MEASURING GREEN GROWTH: INDICATORS

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OECD
BETTER POLICIES FOR BETTER LIVES

Outline

I. Green Growth indicators
  – Background
  – Framework (GGKP/OECD)
  – Examples

II. Challenges and Implications

III. Applications in countries
  – and what we are learning from it

BACKGROUND

GGKP – Moving towards a common approach

- GGGI, OECD, UNEP & WB – each work on GG indicators

- 2013 Annual GGKP conference, (April) – one of the two topics: Measurement & Reporting

- Organise thinking on indicators around a common framework
  - Improve communication (& reduce confusion)
  - Improve measurement (& fill knowledge gaps)
 - Strengthen case for no-nonsense GG policies

INDICATOR FRAMEWORK

Green growth indicators - aims

- Identify potential growth/wellbeing bottlenecks, risks & opportunities

- Communicate need for GG, costs and benefits of action and gain support

- Keep track of progress (or lack of it) on GG

- Set goals & targets, and monitor performance (e.g. SDGs)

- Choose right policies to achieve targets

- Evaluate policies ex post

Choice of indicators

- **Criteria**
  - policy relevance;
  - analytical soundness;
  - measurability (now or in the future);
  - communicability;

- **Flexible framework**
  - potential to adapt to country context & improve & develop further;

- **No single composite indicator (yet?)**

- **Based on refined/combined sets of existing indicators**
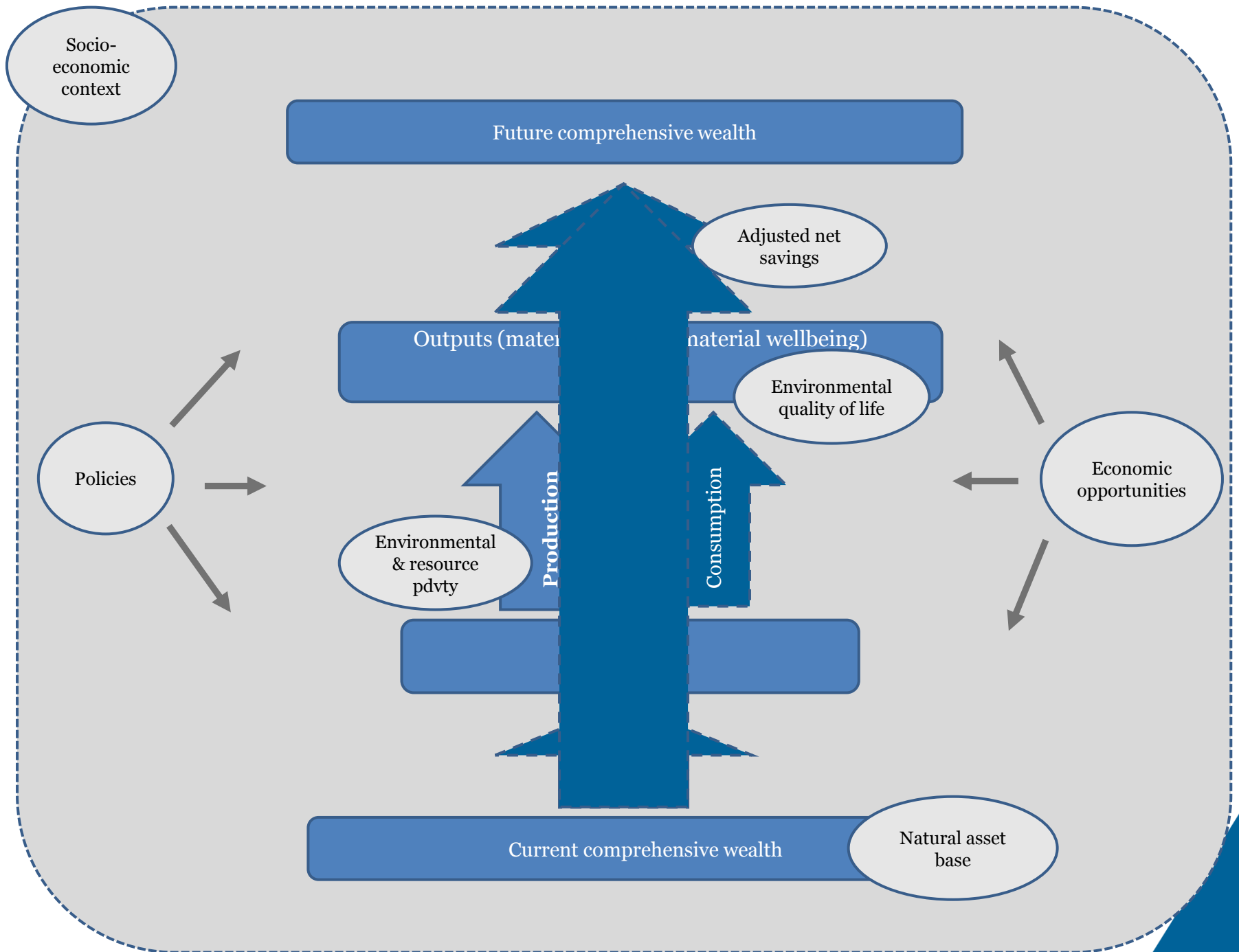
EXAMPLES

Indicator groups and topics

|		
1	**The natural asset base**	• Renewable stocks: water, forest, fish resources • Non-renewable stocks: mineral resources • Biodiversity and ecosystems
2	**Environmental and resource productivity**	• Productivity/efficiency (carbon, energy etc.) • Resource prdvty: materials, nutrients, water, waste • Technology and innovation • « green »multi-factor productivity
3	**The env. dimension of quality of life**	• Environmental health and risks • Access to environmental services and amenities
4	**Economic opportunities, policy responses and the socio-economic context**	• Taxes, prices and transfers, env. harmful subsidies • Regulations, policies and management approaches • Skills and training • International financial flows: FDI, aid… • Environmental goods & services • Economic growth and structure • Productivity and trade • Labour markets, education and income, • Inequality, exclusion, poverty
5	**Comprehensive wealth accounts**	• Adjusted Net Savings • Adjusted Net National Income

1. Natural asset base

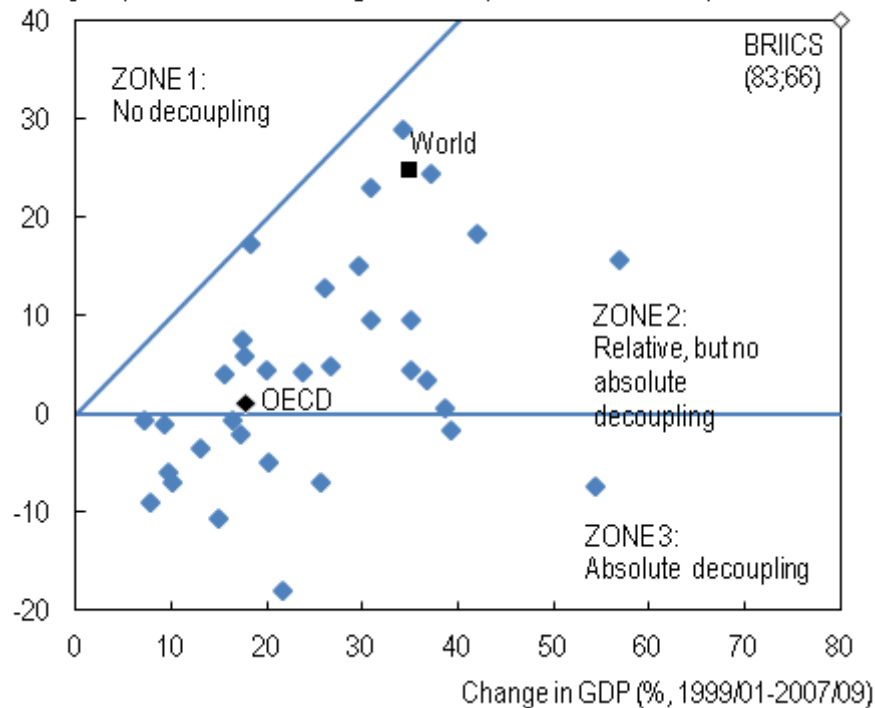Figure 2. Global state of world marine fish stocks, since 1974
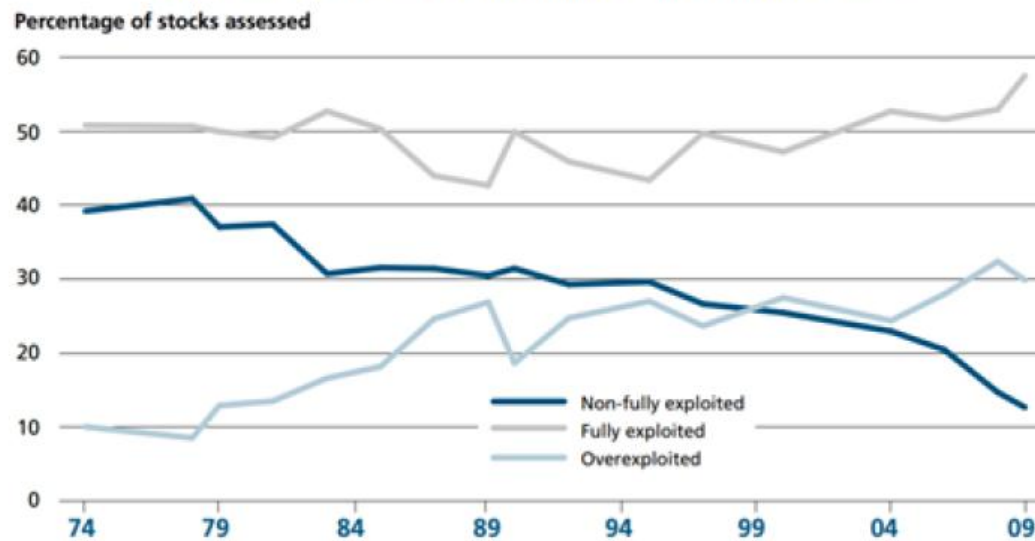
Source: FAO, The State of World Fisheries and Aquaculture.
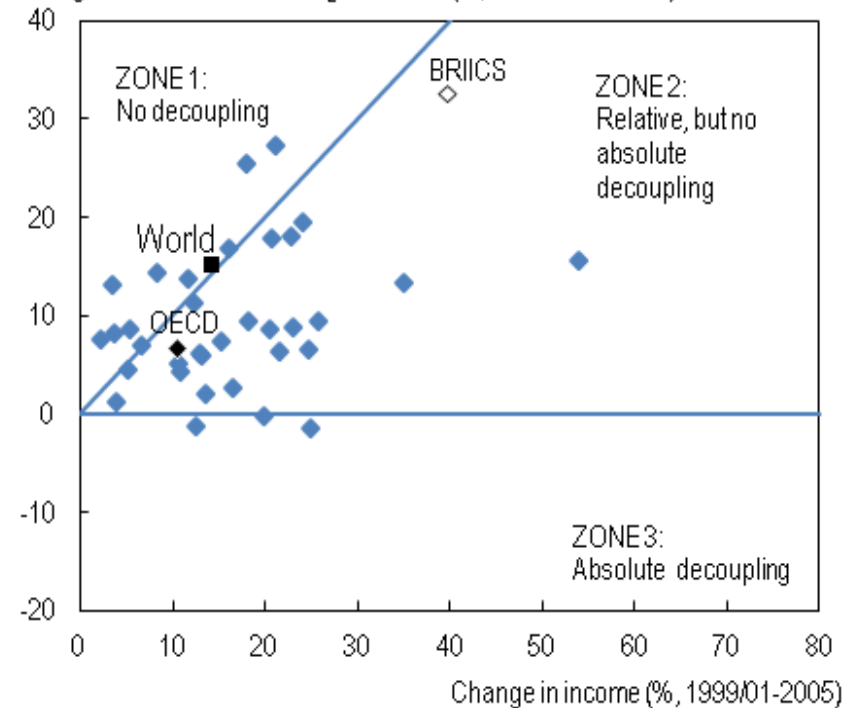
2. Environmental and resource productivity

Production-based CO$_2$ emisisons vs. GDP, OECD countries

Change in production-based CO$_2$ emissions (%, 1999/01-2007/09)

ZONE 1:
No decoupling

BRIICS
(83;66)

World

ZONE 2:
Relative, but no
absolute
decoupling

OECD

ZONE 3:
Absolute decoupling

Change in GDP (%, 1999/01-2007/09)

Demand-based CO$_2$ emisisons vs. income, OECD countries

Change in demand-based CO$_2$ emissions (%, 1999/01-2007/09)

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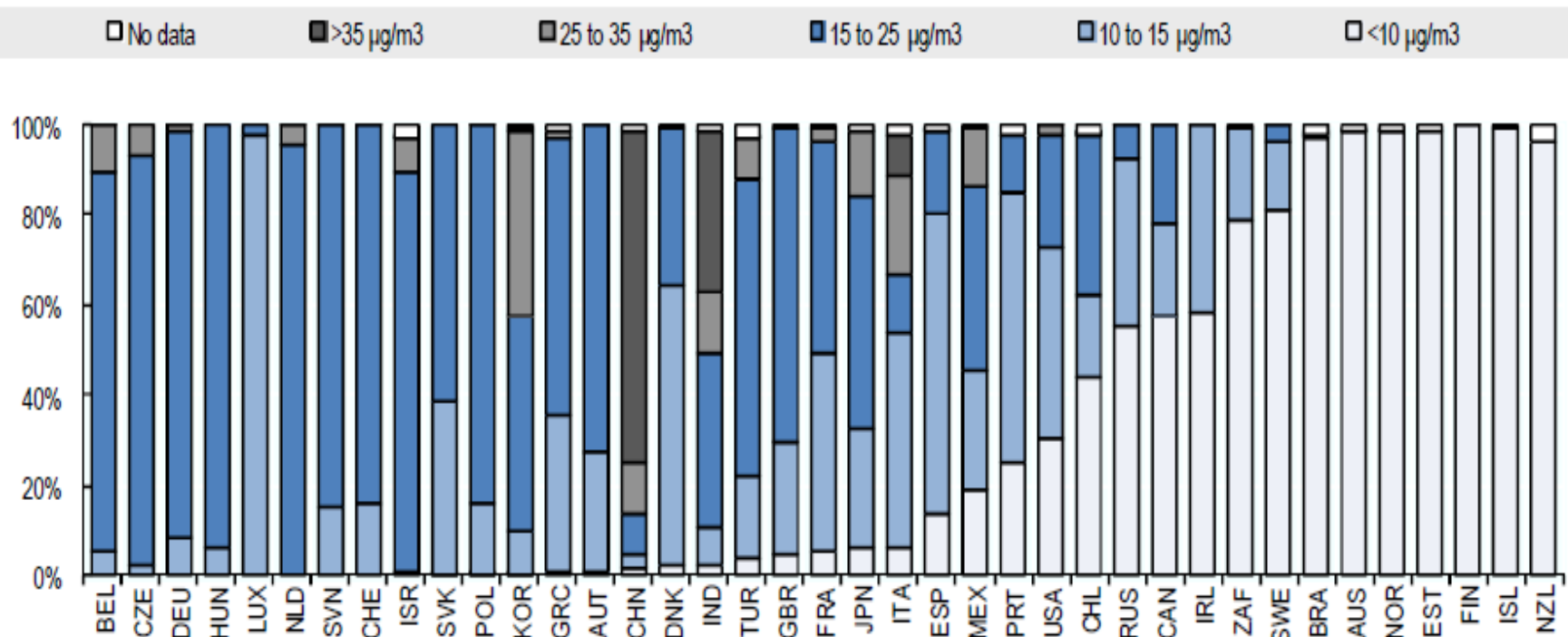
Change in income (%, 1999/01-2005)

3. Environmental quality of life

Population exposed to air pollution by WHO PM$_{2.5}$ thresholds, average 2001-06, OECD and BRIICS countries

Legend: No data | >35 μg/m3 | 25 to 35 μg/m3 | 15 to 25 μg/m3 | 10 to 15 μg/m3 | <10 μg/m3

HEADLINE INDICATORS FOR COMMUNICATION PURPOSES (OECD)

Headline indicators – work in progress

- **Natural asset base**
    - 1. Index of natural resources
    - 2. Land cover & land use change
- **Environmental and resource productivity**
    - 3. CO_2 productivity
    - 4. Non-energy material productivity
    - 5. Environmentally-adjusted multi-factor productivity
- **Environmental quality of life**
    - 6. Population exposure to PMx
- **Economic opportunities/GG policies [placeholder*]**
    - ? Work in progress on environmental policy indicators

WEALTH ACCOUNTING (WB)

Accounting for comprehensive wealth

Table 7. Shares of wealth by income aggregate, 2005

	Intangible	Produced	Natural
Low income	50%	14%	36%
Lower middle income	50%	24%	25%
Upper middle income	67%	17%	17%
High income: OECD	81%	17%	2%

Source: World Bank (2011).

Idea:

Wealth is necessary to sustain (future) consumption,
We can draw from - and produce - different types of wealth

ANS = wealth created – wealth drawn upon
-> is wealth being sustained manner? (ANS>0)?

Challenges for GG measurement

# Valuing environmental services

Issue	Example
Threshold effects, non-linearities	•Marginal effects can be hard to summarise • thresholds often unknown a priori
Substitutibility & partialness	•Lack of markets, information failures, •How easily can one environmental services be substituted– in short and long term (innovation)? • E.g. OECD natural resource index, WB Wealth Accounts
Spatial and direct effects	• located in specific areas, • affecting specific groups of people,
Discounting the future and uncertainty	•USD 10 (real) in 2050 is worth 3 today (r=0.03). •Tail risks (low prob., high loss)
Global vs. local issues	•Climate change, water scarcity,
Trade (& competitiveness)	• leakage/flight vs. comparative advantage? • demand and supply footprints

Example: trade

2.2.1 Greenhouse gas emissions from production and consumption
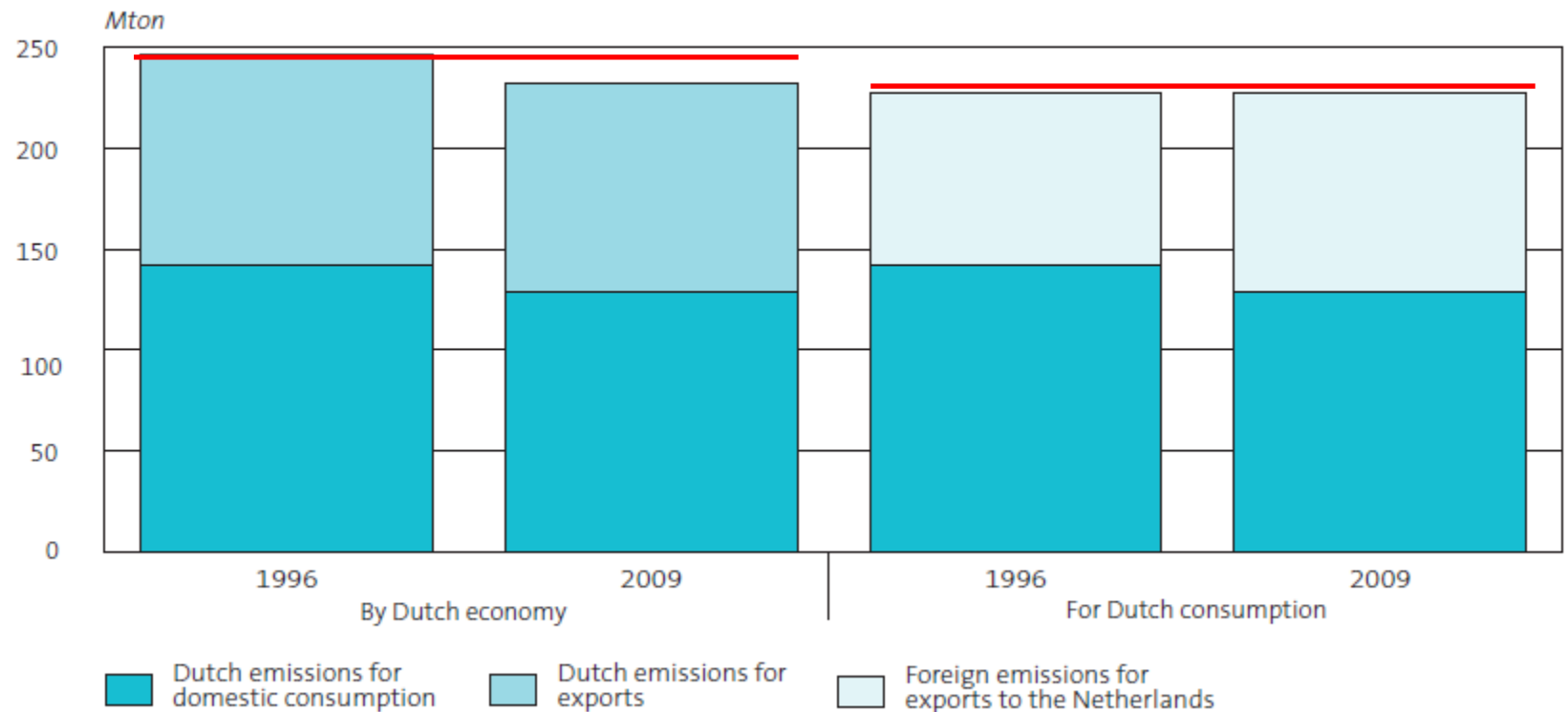
Source: Statistics Netherlands, Environmental accounts of the Netherlands 2009.

Source: CBS, Green growth in the Netherlands, 2012

How to deal with the challenges?

- Harmonising concepts (convergence)
- Filling in the knowledge gaps (GGKP!)
- Prioritising needs
- Investing into the future – collect data now

How to deal with the challenges?

- Using modern data collection techniques
  - E.g. Satellite imagery, surveys, designing natural experiments…
- Looking at supply and demand side
- Building experience & capacity – pilot applications in different countries - feedback

System for Integrated Env & Eco Accounts (SEEA)

- **Combines N.A. and env statistics in a statistical framework**
  - internationally agreed standard concepts, definitions, classifications, accounting rules and tables
  - 2012 revision adopted by UN Statistical Commission
- Broad implementation can improve GG/GE analysis:
  - facilitate production of many of the GG/GE indicators in a comparative manner,
  - facilitate breakdown of national indicators, often needed to understand & focus:
    - S*patial disaggregation.*
    - *Social disaggregation.*
    - *Sectoral disaggregation.*
  - help integrate additional information at the corporate level into the traditional national accounts framework.

https://unstats.un.org/unsd/envaccounting/seea.asp

COUNTRY APPLICATIONS – OECD EXPERIENCES

Country applications

OECD countries (2012 & 2013):

- NLD, KOR, CZE, DNK, DEU, MEX, SVK, SVN;

Non-OECD:

- OECD-UNIDO initiative in Latin America and Caribbean (with CAF, UNEP, SELA): Colombia, Costa Rica, Ecuador, Guatemala, Paraguay, Peru;

- Work underway (earlier stages):
    - Eastern Europe, Caucasus and Central Asia,
    - Middle East and Western Asia
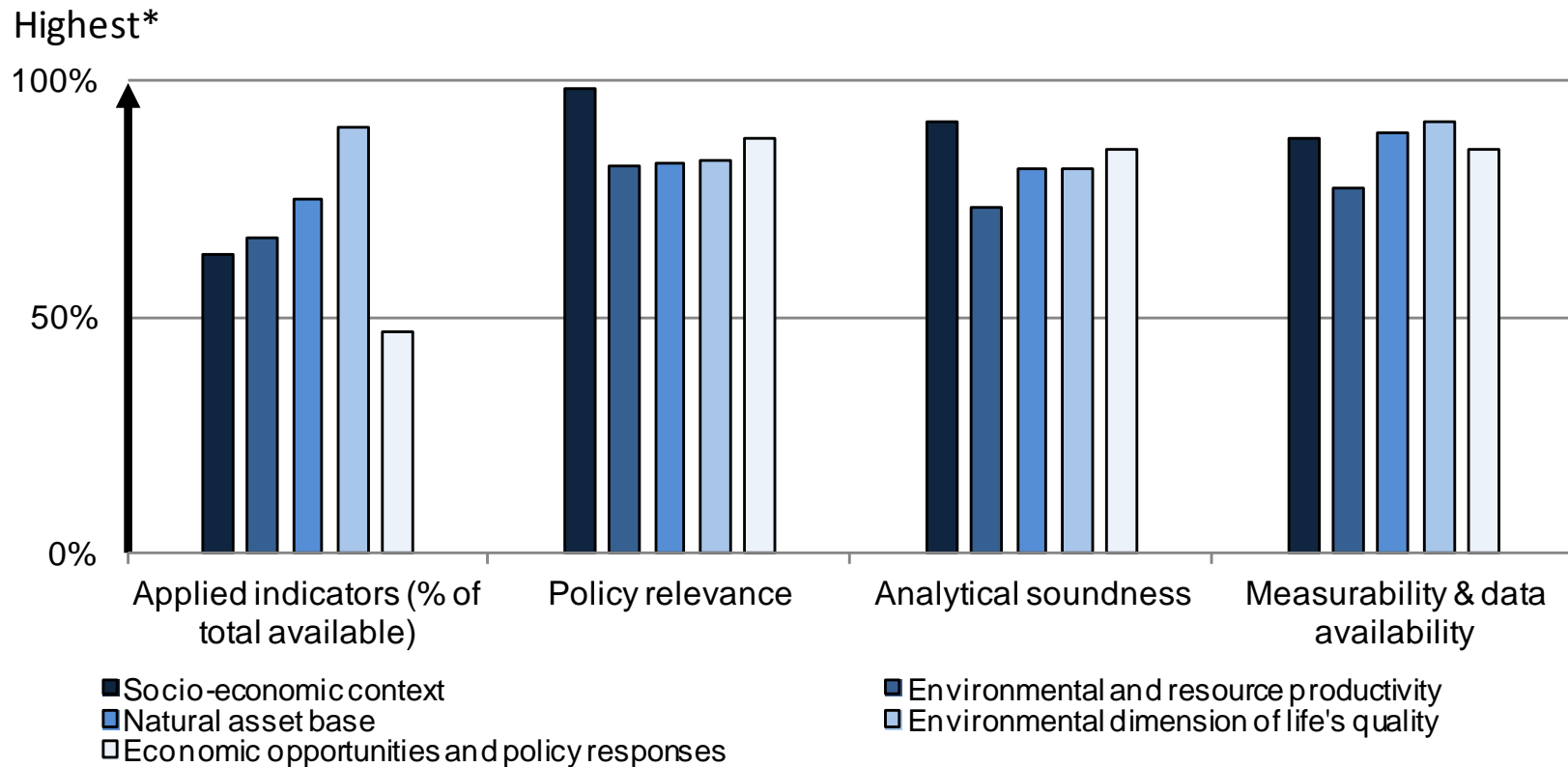   - East-Asian countries (planned)

Learning from country applications (1)

- Co-operation & availability throughout the process,

- Questionnaire to authorities:
  - For each indicator (used & not) assess:
    - Data & Measurability
    - Analytical soundness
    - Policy Relevance

Learning from country applications (2)

Highest*

* Refers to the highest level of i) data availability, ii) analytical soundness, iii) policy relevance, or iv) applied indicators as percent of total indicators considered in the country case studies. The underlying information is based on preliminary responses of participant countries on the applicability of green growth indicators to their national contexts (refers to Annex summary table).

Challenges

Challenges	Tentative ways to address
Indicator selection	• adjust: add/drop indicators • transparent criteria • balance local and global concerns • feasibility of measurement
Data compilation	• harmonisation • compliance with statistical standards • modern data collection methods • invest into the future • organise flows to facilitate updates • proxies
Interpretation and communication	• background on national circumstances • transparency on limitations and interpretation of indicators • standardised ways of reporting, adapt to audience • user-friendly reports and public availability • summarise relevant policy messages
Institutional co-ordination and capacity building*	• establish network of data providers • exchange knowledge and experience • learning by doing – pilot projects • clear responsibilities

Source: CAF-OECD-UNIDO (forthcoming), Monitoring GG in the LAC Region: Progress and Challenges.

Thank you!

www.oecd.org/greengrowth/indicators

www.greengrowthknowledge.org

Some backup slides…

Work in progress - dull self-assessment

Category	Relevance	Analytical soundness	Measurable today
Env. & resource productivity	High: 9 of 15*	High: 7	~7
Natural asset base	High: 10 of 11*	High: 4	~8
Environmental quality of life	High: 3 of 5*	High: 1	~3
Economic opp. and policy responses	High: 14 of 21*	High: 13	~15

* Total for main and proxy indicators, including different variations in the same category. Calculations for illustrative purposes only.
Source: OECD, 2013, forthcoming

Concepts – example – "green jobs"

- Definitional issues:
  - What are green jobs? "green jobs" vs. green jobs,
    - Some "green jobs" can be more harmful for the environment than some "non-green jobs"
    - Easy to count "clean-up" jobs, not possible to capture "prevent" jobs!
  - Costs?
    - General equilibrium vs. partial equilibrium,
    - Direct and visible effect (jobs created) vs. indirect and diluted effect (jobs destroyed)
  - Sustainability?

2. Environmental and resource productivity

Environmentally-adjusted Multi-Factor Productivity:

$\Rightarrow$ Traditional *Growth Accounting:*

- Output = GDP, Inputs: L & K
- Ignores services of much of natural capital & to a large extent mineral resources.

$\Rightarrow$ running down the environment can lead to over-estimation of MFP (growth),

IDEA: Adjust MFP to account for 'environmental' inputs (~natural resources) and outputs ('bads')

2. Environmental and resource productivity

Difference between environmentally-adjusted and traditional MFP growth (Norway)
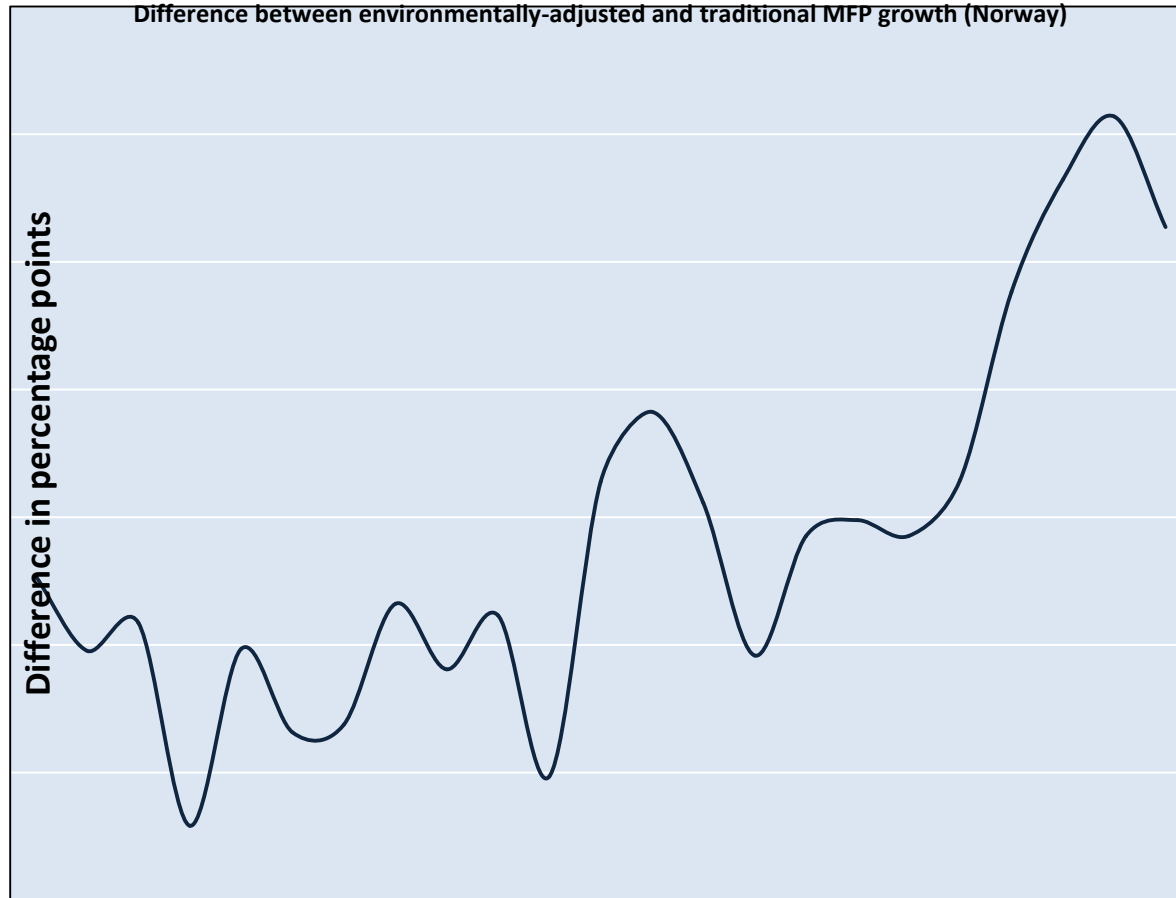
Env. policies and growth – work in progress

- **OECD Database on Environmental Policy Instruments (mainly OECD)**
  - Cross-country, comparable data,
  - Good coverage of taxation & tradable permits, some of subsidies, VAs, deposit schemes
  - Little on standards/command & control, administrative burdens,

- **Indicators of environmental policies**

- **Emprical insight on how to achieve 'green' in a growth-friendly way:**
  - How env. policy design affects productivity growth, innovation, competitiveness, competition, entry/exit
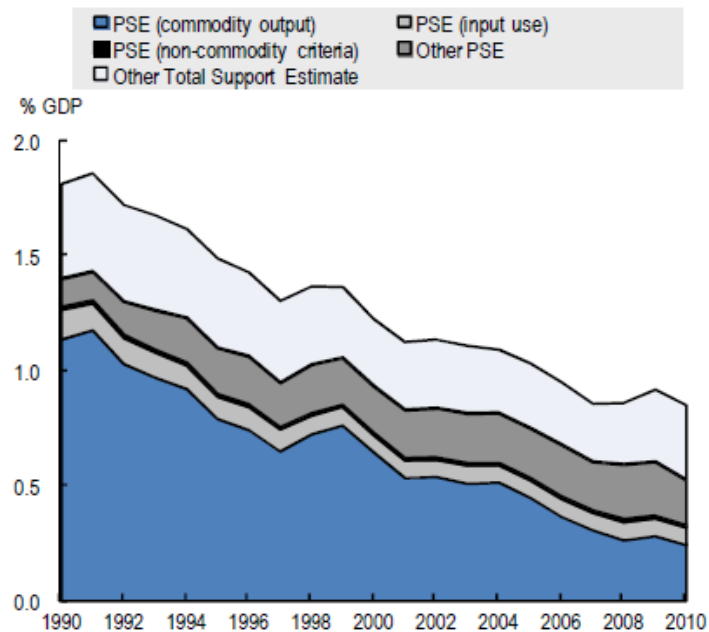
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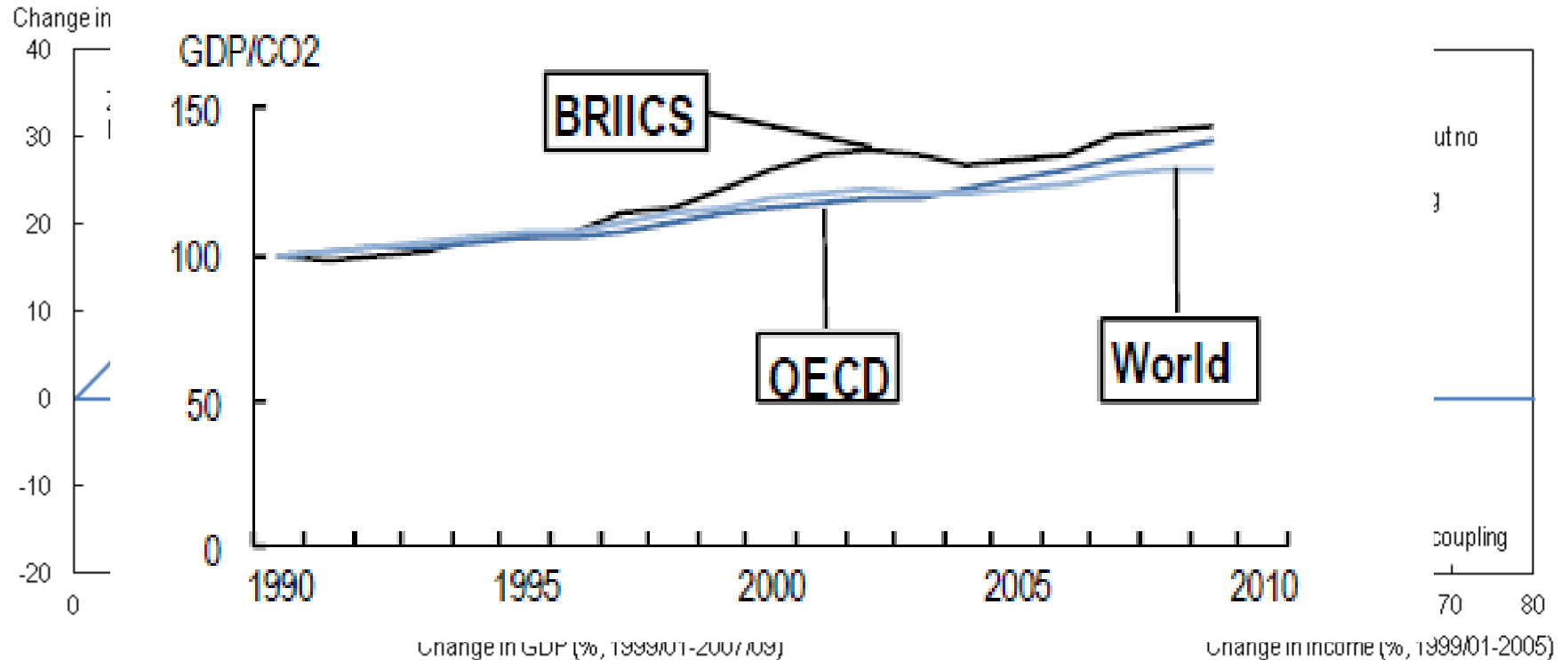
4. Economic opportunities & policy responses

Support to agriculture, OECD

Total support to fossil fuels, OECD