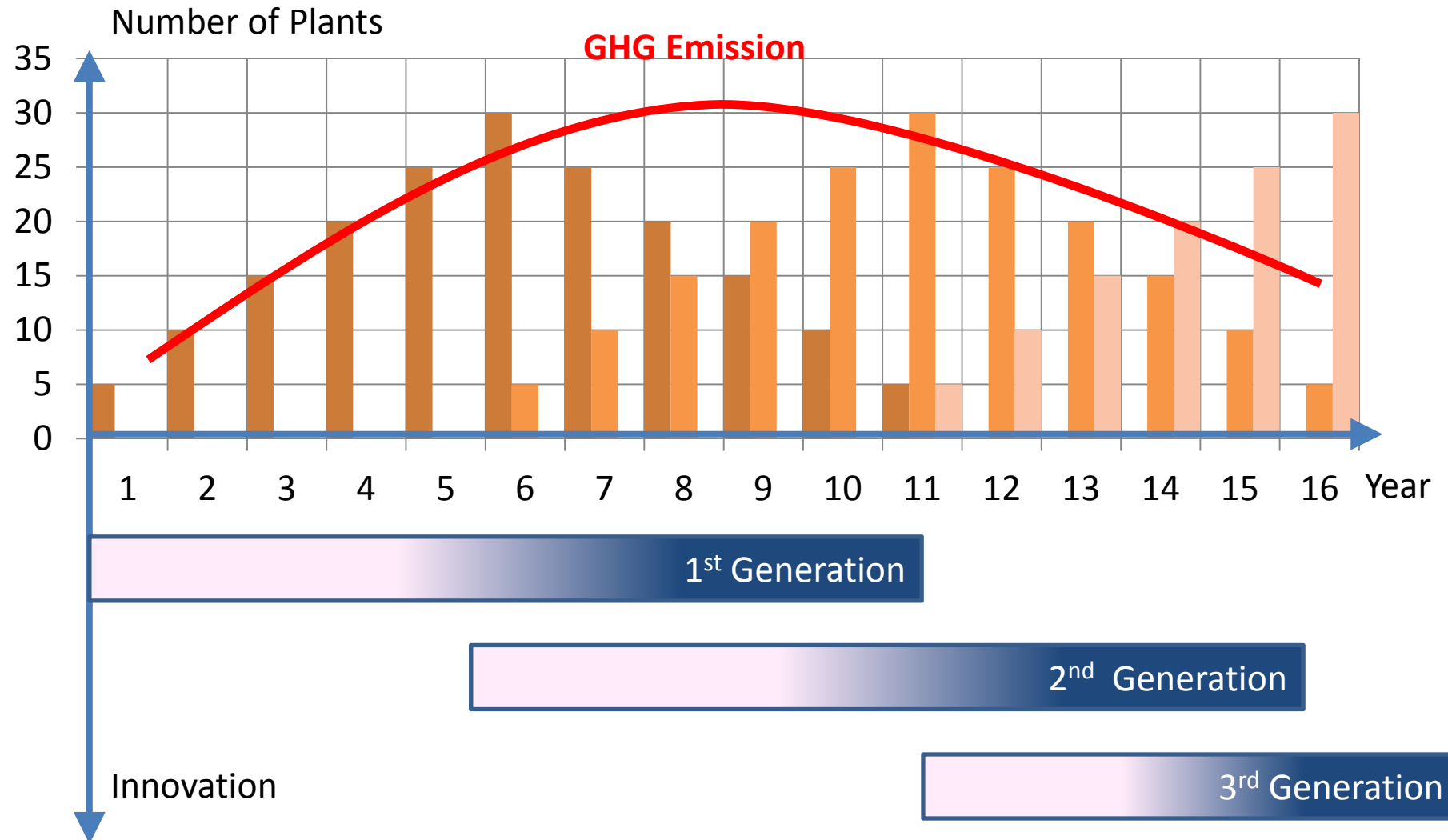


New pattern of innovation and growth

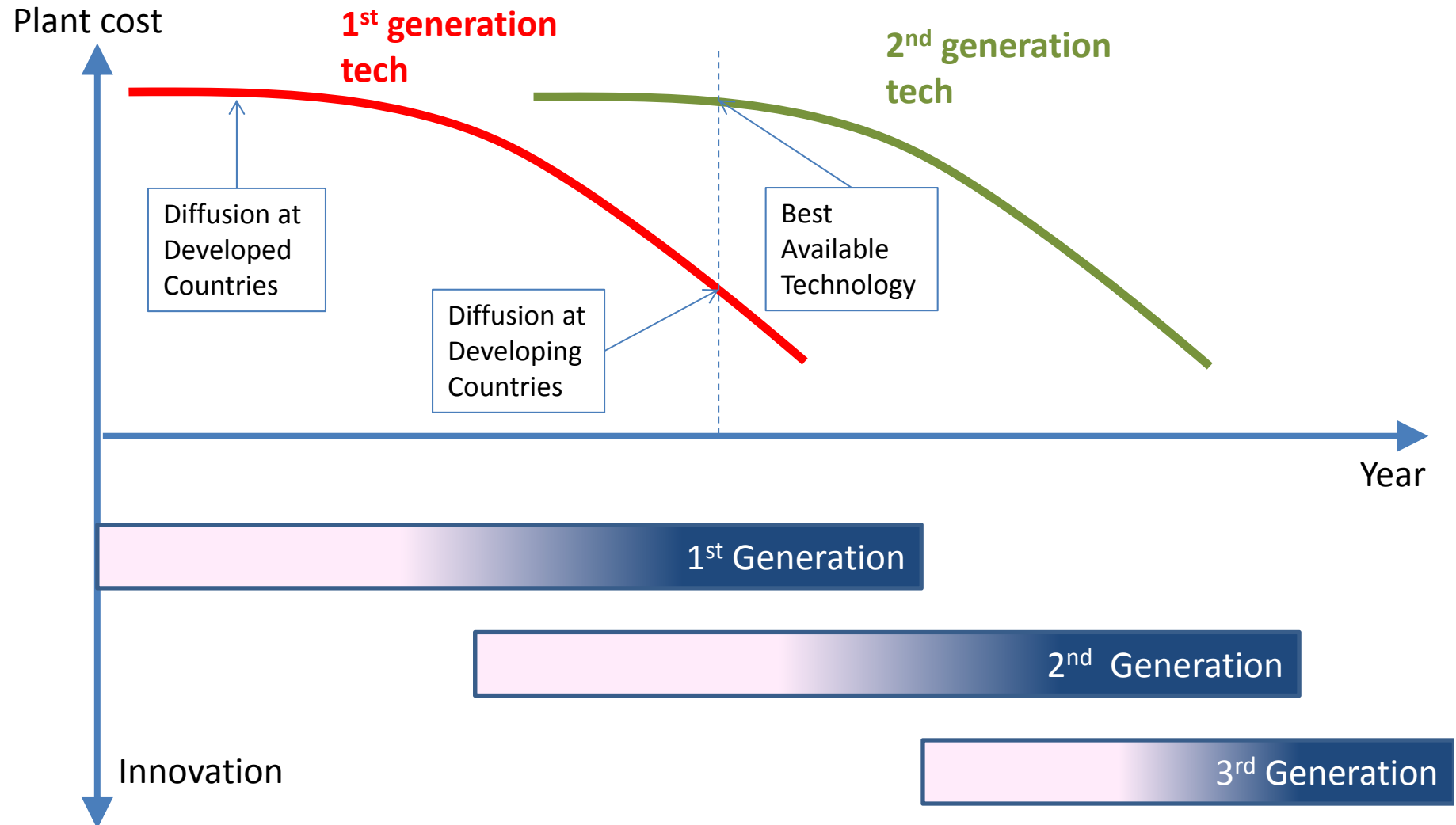


Source: Merrill Lynch

Technology transition



Difference of timing of technology diffusion between Developed and developing countries



Why new technology deployment will be delayed in Developing countries?

- Cost effect
 - Cost is expensive at early stage of diffusion
 - Cost will be decreased at late stage of diffusion
 - Technology Effect
 - Track record of New technology is limited at early stage
 - uncertainties in long-term operation → operational risks
 - Limited operation engineers → limited absorptive capacity of new technology
- Developing countries tend to employ diffused technology rather than new technology

Long term Objective and short/Middle term Issues on Infrastructure development

- Long term Objective
 - Sustainable development (Environmentally, economically and socially)
 - Needs to consider “strong sustainability” rather than “weak sustainability”
- Middle/Short term issues
 - How to develop infrastructure which will serve as economic and social driver to alleviate poverty?
 - How to encourage project developers to shift from conventional development to low carbon development?
 - How to speed-up diffusion of low carbon infrastructure in developing countries?
 - How to raise finance for infrastructure development?
 - How to receive and apply new technologies?

Towards Green Growth - OECD Green Growth Strategy-

Enabling Condition

- Balanced tax structures
- R&D and innovation policy
- Competition
- Infrastructure investment
- Openness to trade and FDI

Major environmental issues

- Water scarcity
- Climate change
- Health impacts of pollution
- Biodiversity

Key policy tools

- Pricing of pollution and resource use
- Subsidy reform
- Regulatory and policy predictability
- Support to basic research and emerging technologies
- Governance of natural assets

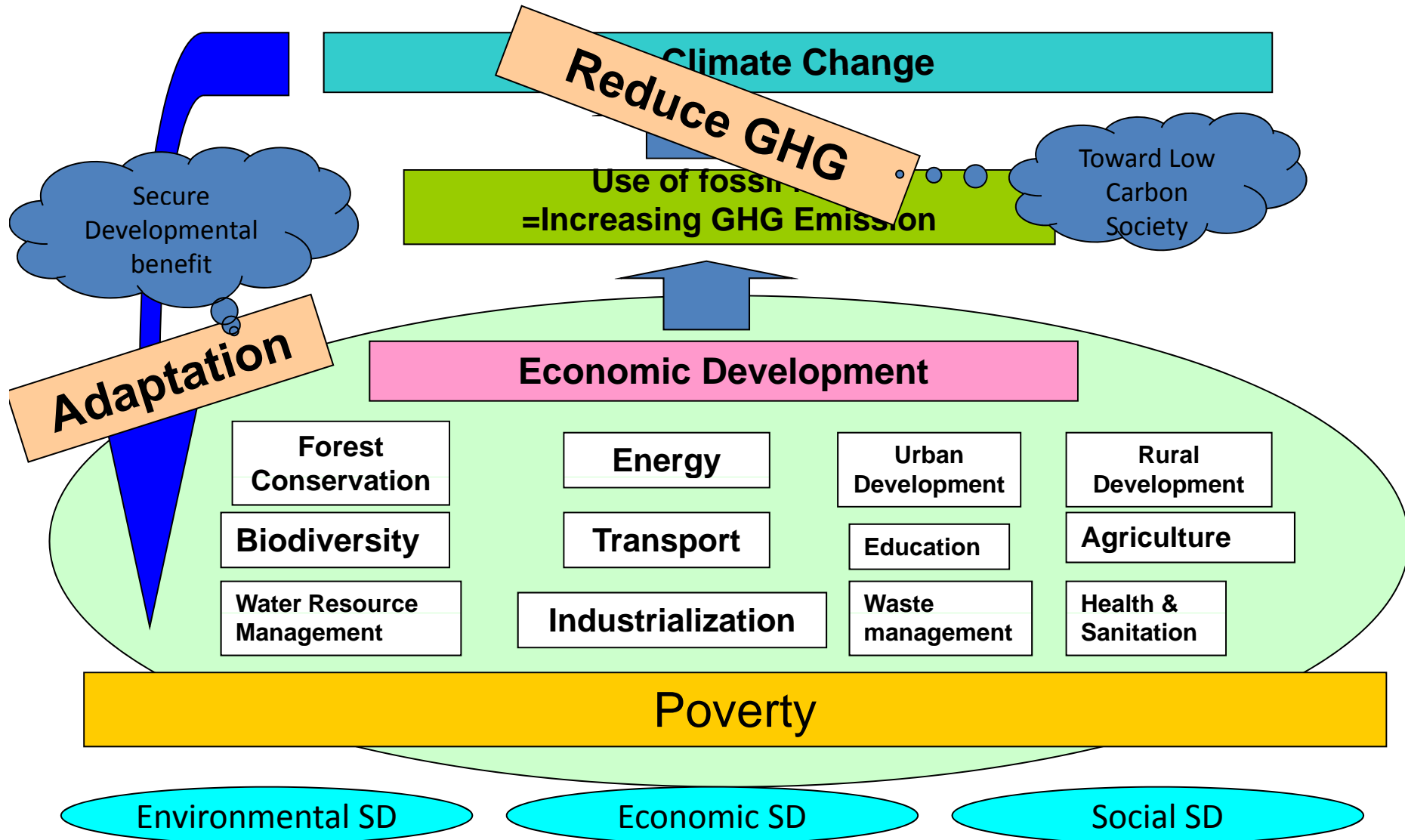
Promoting transition

- Skills and labour market adjustment
- Distributional and competitiveness concerns
- Science and technology cooperation
- Development assistance
- Management of global public goods

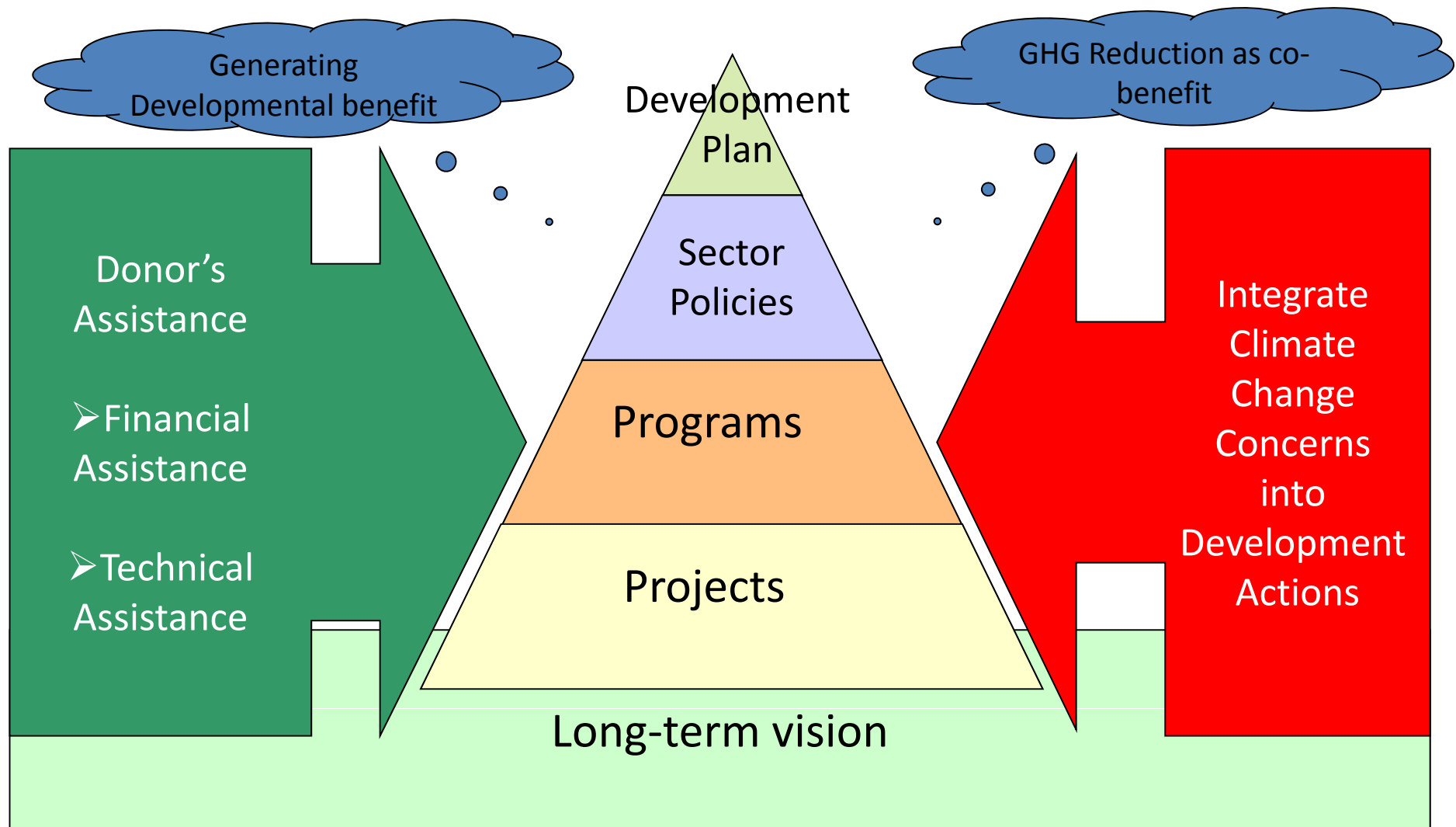
Measurement agenda

- Productivity of resource use
- Physical evolution of the natural asset base
- Environmental quality of life
- Opportunities arising from environmental considerations
- Evolution of policy and social responses
- Promoting efforts consistent with international standards

Major drivers of Infrastructure development

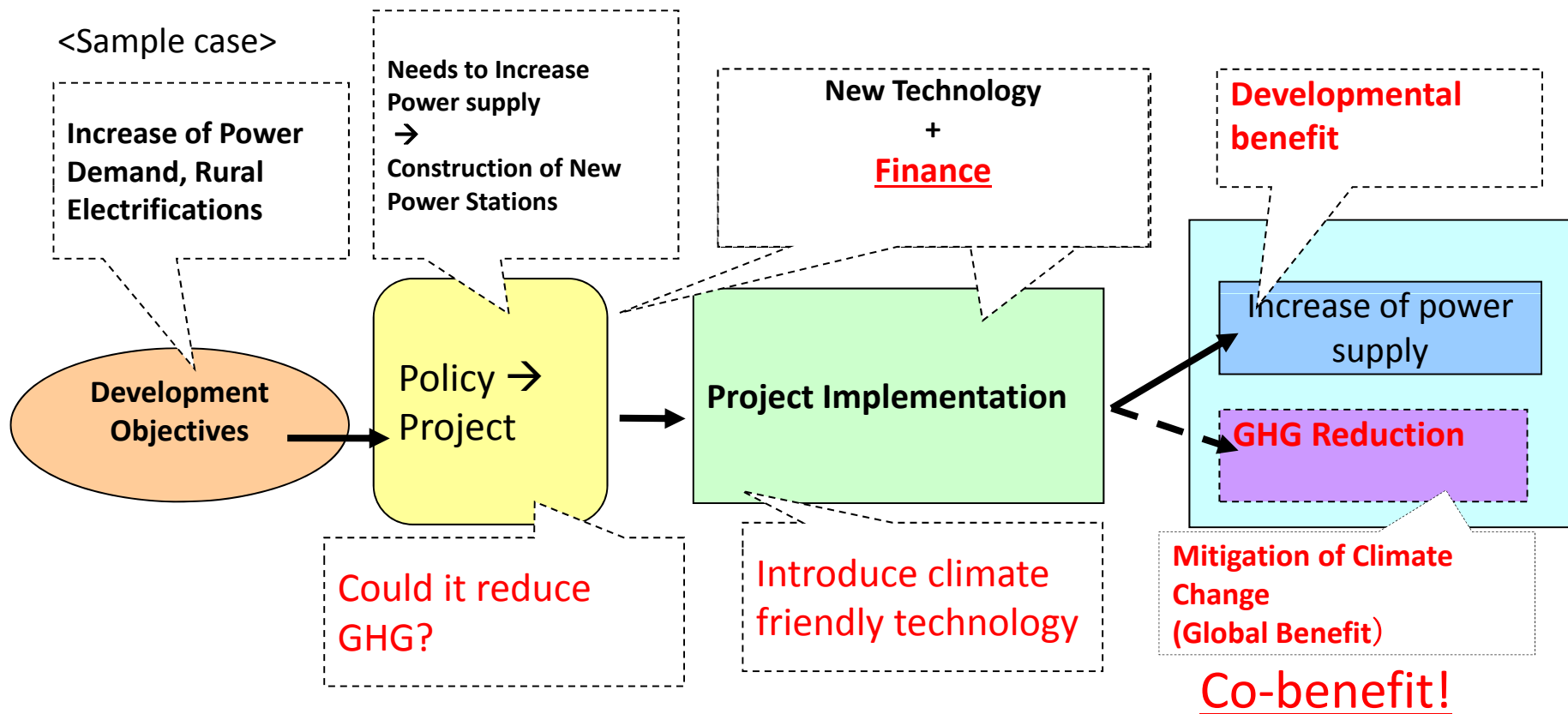


Major drivers of Infrastructure development



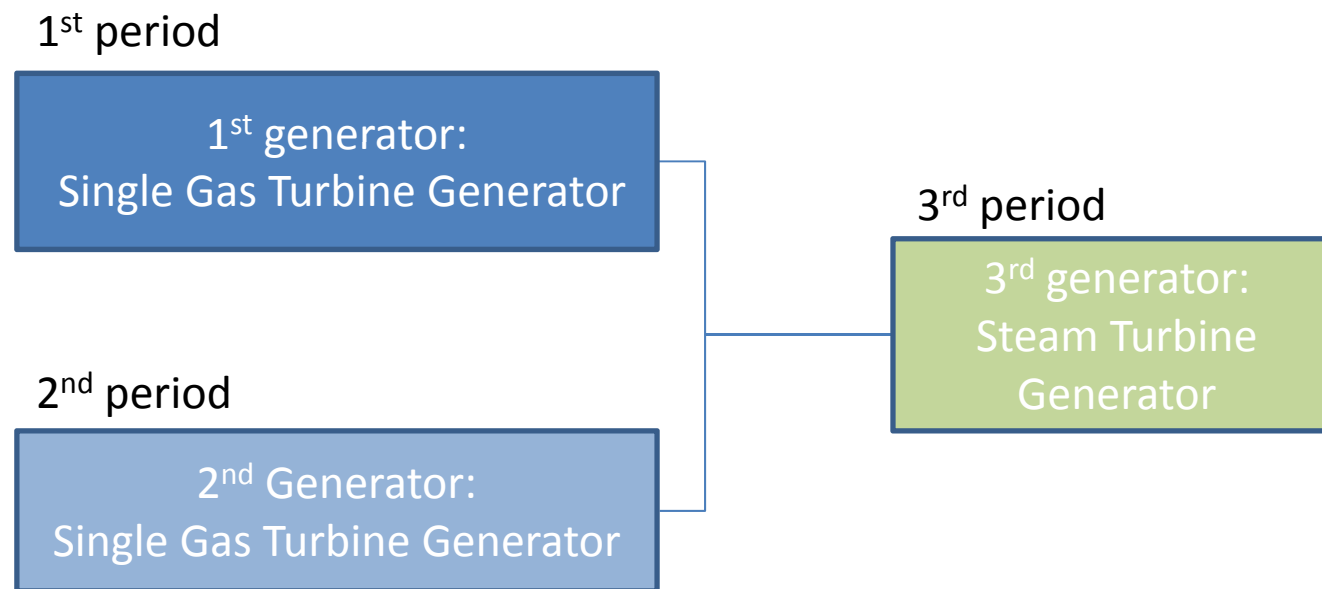
Co-benefit Approach

- Co-benefit approach, which will generate both developmental benefit such as recovery from economic crisis, stable economic growth and poverty alleviation and global benefit such as GHG reduction simultaneously, will be effective in infrastructure development.
- Infrastructure development with conventional technologies may lead fossil energy dependent technology lock-in. Therefore, considering long lifetime of infrastructure, it should be avoided to develop “fossil energy dependent economy” in developing countries.



Potential option for avoiding lock-in - Energy Sector -

- Multi-staged Development
 - Case of Combined Power Station development.

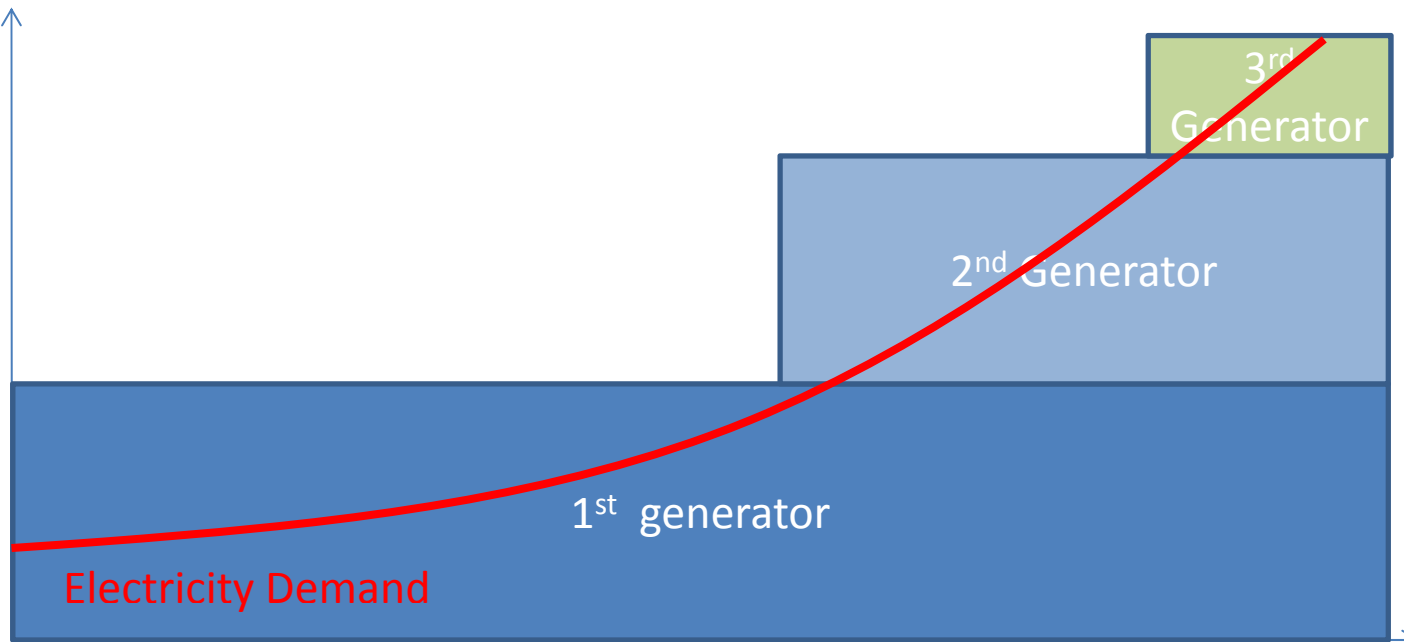


Design as “a package”, but different timing of installation → improved technology will be available

Potential option for avoiding lock-in - Energy Sector -

- Multi-staged Development
 - Develop power station with consideration of future expansion options

Power Demand/
Installed capacity

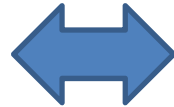


Time

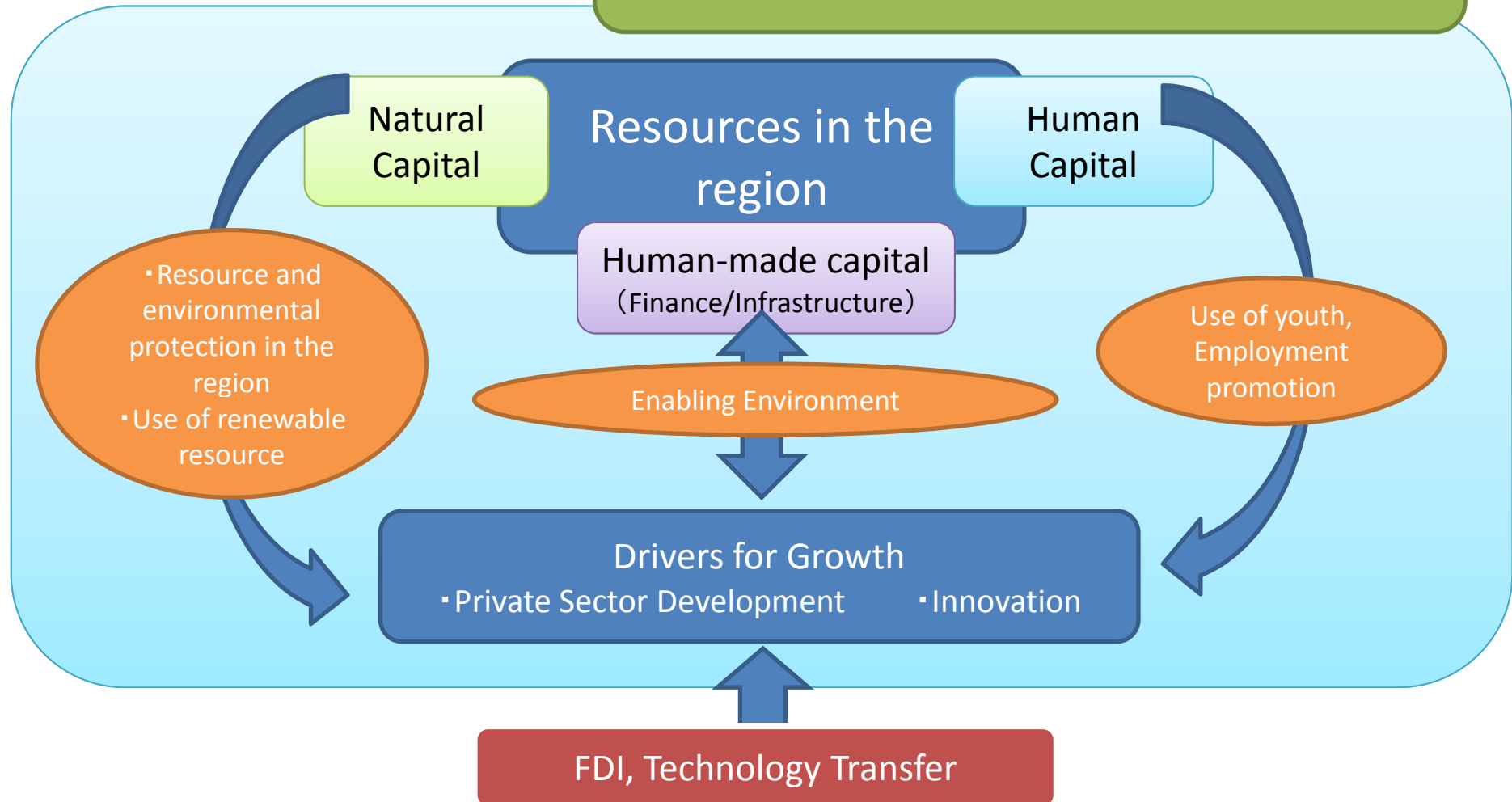
New Development Paradigm from Africa

Inclusive Green Growth

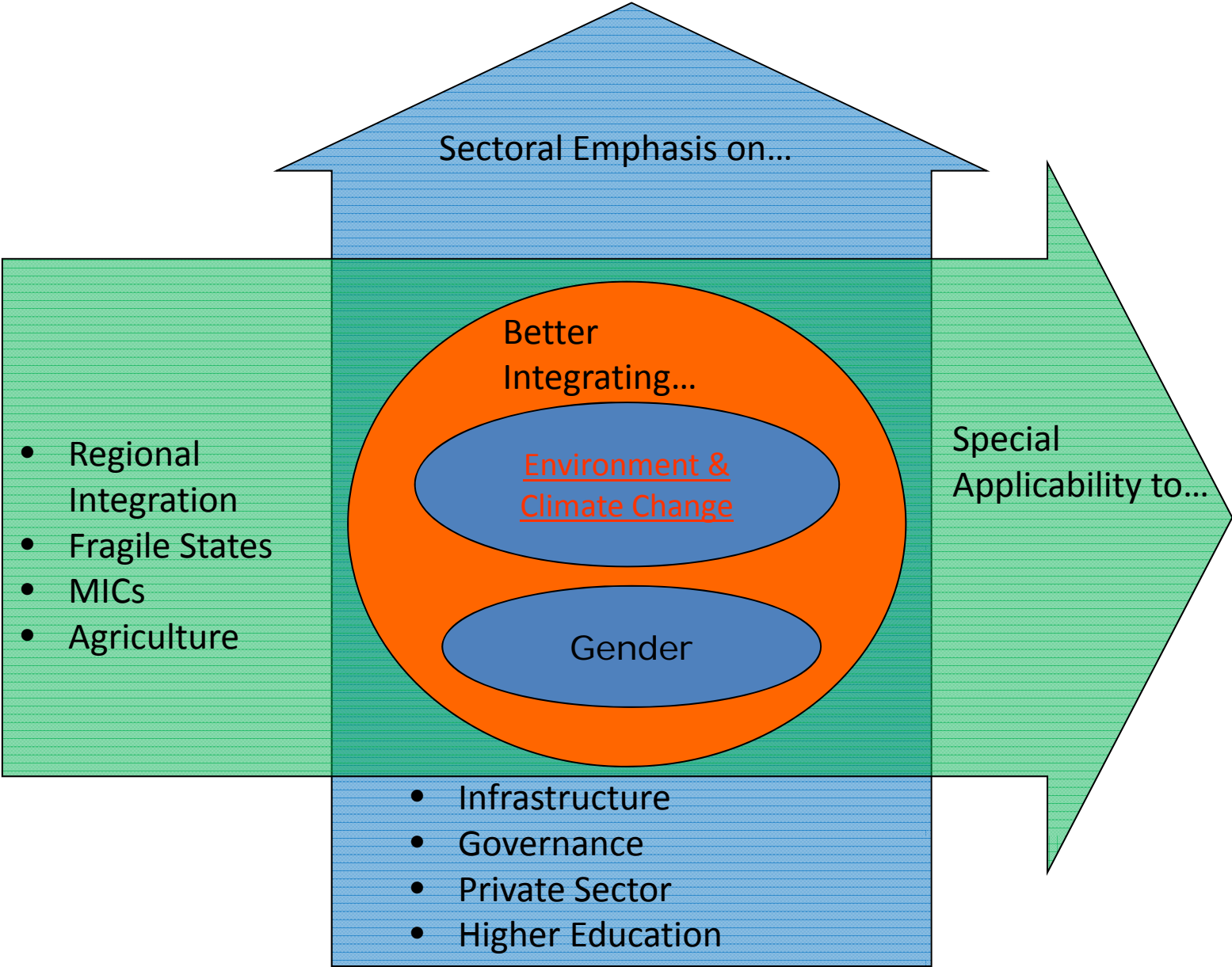
Resilience to External Shocks
(Resource Price, Food Price,
Climate Change etc)



Regional self-reliant and sustainable development
= Green Growth



Core Priorities Set Out In Mid Term Strategy of AfDB



【Regional Cooperation】 Case of African Power Pool

List of Projects (FY 2008-09)

North Africa

EGYPT

- > Kuraymat Integrated Solar Combined Cycle Power Plant Project (Phase II)
- > Energy Control System Upgrading Project in Upper Egypt
- > Gulf of El Zayt Wind Power Plant Project
- > Project for Introduction of Clean Energy by Solar Electricity Generation System

TUNISIA

- > Metropolitan Railway Electrification Project (Phase II)

West-Central Africa

SIERRA LEONE

- > Project for Urgent Improvement of Electric Power Supply System in Freetown
- > Master Plan Study on Power Supply in Western Area

GHANA

- > Project for Introduction of Clean Energy by Solar Electricity Generation System

NIGERIA

- > Project for Rural Electrification in Cross River and Akwa Ibom States (Phase III)

GABON

- > Project for Introduction of Clean Energy by Solar Electricity Generation System

East Africa

UGANDA

- > Interconnection of Electric Grids of Nile Equatorial Lakes Countries Project
- > Project for Rural Electrification (Phase II)
- > Project for Master Plan Study on Hydropower Development

DJIBOUTI

- > Project for Introduction of Clean Energy by Solar Electricity Generation System

KENYA

- > Olkaria I Unit 4 and 5 Geothermal Power Project

TANZANIA

- > Project for Reinforcement of Transmission and Distribution Facilities in Oyster Bay Substation (Phase I & II)
- > Project for Capacity Development of Efficient Transmission and Distribution

BURUNDI

- > Project for Introduction of Clean Energy by Solar Electricity Generation System

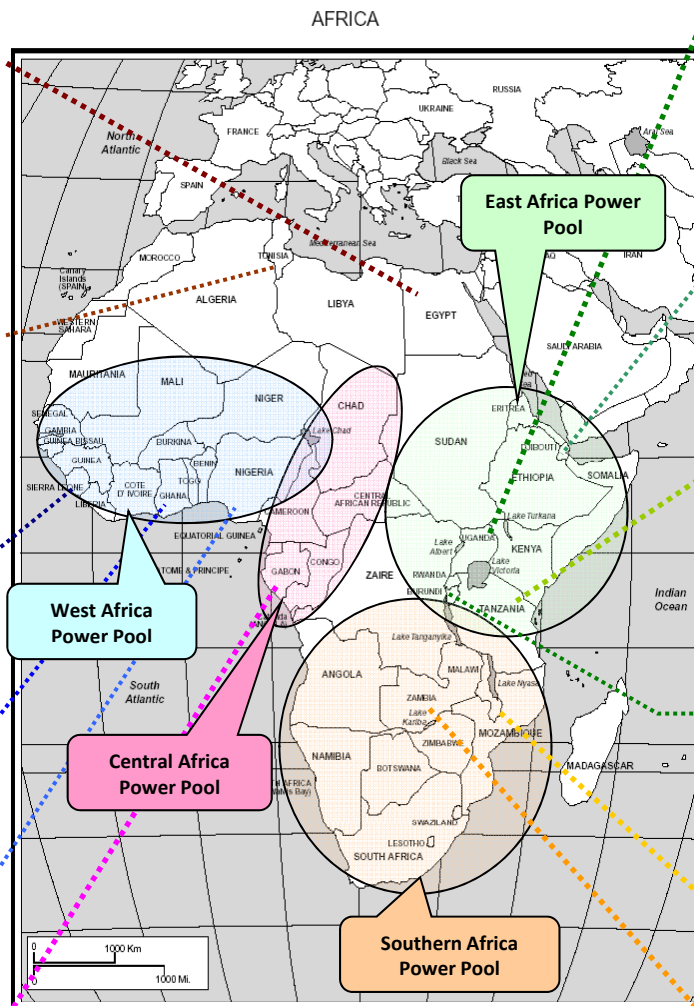
Southern Africa

MALAWI

- > Project for Introduction of Clean Energy by Solar Electricity Generation System

ZAMBIA

- > Increasing Access to Electricity Services Project
- > Project for the Capacity Development for Rural Electrification
- > Study for Power System Development



Short-term responses (1)

- **Fiscal stimulus is first goal for developing country to ensure their continuous economic growth and resilience to financial turmoil**
 - Maintaining and expanding fiscal scale for continuous actions on climate change by developing country's governments can lead climate change actions and, in turn, appropriate development process toward Low Carbon & Climate resilient Society.
 - Climate change policy is not necessarily new policy. Climate change policy is only an application of development policy which is already prepared by the developing countries' government.

Short-term responses (2)

- **Increasing “Green” infrastructure investment can support developing countries’ economic growth with creating job opportunity:**
 - There exists a huge demand on infrastructure development. On a short time, this will realize job creation through labor-intensive projects (i.e. will have a nature of social protection measures).
- **Social security net (SSN) measures will cope with adaptation measures:**
 - It may support socially vulnerable people to strengthen their resilience to climate change. Adverse impact of climate change is large on vulnerable people.
 - It is important to strengthen the social resilience to uncertainty such as financial crisis and climate change, and social safety net measures implemented for the recovery from financial crisis are also effective as adaptation to climate change.

Mid/Long-term responses

–Green growth-oriented structural reform

- **Economic growth must be a top priority in developing countries, however, it is necessary to depart from fossil fuel dependent economic growth towards low carbon development:**
 - Low carbon development path is quite different from conventional development path. And, it is necessary to change development structures for establishing low carbon development path.
 - Many developing countries currently develop their development policy based on the conventional development path, but they need to develop new development plan integrating climate change issues under new process. There is a need to develop capacity to enable for developing countries to develop own low carbon development path.

Mid/Long-term responses

–Green growth-oriented structural reform

- **Infrastructure development can improve in the enabling environment to shift to Low Carbon Economy:**

- On a long-term, Infrastructure development will create an enabling environment which will underpin the demand boosting after the crisis recovery (in Asian currency crisis the cut in spending on infrastructure development by fiscal authorities was one of the main reasons which prolonged the recession).
- The enabling environment of low carbon development consists of the above mentioned infrastructure (hard component), related laws and regulations (soft) and domestic & international capital flows (finance). These components will be realised and supported by appropriate policy planning and implementation by the public sector, which needs enough capacity development.

Mid/Long-term responses

–Green growth-oriented structural reform

- **Development and implementation of climate policy is essential for Low carbon & climate resilient development:**
 - Establishment of appropriate climate change policy will lead greening development process.
 - It should be considered that climate change is not environment issues but development issue and climate change policy needs to develop based on the long term vision.

Concluding remarks

- There are good opportunities for developing countries to shift their development path toward low carbon development
- It is critical to ensure that climate change policy based on the long term vision should be developed in line with development objective
- It will be critical to ensure that climate change finance contributes to development objective



We are all sitting in the same boat¹

Thank you very much for your
attention!

Your comments are welcome!

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