

Economics of SDG/SCP

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Raekwon Chung

Professor Emeritus, Incheon National University

Member, International Award Committee,

Global Energy Prize, Russia,

SCP: why not happening automatically ?

- **Sustainability: long term return**
- **Market: short term profit**
- **SCP: is it something new? Invented by Agenda21?**
- **Traditional lifestyle: SCP**
- **Ecological footprint: US, EU, Japan,**
- **Problem lies with the Economics**
- **Worst case of U/SCP: climate change**

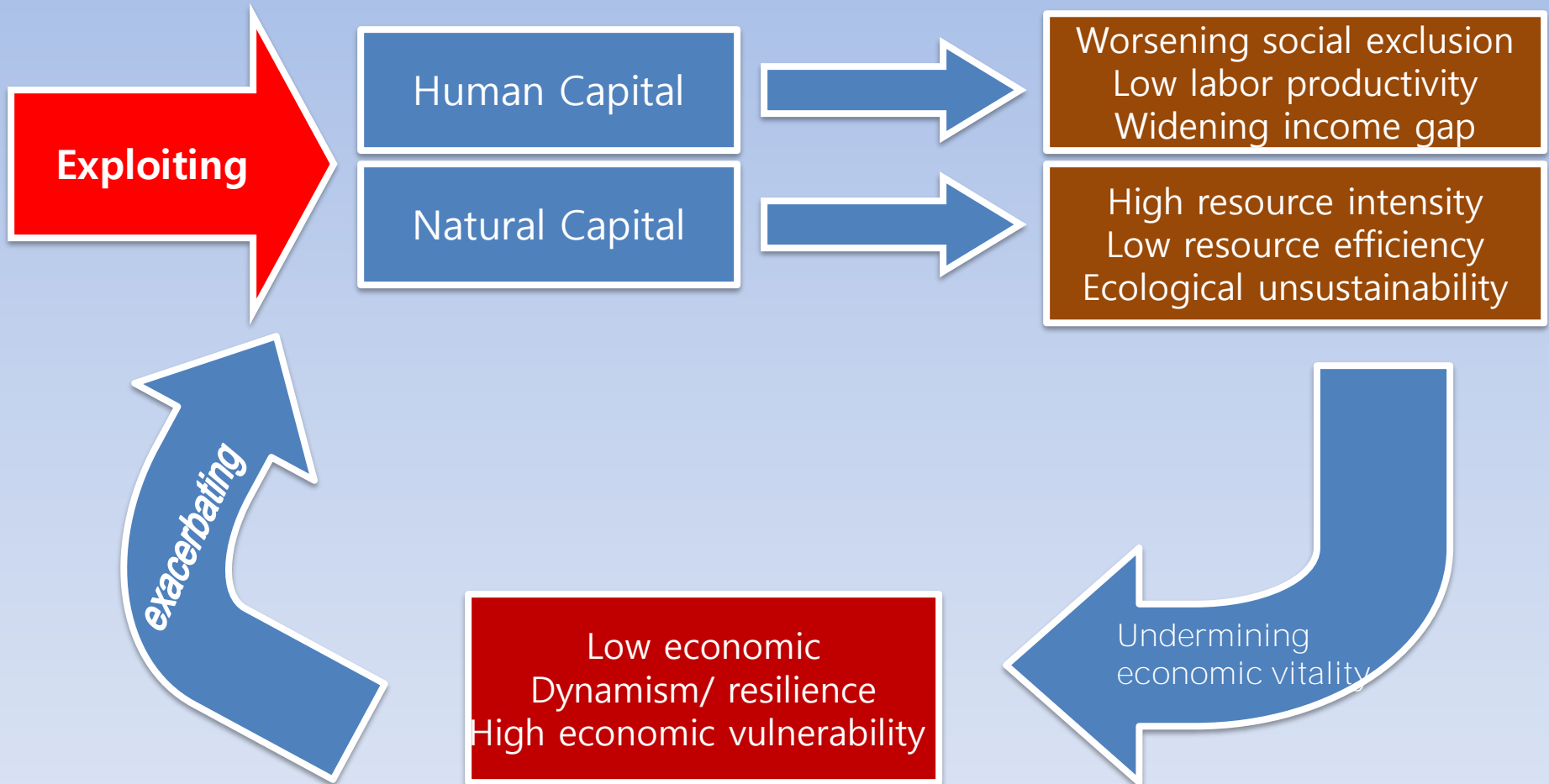
Transformation towards clean energy future

- Climate Change is not just “Rising Temperature”
- Our Challenge: Transforming our economy towards clean energy future to remain within 2°C target
- Clean Energy Transformation will not happen automatically: it is political, ecological, social choice not market choice; a choice for our survival,
- ✓ Industrial Innovations powered by coal, oil, electricity, internet happened automatically by market

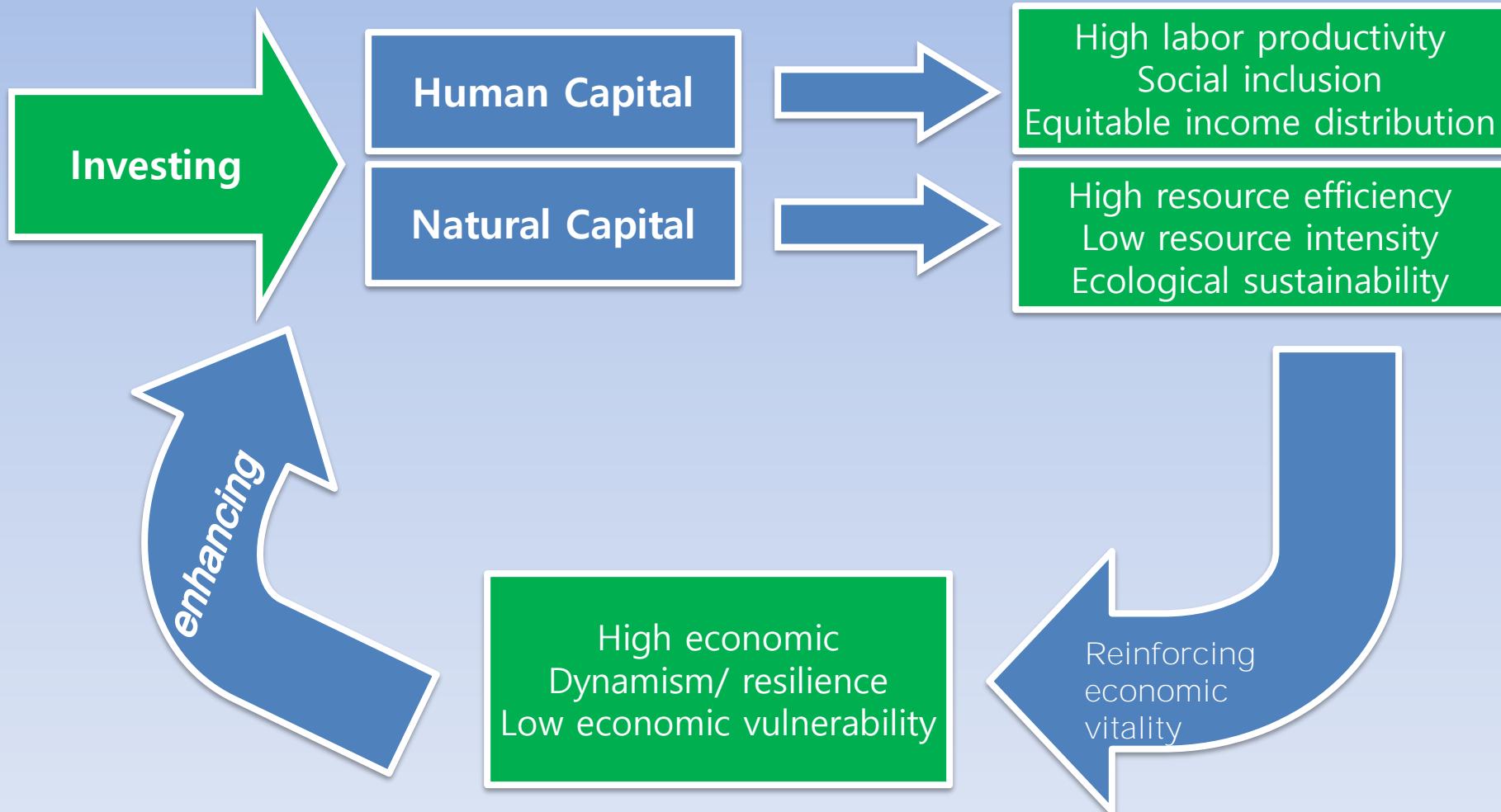
Sadly, extent of long term transformation is limited by short term economic feasibility

- **Unfortunately, success or failure of low carbon transformation will depend on economic viability as we are stuck in short term GDP quantity paradigm;**
- **Long term transformation requires paradigm shift towards Long term quality of our economic growth**

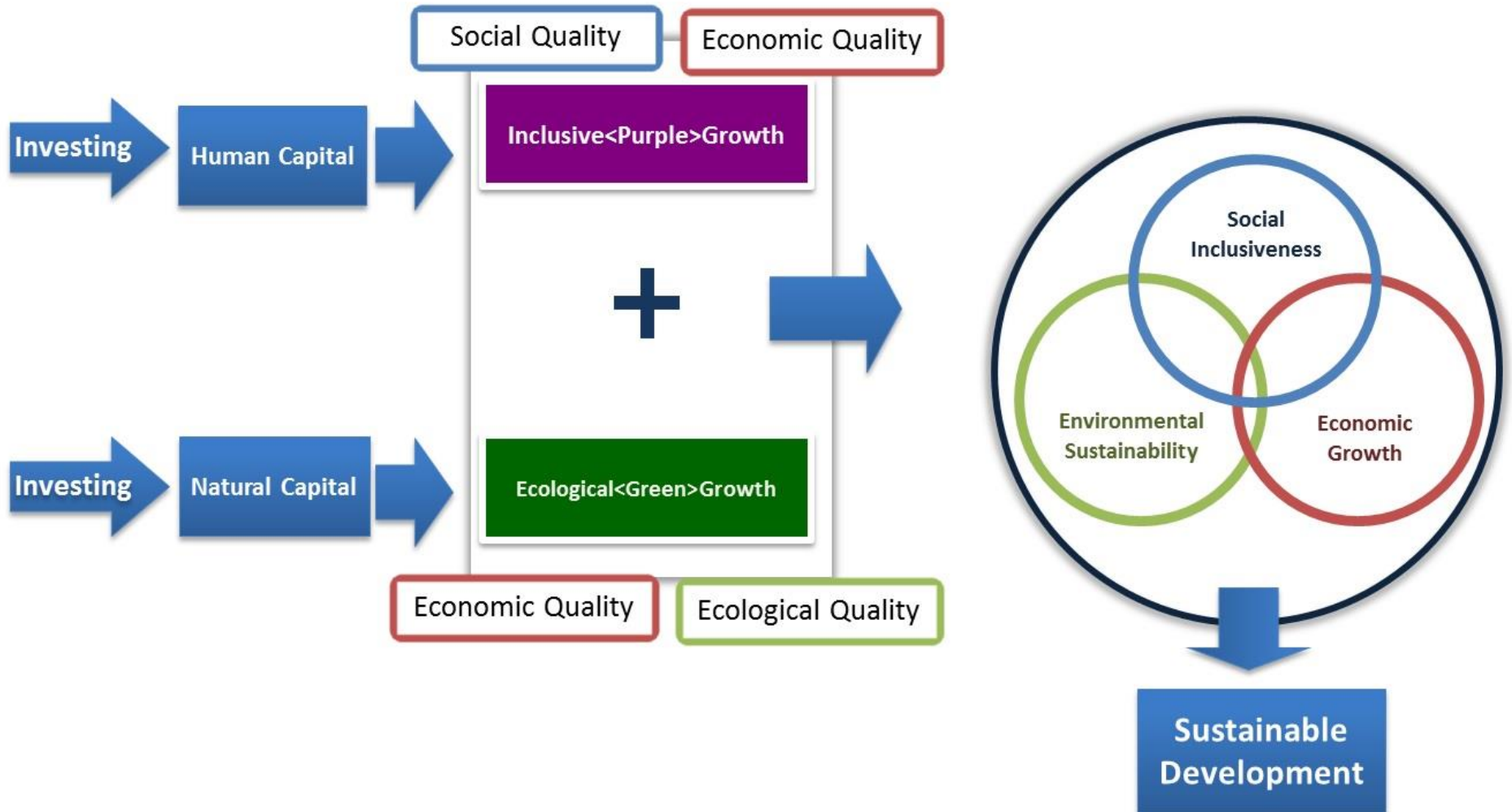
Vicious cycle/Maximization of Short Term Quantity of Growth (GDP)



Virtuous cycle/Pursuing Long Term Quality of Growth (GDP)



Model for integration of 3 dimensions of SD



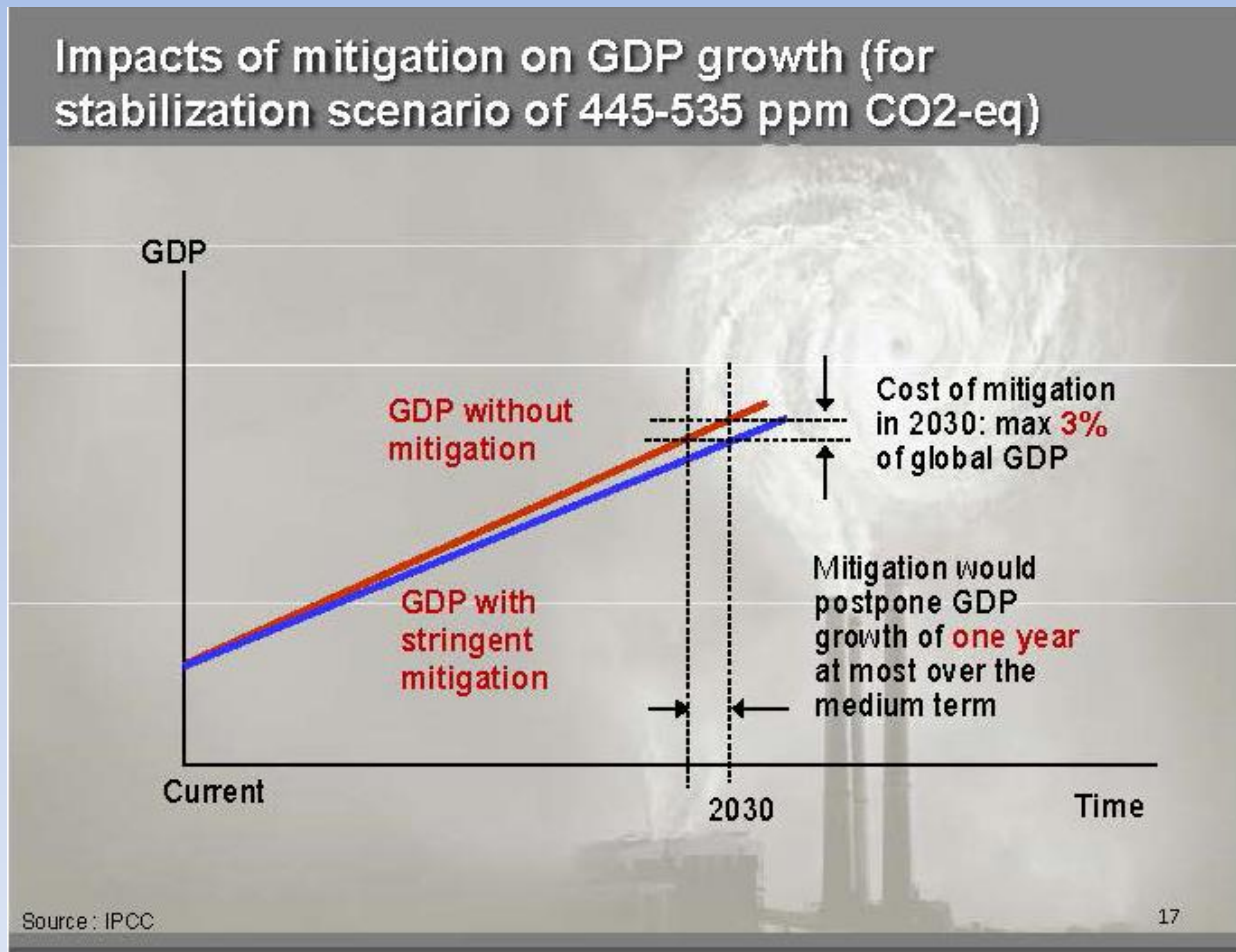
Magnitude of Deep De-carbonization for 2°C

- CO₂ emission from energy sector should peak by 2020, reduced by 70% from current level by 2050
- 70% global energy has to be clean energy
- share of renewable energy to increase from around 15% in 2015 to 65% in 2050
- By 2050, nearly 95% of electricity should be clean energy, 70% of new cars to be electric, the entire existing building stock has to be retrofitted, CO₂ intensity of industrial sector to be 80% lower

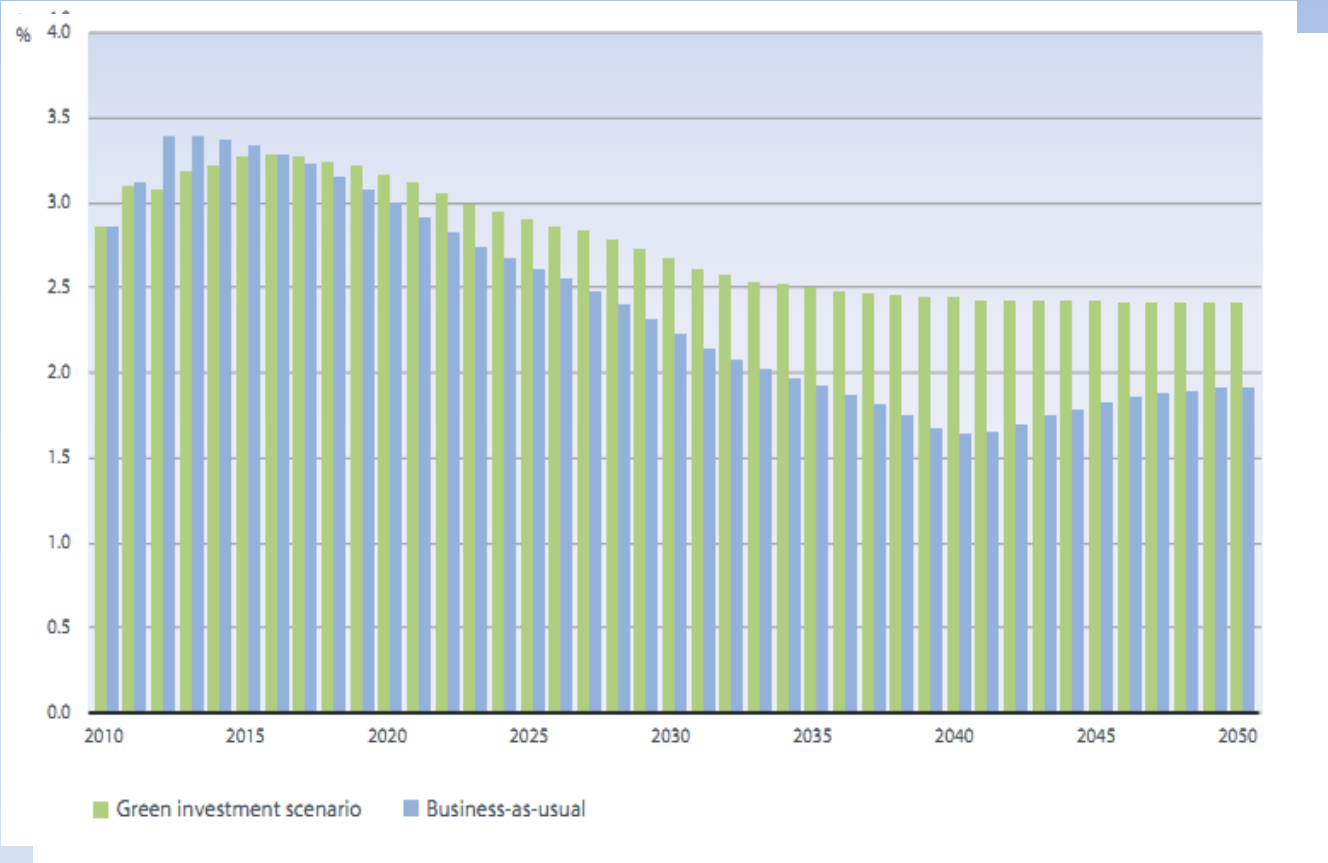
Extent of challenge

- Fossil fuel share in 2050 reduced to a third of today's level. oil demand to be reduced to 45% of today's level
- Even with NDC of Paris Climate Agreement: **by 2050, the energy sector will emit almost 1,260 Gt; nearly 60% more than carbon budget of 790Gt.**
- Investment in RE to be tripled; Net incremental investment of USD 830 billion more per year compared to current plans and policies

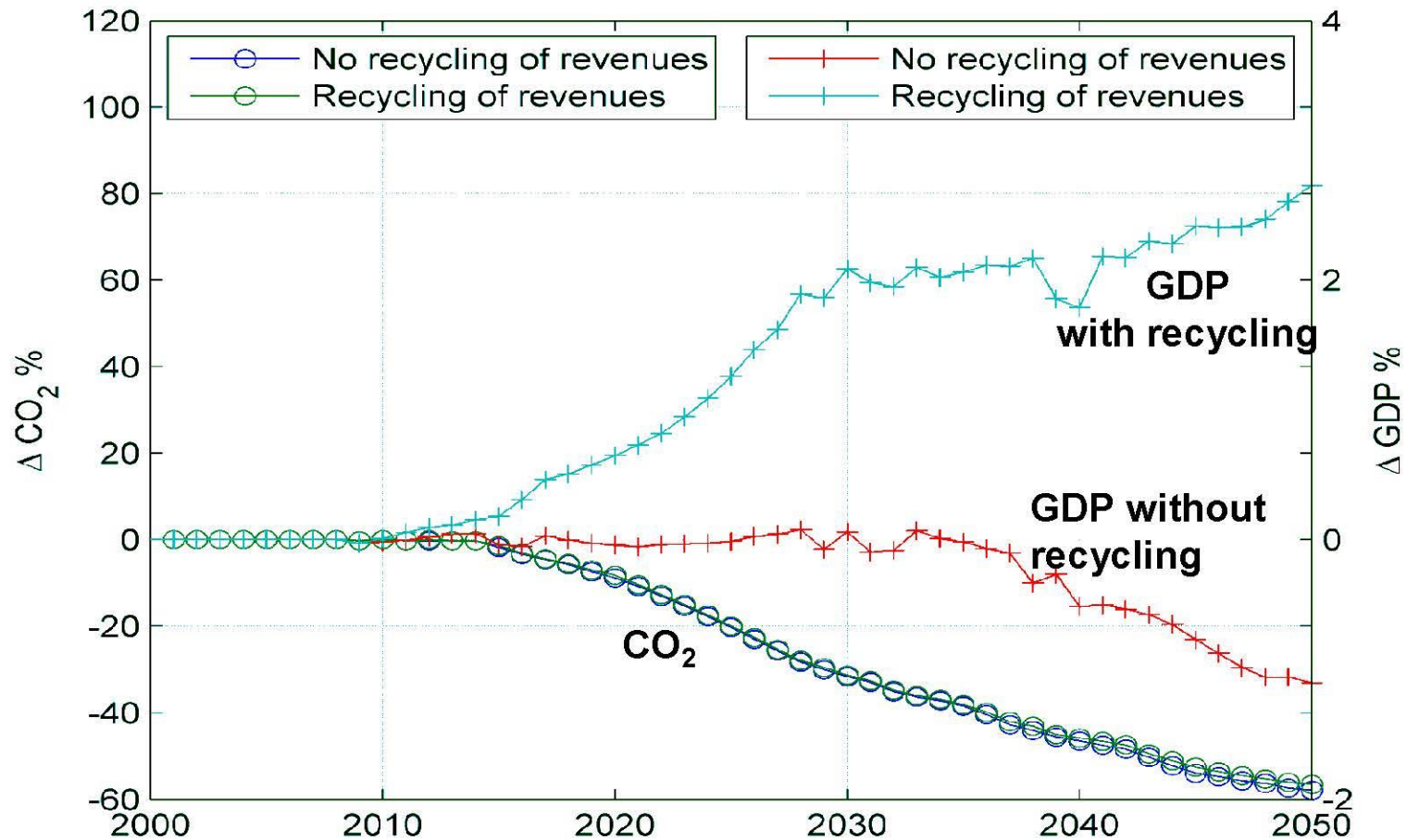
Economic Models of Low Carbon Transformation: IPCC 5th AR



Green Growth: Projected trends, UNEP



% difference from reference case for the effects of recycling of revenues from carbon prices on global GDP and CO₂ emissions 2010 - 2050



Source: E3MG modelling, Barker and Anger, 2013 – work in progress

Contradicting Projections

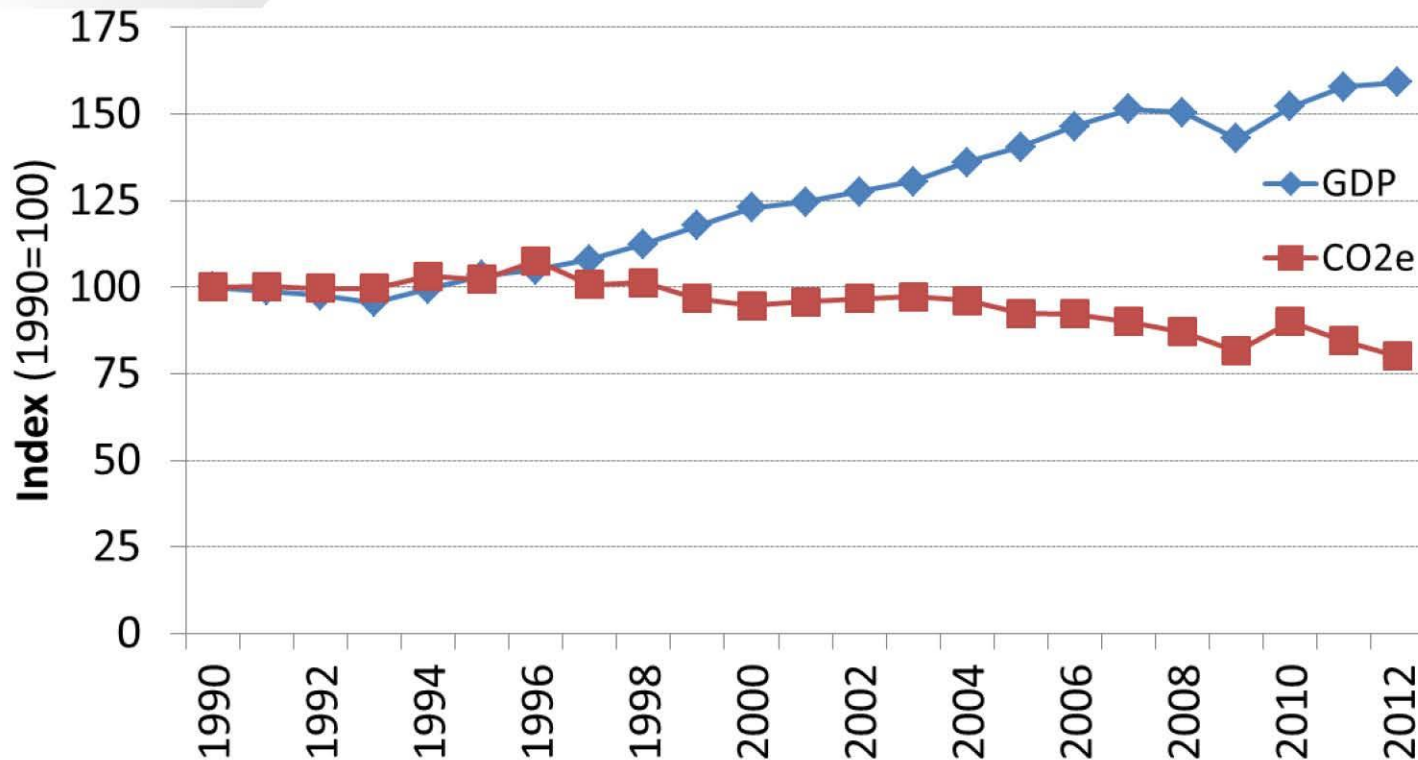
- Bjorn Lomborg: Paris Climate agreement will cost 1 trillion annually, EU GDP will be reduced by 1.6% by 2030, EU will lose £200 billion annually, for global economy to lose £600 billion to £1.2 trillion GDP annually
- IRENA: Global GDP will be 0.8% higher in 2050, \$19 trillion in cumulative economic gains 2015-2050, 26 million jobs in renewables by 2050 from 9.8 million today, Health, environmental, climate welfare 6 times the investment,
- OECD: G20 GDP will increase by up to 2.8% by 2050. If the positive impacts of avoiding climate damage are taken into account, the net effect on GDP in 2050 rises to nearly 5% across developed and emerging economies of the G20.

Can we believe Static Long term economic modeling? Need Dynamic Modelling

- Conventional economists argue Climate Action will reduce Growth, damage the Economy.
- Is it true???
- It can be in the short run, but in the long run?
- **Static** CGE model: can it predict qualitative structural change of transformation? Not At All.
- We need **Dynamic** not static long term long term economic modelling that internalizes **structural & qualitative transformation of economic system.**
- **We should rather believe empirical evidence.**



Real GDP growth and CO₂e emissions in Sweden, 1990-2012



**1990 – 2012:
20 %
reduction of
CO₂e
emissions
+ 59 %
economic
growth**

Sources. For CO₂e: Sweden's National Inventory Report 2012, submitted under the UNFCCC and the Kyoto Protocol. Preliminary figures for 2012. For real GDP: Statistics Sweden.

Clean Energy Transformation can be an opportunity for business

- Net additional investment of \$860billion in RE is a huge business opportunity: Business should strategize to seize the opportunity, rather than resist.
- Role of Government: long term predictability, elimination of uncertainty for private investment, & lead technology R&DD, level playing field,
- Carbon pricing: IRENA, expects carbon pricing to be at around \$190 to meet 2°C target

Role of States : System Change

- Clean Energy Transformation requires **economic & financial system change**: which cannot be led by Market, has to be led by States.
- \$860 billion investment annually in RE, carbon pricing of \$190 etc. have to be led by States.
- Clean Energy Transformation requires not only **Technical Innovations** but **Policy Innovations**; innovative policy tools, such as ETR(Ecological Tax Reform); shifting tax base from Income to Carbon,
- Long Term Vision & Strategy: providing long term predictability & level playing field to minimize investment uncertainty & risk

For Developing country:

- Transformation to Clean Energy Future: poses extra challenges and opportunities
- Should set long term vision and strategy to take advantage of the First Mover's advantage; Costa Rica (long term consistency, reforestation, eco-tourism)
- Important policy tool; Eco-Tax Reform, Double Dividend, Revenue Neutrality,

ETR for 7 countries in AP

Country	CO ₂ reduction	GDP impacts	Employment	Recommended taxes to be reduced		
				GDP	Employment	Utility
Japan	-3.01, -2.77	+0.08, +0.22	-0.03, +0.04	CPR	LAB	LAB or CON
Korea	-8.64, -7.30	-0.22, +0.74	-0.13, +0.08	CPR	LAB or CON	CON
China	-21.10, -15.58	-1.85, +1.91	-0.44, +0.68	CPR	CON	CPR
India	-14.97, -17.68	-0.97, +0.54	-0.31, +0.32	CPR	CON	CON
Thailand	-6.72, -3.77	-0.81, +1.53	-0.36, +0.54	CPR	LAB	LAB
Malaysia	-9.37, -7.24	-0.81, +1.46	-0.53, +0.42	CPR	CON	LAB
Cambodia	-10.86, -8.60	-0.39, +1.01	-0.27, +0.26	CPR	LAB	LAB or CON

5 tracks of Policy Innovation

1. From quantity to quality of growth
2. Internalizing ecological price
3. Sustainable Infrastructure: Re-design city, building, transport, energy, water system
4. Promoting Green Business
5. Enabling Low Carbon Economics

Track 1. from quantity to quality of growth

Economic Quality

low unemployment, high value-added, competitiveness, resilience against outside oil price & financial shocks, low stocks and real estate bubble

Ecological Quality

eco-efficient growth, decoupling growth with energy consumption, Resilience to climate change, dynamic eco-system, water security

Social Quality

Inclusive, income equity, quality of life, happiness, well-being

- * different from Quality of Life, Well-being :
- * GG: ecological quality of growth

Track 2: Internalizing Ecological Prices

- Changing tax base from Labor to Pollution
- Making Market Driver of GE/EE
- Revenue Neutrality
- Double Dividend
- Explore potential for Double Dividend & applicability to DCs
- Leapfrogging Strategy for DCs

Track 3. Promoting sustainable infrastructure

- Transport: public transport > private car, Speed Train road to rail, minimize congestion,
- losing 3-5% GDP from traffic congestion
- Compact eco-City design for People not for Car,
- Walk-ability
- Zero Emission Buildings: energy efficiency, energy generation



Courtesy of ManagEnergy (European Commission)

Track 4. Turning “green” into business opportunity

- Climate is economic opportunities
- Business: needs to grasp
Green Ocean,
- Governments needs to support
 - Green R&D, technology
 - Creating New Market
 - Closing long & short term time gap
Market & Ecological Price Gap



Track 5. Low Carbon Economics

- Bjorn Lomborg: \$1 trillion costs for global economy , (????) is it true???
- Low Carbon Economics: OECD: climate investment could increase global GDP by 2.8 % by 2050
- Need to develop long term economic models and identify conditions to maximize economic benefit and job creation from the investments in Climate actions.

Blue Print for policy Innovation: Low Carbon Green Growth Roadmap for Asia and the Pacific May 2012

- a comprehensive blueprint for policymakers
- Roadmap consists of:
 - Main report
 - 63 fact sheets
 - 51 case studies
 - 8 policy papers
- Available for download: just google “**Low Carbon Green Growth Roadmap**”

