

PUBLIC LECTURE ON

# "Measuring Sustainable Development: the Importance of Green Accounting for Moving Beyond GDP"

**Guest Speaker**

**17 August 2017 (Thursday) at 3.30 p.m.**

**at the Atrium, Central Bank of Sri Lanka**

*Entrance Free. All are Welcome*



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Changing how we measure national progress  
is a wide and mainstream demand..



The screenshot shows the top navigation bar of The Guardian website with links for sign in, become a supporter, subscribe, and search. The main navigation bar includes sections like UK, world, sport, football, opinion, culture, business, lifestyle, fashion, environment, tech, and travel. The article headline is "Forget GDP - there's more to Britain's wealth than its bank balance" by Utopian thinking. The article is part of the "Economic growth (GDP)" series. The World Economic Forum logo is visible. The article title is "Five measures of growth that are better than GDP" by Stewart Wallis, dated 19 Apr 2016. The article text begins with "GDP is like a speedometer: it tells you whether your economy is going faster or slower. As in cars, a speedometer is useful but doesn't tell you everything you want to know. For example, it won't tell you whether you are overheating, or about to run out of fuel."

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**Economic growth (GDP)**  
Utopian thinking

Forget GDP - there's more to Britain's wealth than its bank balance

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# Five measures of growth that are better than GDP

19 Apr 2016

**Stewart Wallis**  
Independent Thinker, Speaker and Advocate for a New Economic System

GDP is like a speedometer: it tells you whether your economy is going faster or slower. As in cars, a speedometer is useful but doesn't tell you everything you want to know. For example, it won't tell you whether you are overheating, or about to run out of fuel.

# “Beyond GDP” an International conference: November 19th & 20th, 2007, Brussels

Courtesy of European Parliament



650 delegates  
(politicians, scholars,  
institutions,  
corporations ) from  
over 50 countries  
supported the  
momentum to go  
“Beyond GDP”

**Conclusion :** “GDP is unfit to reflect many of today’s challenges, such as climate change, public health, education and the environment”

# How good a measure of Well-being is GDP Growth ?

## .... some *examples*

### **The following ARE included in computed “GDP growth”**

- ☐ increase in government and private spending on flood damage & drought losses
- ☐ increase in medical spending on respiratory diseases
- ☐ increase in spending on school & university buildings
- ☐ the repair and reconstruction activity after the Tsunami

### **The following are NOT included in computed “GDP growth”**

- ☐ reduction of flood damage & and drought losses by increasing forest density & forest cover
- ☐ reduction of ambient air pollution by using cleaner fuels, greening cities
- ☐ increase in human capital (i.e. earnings potential) through education
- ☐ the loss of lives and livelihoods due to the Tsunami



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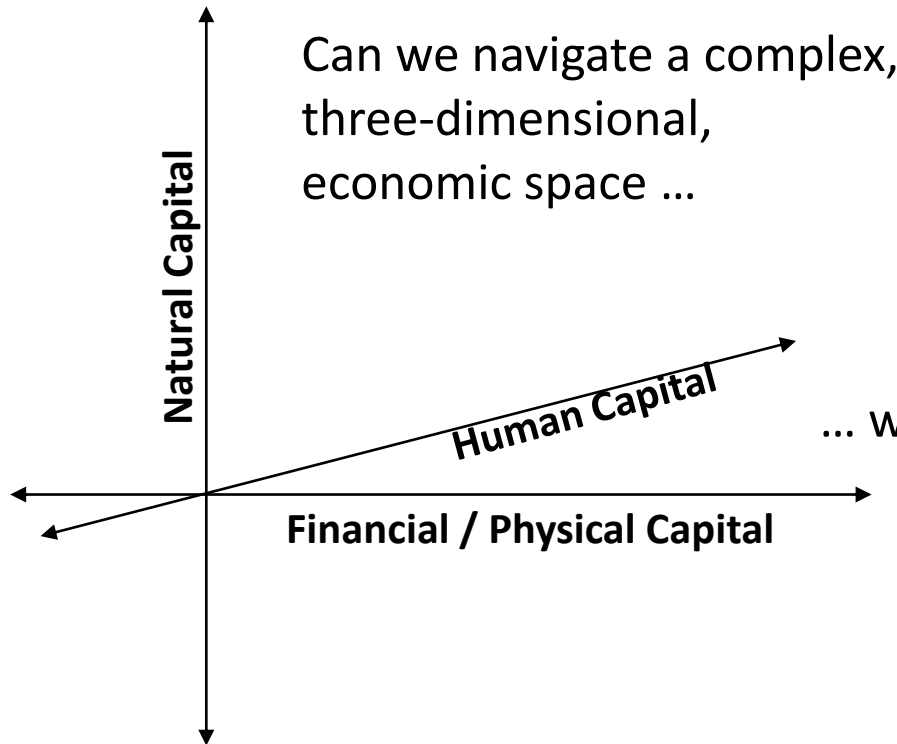
... supported by political economists,

- "because national accounts are based on financial transactions they account nothing for Nature, to which we don't owe anything in terms of payments but to which we owe everything in terms of livelihood."  
– ***Bertrand de Jouvenel, 1968***

... supported by political economists, &  
even the founders of GDP accounting

- "because national accounts are based on financial transactions they account nothing for Nature, to which we don't owe anything in terms of payments but to which we owe everything in terms of livelihood."  
– ***Bertrand de Jouvenel, 1968***
- “The three pillars on which analysis of society ought to rest are studies of economic, socio-demographic and environmental phenomenon.” .... and ... “environmental issues, such as pollution, land use and non-renewable resources offer plenty of scope for accounting”.  
- ***Richard Stone, 1984, in his Nobel Memorial Lecture in 1984***

# Navigation Challenge Ahead !



... with a simple economic compass ?

***Question : Are there better quantitative measures of national progress ?***

***Answer: Yes, two...***



# Measuring “Green GDP”

- ❑ Adjusted GDP, to reflect unaccounted (invisible) incomes and unaccounted depreciation and appreciation of capital stocks
- ❑ Rationale: Capture & integrate into National Accounts significant externalities not reflected in traditional GDP accounts drawn up under the SNA (System of National Accounts of the UN)
- ❑ Includes the valuation of non-marketed services of environmental assets, calculating the real value of education as a generator of future income, and present-valuing future liabilities such as pollution abatement costs and health costs.
- ❑ Flow externalities as well as unaccounted depreciation / appreciation of capital Stock are estimated & internalized
- ❑ Economic modelling and Contingent Valuation techniques are used to quantify & price externalities
- ❑ For an accounting period, the exercise arrives at a revised value of net assets, and the difference year-on-year is a true measure of national savings, or “genuine savings”.
- ❑ Alternatively, flow and stock adjustments for natural capital and human capital externalities can be estimated and posted alongside classical (unadjusted) annual GDP statistics.

# Measuring “Inclusive Wealth”

- ❑ Holistic measure of “wealth” and its average availability to citizens
- ❑ Rationale: National wealth should include not just a measure of manufactured / financial assets (**physical capital**), but also **natural capital** (oil, minerals, forests, freshwater resources, cropland, fisheries, etc), **human capital** (knowledge, skills), and **social capital** (institutional and legal infrastructure, political maturity, social harmony, etc).
- ❑ Economic Valuation techniques to shadow-price non-marketed goods & services
- ❑ Estimates annual increases/ decreases in per-capita physical capital, natural capital, human capital and social capital
- ❑ “Sustainable” growth is that which increases per-capita national wealth categories, defined holistically
- ❑ “Green GDP” and “Inclusive Wealth” use the same “stock” or “national balance sheet” numbers, and can also be published simultaneously

# Growth Models

## *Growth in per-capita inclusive wealth (2003)*



Arrow



Dasgupta



Maler

## *Environmentally friendly GDP Growth (2005)*



"Green Growth" models

## *Growth in comprehensive wealth (2009)*



Stiglitz

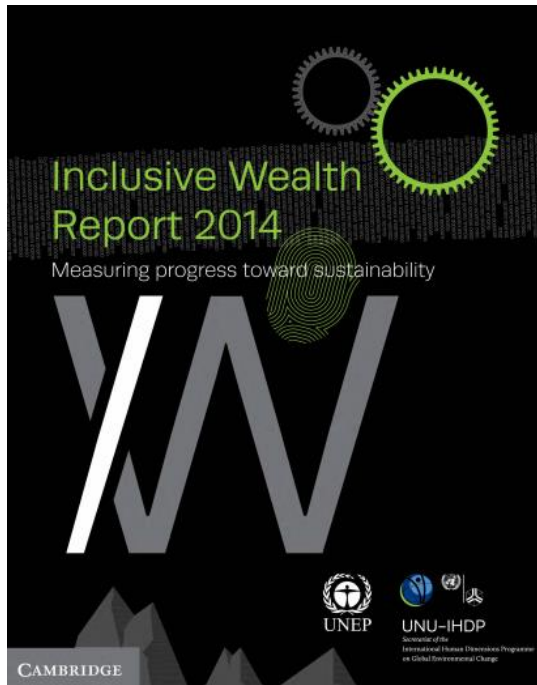


Sen



Fitoussi

# What is “Inclusive Wealth” ?



**From: *Foreword,*  
by *Prof. Partha Dasgupta....***

***“Inclusive wealth is the social value of an economy's capital assets. The assets comprise (i) **manufactured capital** (roads, buildings, machines, and equipment), (ii) **human capital** (skills, education, health), and (iii) **natural capital** (sub-soil resources, ecosystems, the atmosphere).***

***Such other durable assets as knowledge, institutions, culture, religion – more broadly, **social capital** – were taken to **be enabling assets**; that is, assets that enable the production and allocation of assets in categories (i)-(iii). The effectiveness of enabling assets in a country gets reflected in the shadow prices of assets in categories (i)-(iii)”***

# “Inclusive Wealth”: a True Balance Sheet of Nations

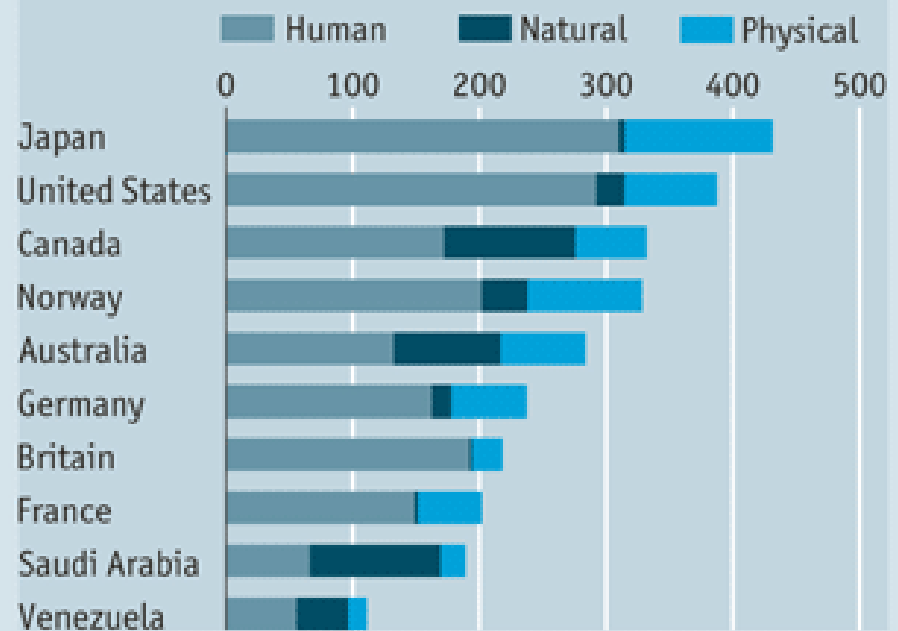
## The balance-sheet of wealth

The  
Economist

Inclusive wealth		
Country	2008, \$trn*	1990-2008 growth†, %
United States	117.8	0.7
Japan	55.1	0.9
China	20.0	2.1
Germany	19.5	1.8
Britain	13.4	0.9
France	13.0	1.4
Canada	11.1	0.4
Brazil	7.4	0.9
India	6.2	0.9
Australia	6.1	0.1

Source: UN

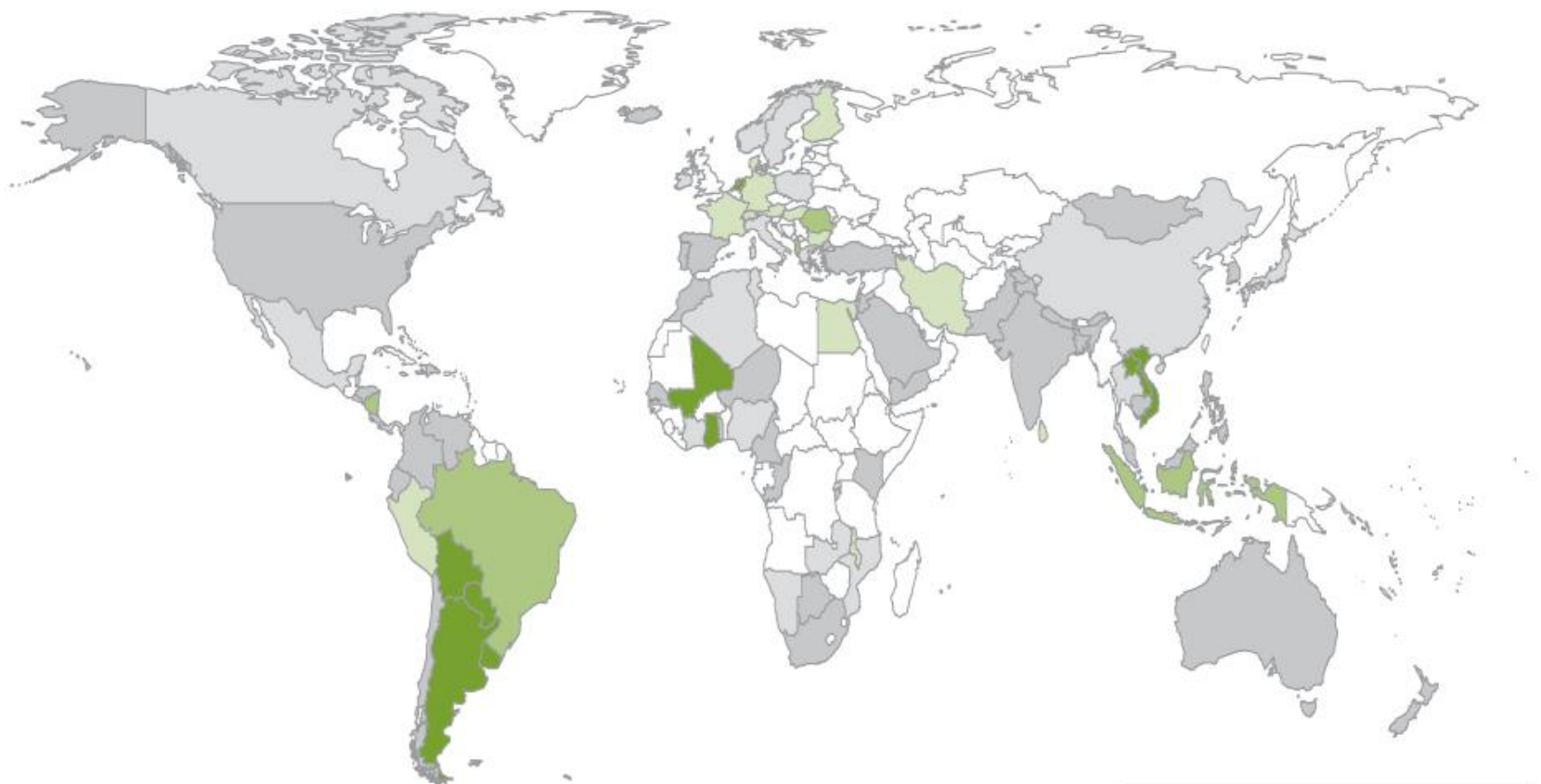
## Inclusive wealth per person 2008, \$'000\*



\*Constant 2000 \$ †Average annual rate







The UN (“Inclusive Wealth Report, 2014”) calculates human capital based on average years of schooling, workers wages, and the number of years they can expect to work before they retire (or die)<sup>1</sup>.

# Change in cropland wealth per capita (%), 2010/1990...



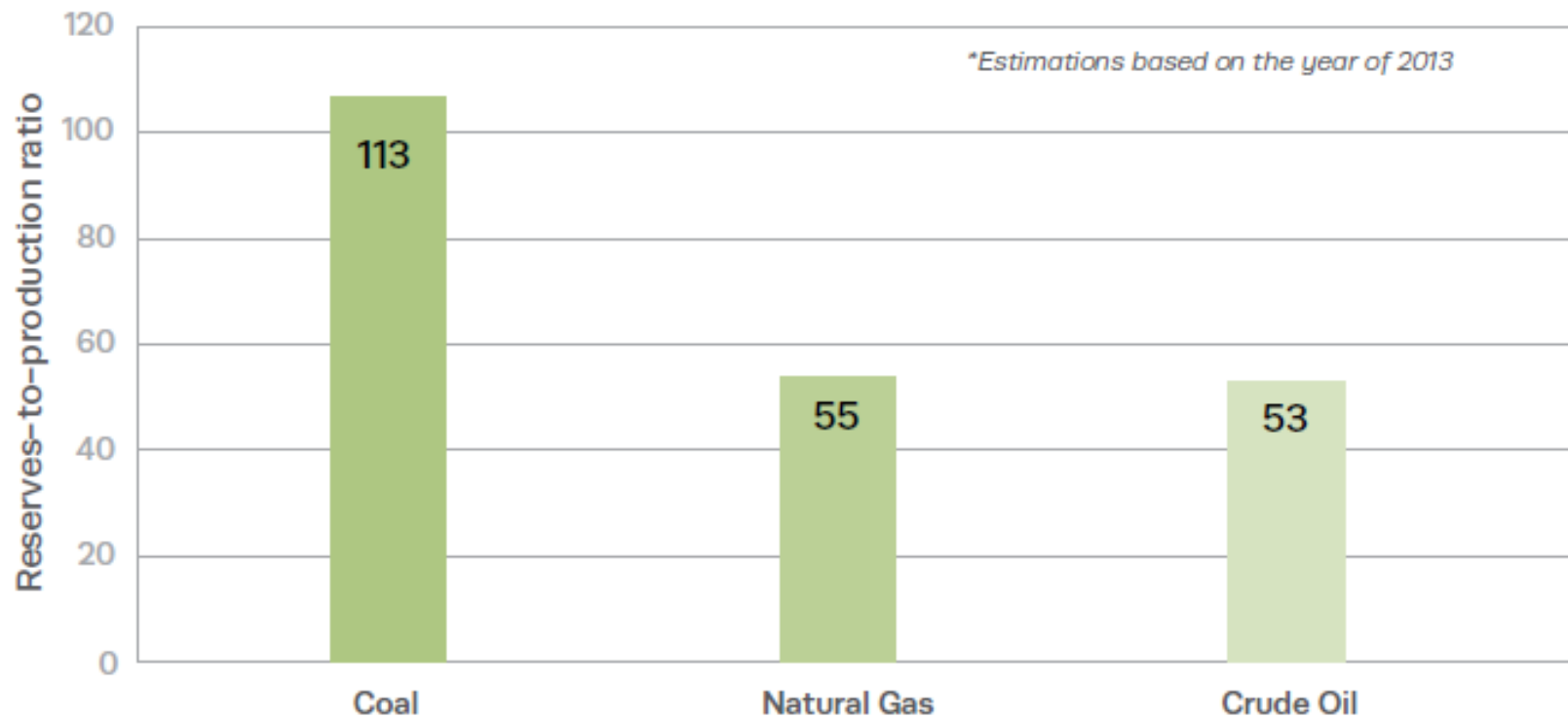
Source: Inclusive Wealth Report, 2014

## Key

 > 5	 -25 to -15
 0 to 5	 < -25
 -15 to 0	 no data

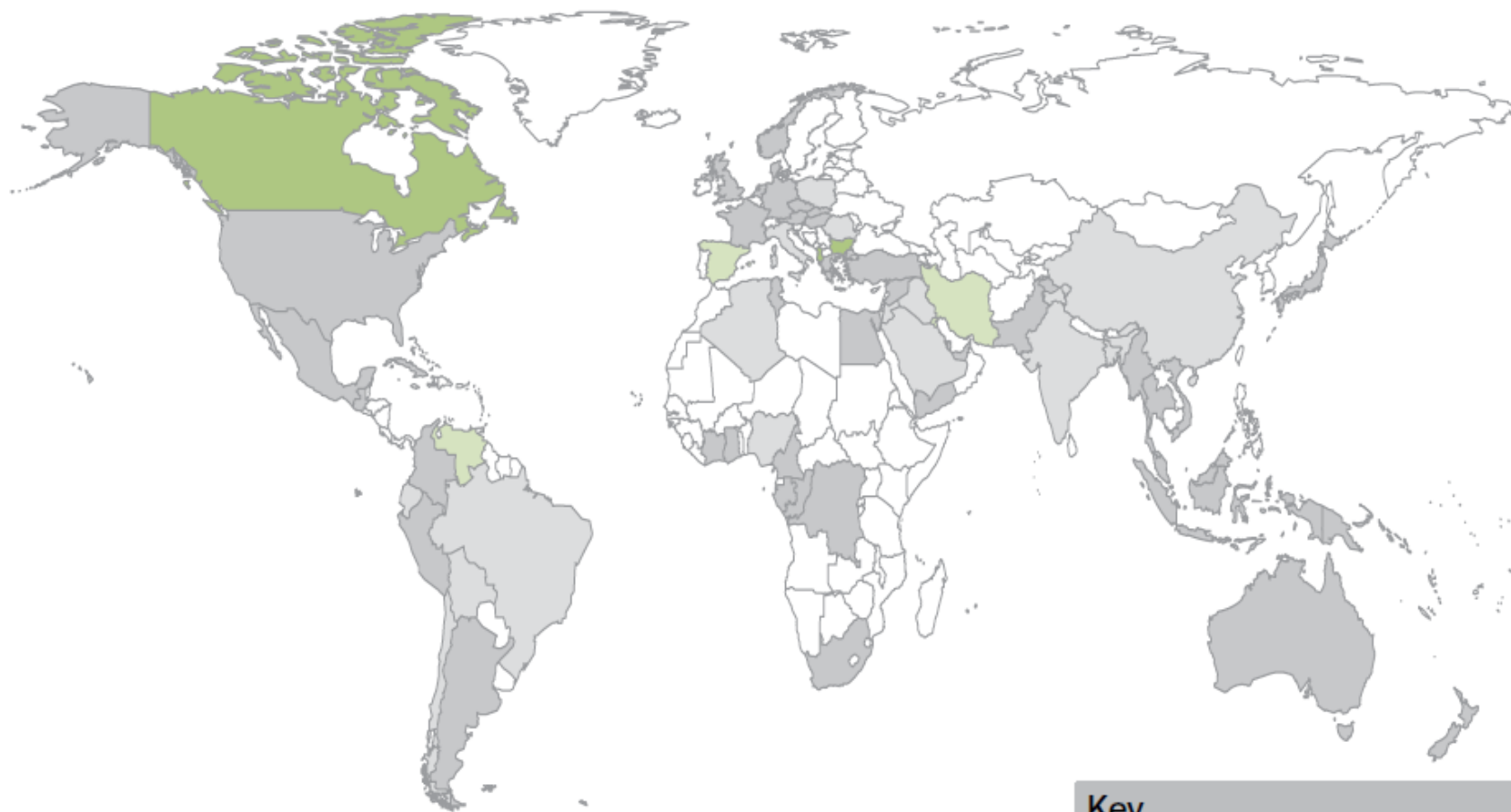


# Reserves-to-production: remaining extract years of fossil fuels









Source: Inclusive Wealth Report, 2014

# Change in oil wealth per capita (%), 2010/1990

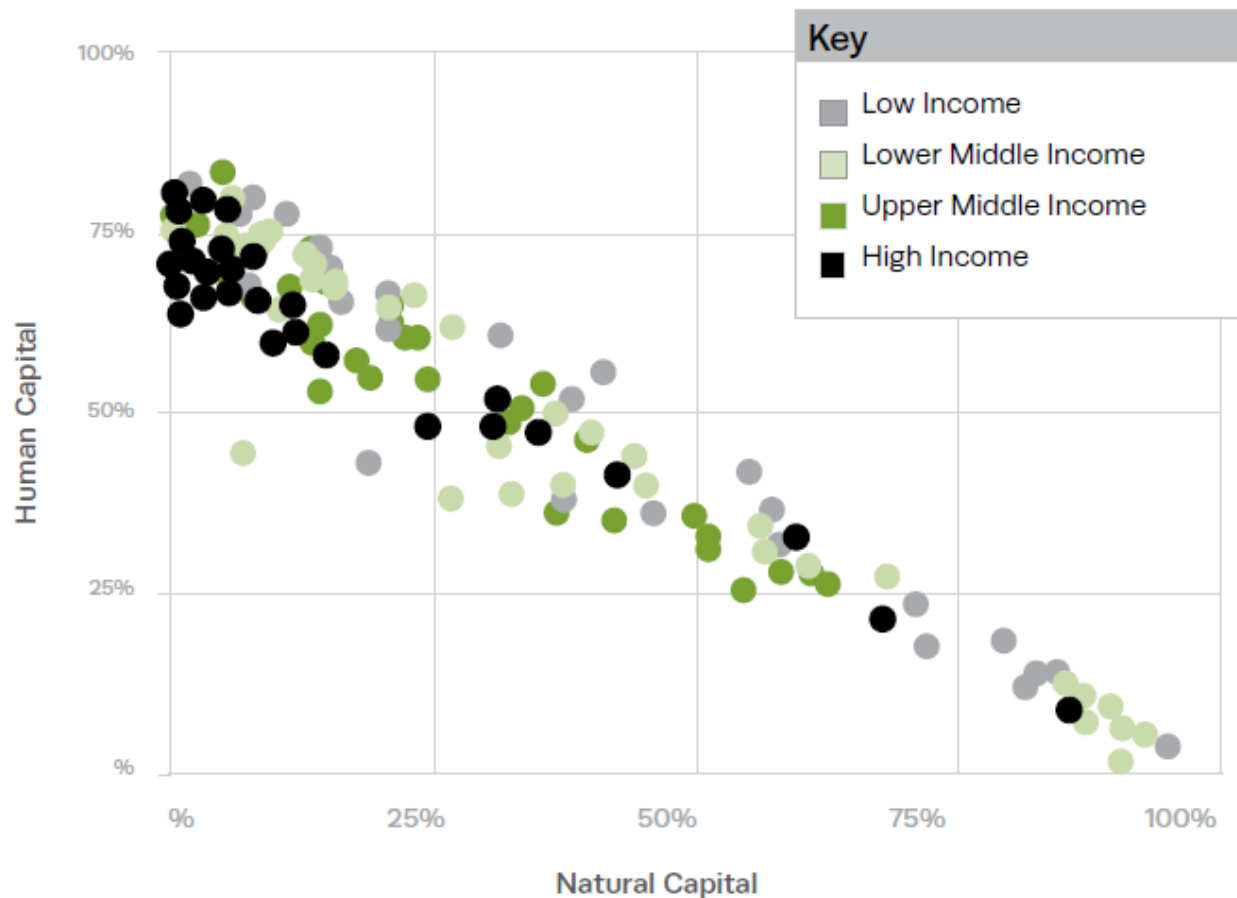


Source: Inclusive Wealth Report, 2014

## Key

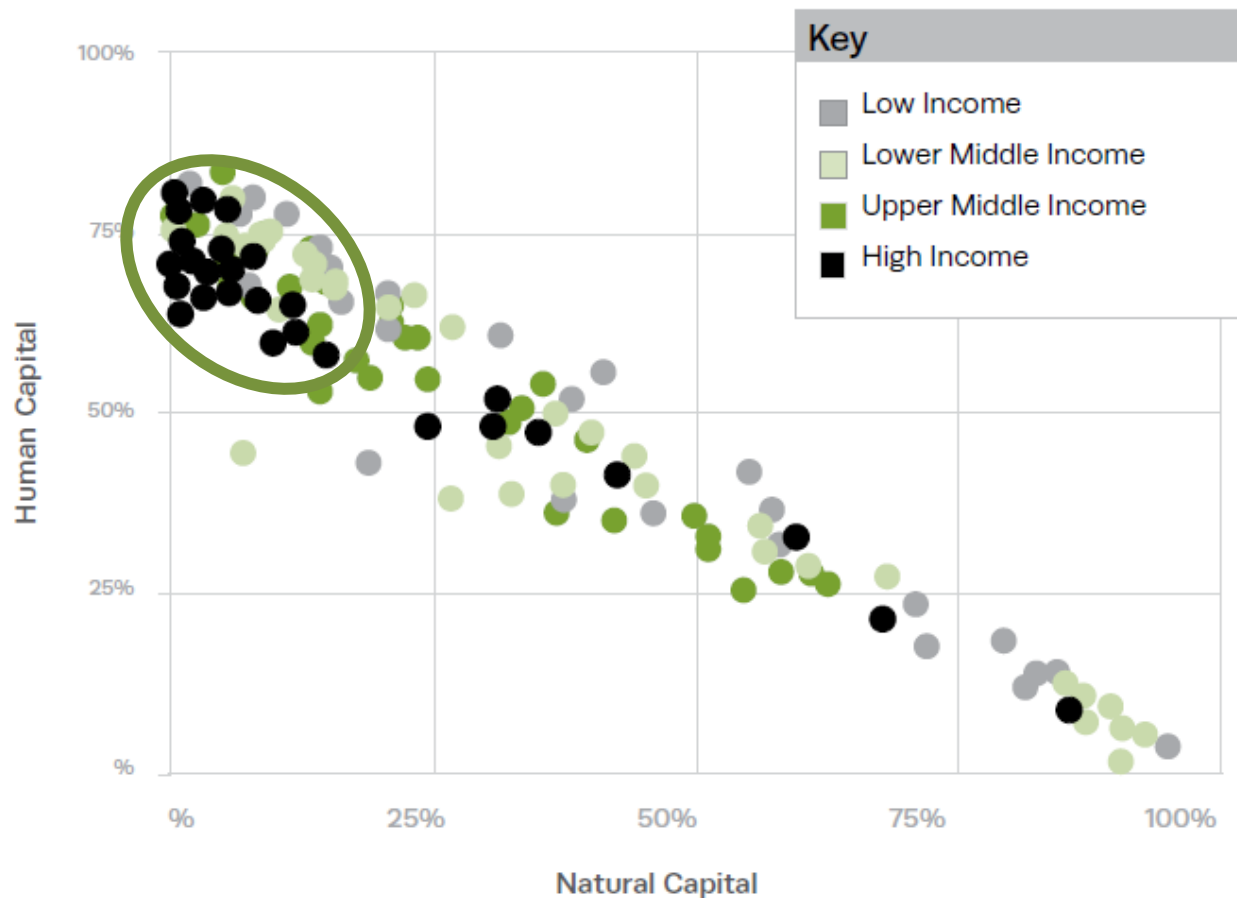
 > -15	 -66 to -49
 -32 to -15	 < -66
 -49 to -32	 no data

# Shares of human capital and natural capital in total wealth, average 1990-2010



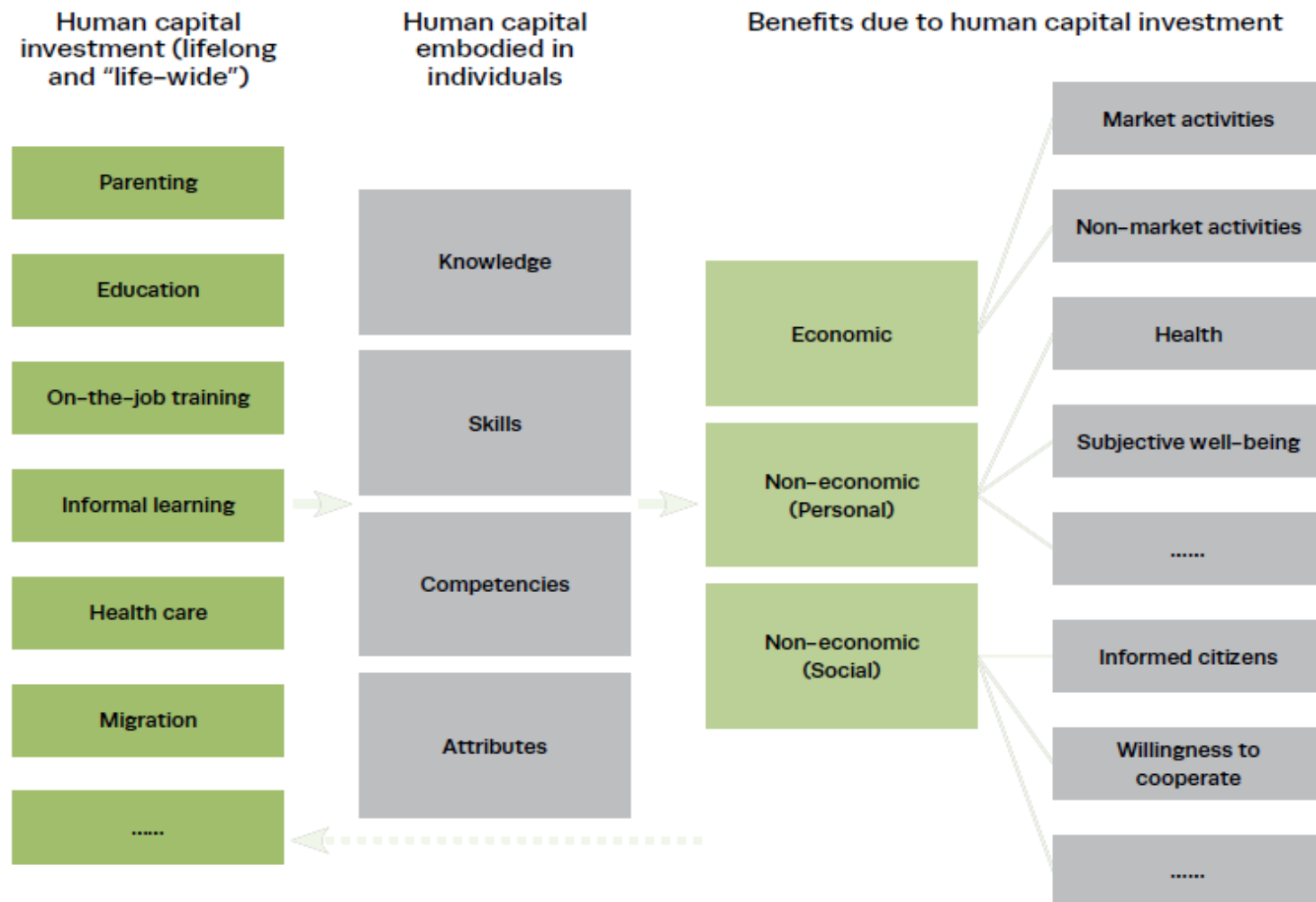
Source: Inclusive Wealth Report, 2014

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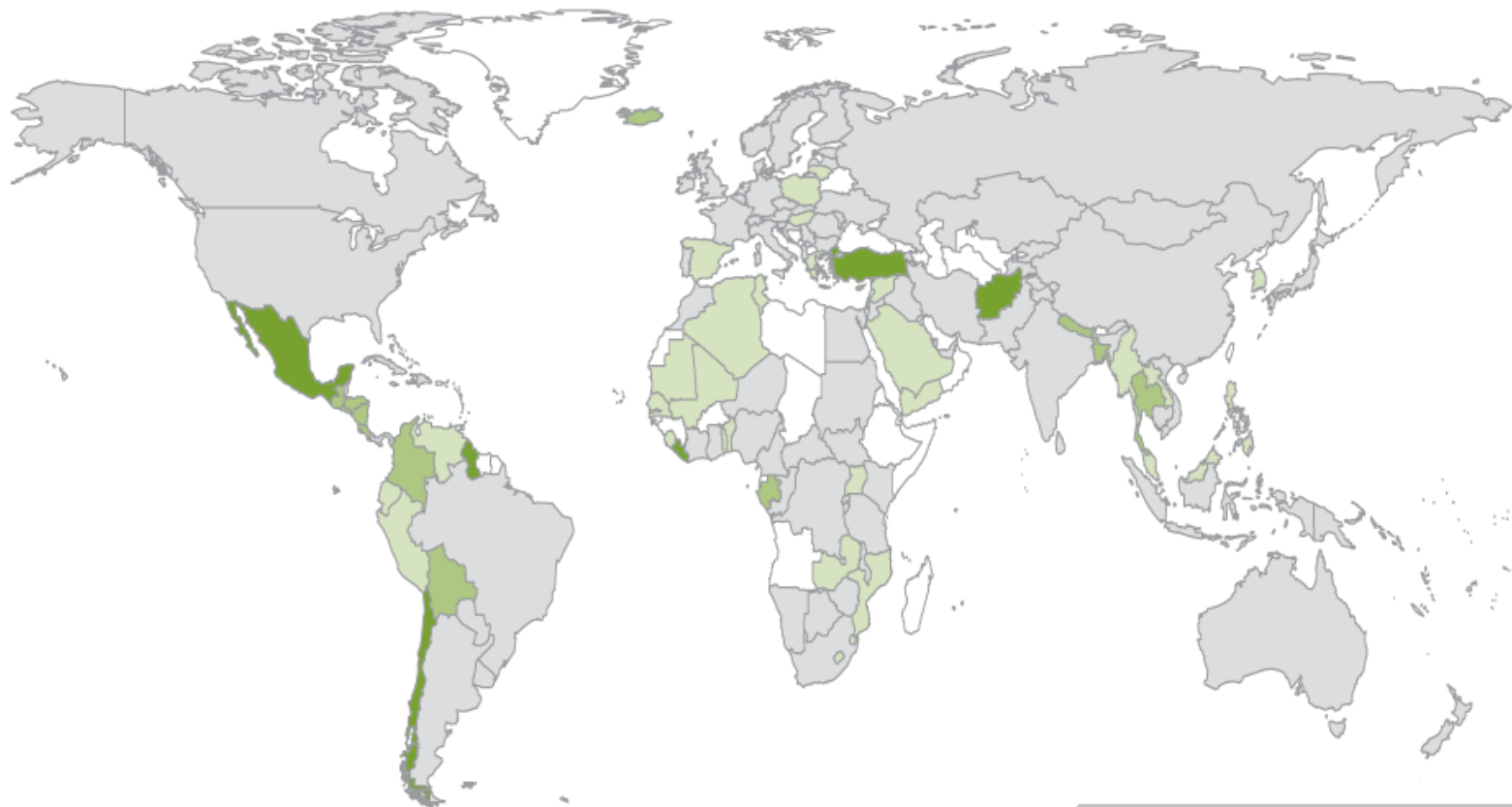
Source: Inclusive Wealth Report, 2014

# Investing in Human Capital delivers many benefits

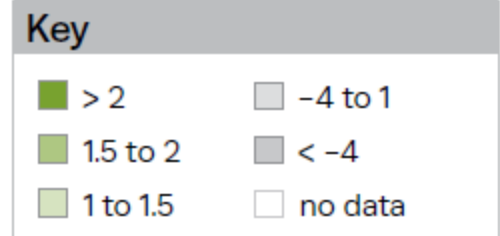


Source: Inclusive Wealth Report, 2014

# In which countries is investment in education per capita growing? (% , 2010/2009)



Source: Inclusive Wealth Report, 2014





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## Example: GAISP, 2004-08

### Forest Accounting Framework

- Opening stocks
  - Changes due to economic activities
  - Other Changes
  - Closing stocks
- 
- *Area* Accounts for Forest Land
  - *Physical* Accounts for Timber (non-PA) and Carbon (PA)
  - *Monetary* Accounts

### Physical accounting framework for timber and carbon

Opening stocks

+ Changes due to economic activities

-Logging and logging damage

-Forest encroachment and shifting cultivation

+Afforestation

-Loss due to livestock grazing

+ Other accumulations

+ Changes due to natural causes

+ Natural growth

+ Natural regeneration

+Changes due to reclassification

+net transfer of land

+Other Volume changes

-Stand mortality

-Forest fires and pest damage

= Closing stocks

# Key Challenge: Integrating Diverse Data Sources!

<b>Area accounts for forested land</b>	<b>Data sources and assumptions</b>
Opening stock	Year 2001 from SFR (2001)
+ Changes in forest land	
+Natural expansion Afforestation	ICFRE (2000) Various forest statistical reports
- Net transfer of forest land to non-forest uses (through deforestation and degradation)	Compiled from forestland use change matrix between the years 2001-03.
Loss of forest land due to shifting cultivation	Shifting cultivation (ICFRE 2000, FSI, 1999) – average values taken
+Net reclassification and other changes	
= Closing stocks	Opening stocks less reductions plus additions and reconciled with the FSI (2003) estimates

# “Green GDP” Adjustments

## GIST Monographs


**M2**

**M1**

**M7**

**M4**

**M8**

<b>2002-03</b> (INR Mio / % of NDP or NSDP)	<b>Assam</b>	<b>Himachal</b>	<b>Bihar</b>	<b>India</b>
GSDP or GDP	354,314 100.0%	159,460 100.0%	897,150 100.0%	<b>19,295,454 100.0%</b>
NSDP or NDP	317,208 89.5%	142,024 89.1%	787,033 87.7%	<b>17,083,824 88.5%</b>
Agriculture Losses - Soil Erosion, Sedimentation, Quantity changes	-4,980 -1.6%	-1,135 -0.8%	-12,054 -1.5%	<b>-258,605 -1.5%</b>
Agriculture - Subsidies	-9,670 -3.0%	-2,604 -1.8%	-21,457 -2.7%	<b>-312,634 -1.8%</b>
Forests - Depletion of Timber/Carbon, Fuelwood, NTFP	-663 -0.2%	-51,394 -36.2%	-1,032 -0.1%	<b>-74,639 -0.4%</b>
Forests - understated services of Timber/carbon, Fuelwood, NTFP	1,703 0.5%	56,539 39.8%	-11,683 -1.5%	<b>154,524 0.9%</b>
Forests - Ecological Services Lost	-21,624 -6.8%	-10,470 -7.4%	-3,287 -0.4%	<b>-190,403 -1.1%</b>
Forests - unstated benefits of Ecological Services	8,064 2.5%	5,274 3.7%	8,119 1.0%	<b>225,504 1.3%</b>
Forests - Depletion of ecotourism and bioprospecting	-23,660 -6.7%	-13,078 -8.2%	-2,711 -0.3%	<b>-461,525 -2.4%</b>
Forests - unstated ecotourism and bio-prospecting benefits	9,356 2.6%	632 0.4%	2,529 0.3%	<b>137,144 0.7%</b>
Freshwater - Water Quality Losses	-4,294 -1.4%	-13,808 -9.7%	-42,755 -5.4%	<b>-586,586 -3.4%</b>

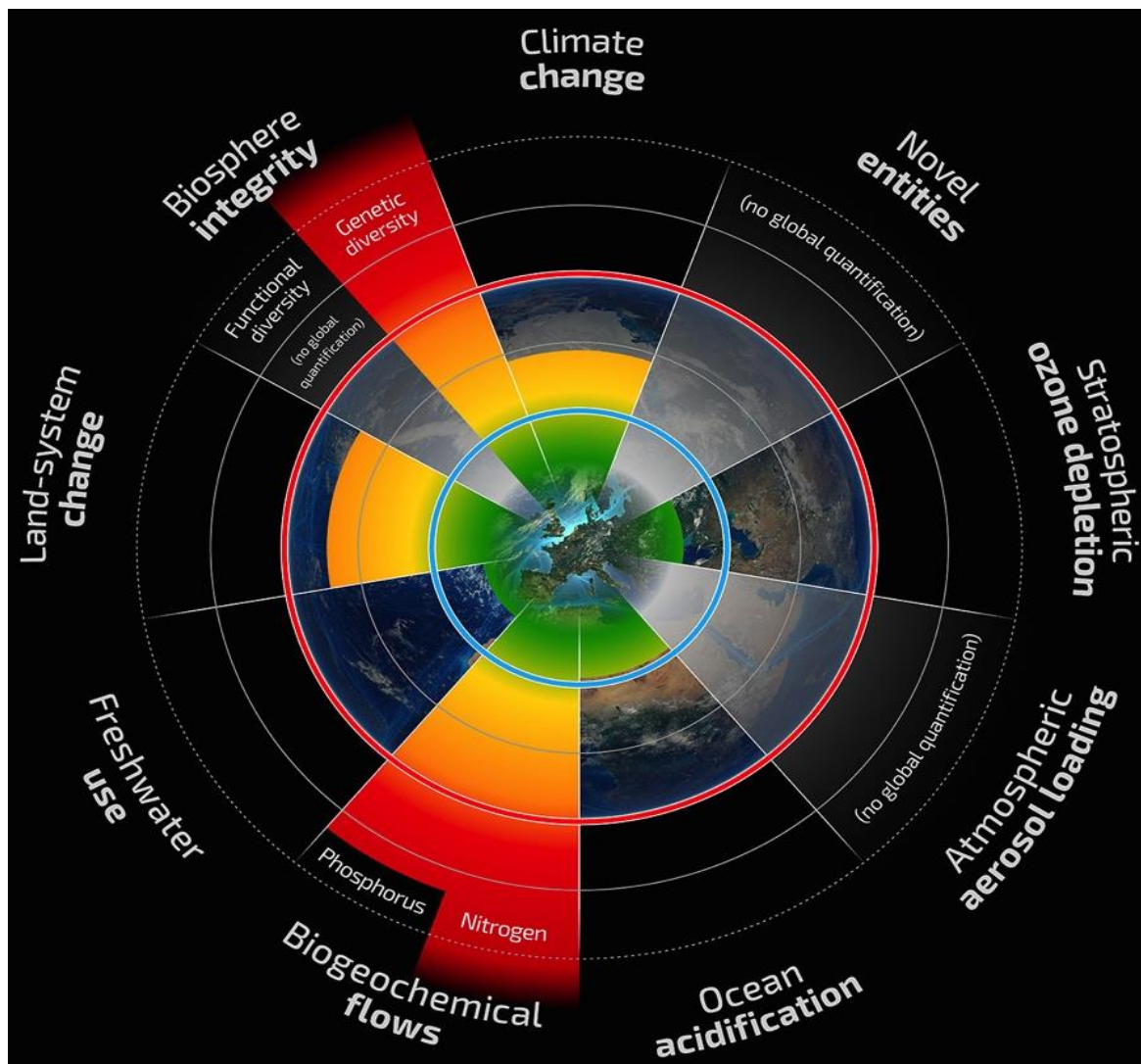
<b>Stock Adjustments</b>	<b>-55,221 -17%</b>	<b>-89,885 -62%</b>	<b>-61,839 -8%</b>	<b>-1,571,758 -9%</b>
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<b>Flow Adjustments</b>	<b>9,453 3%</b>	<b>59,841 42%</b>	<b>-22,492 -3%</b>	<b>204,538 1%</b>
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Stock Adjustments  
Flow Adjustments

# Planetary Boundaries<sup>1</sup> Framework

## “Safe Operating Space”



■ Beyond zone of uncertainty (high risk)  
■ In zone of uncertainty (increasing risk)  
■ Below boundary (safe)  
■ Boundary not yet quantified

**Environmental  
/ Ecological  
*Ceiling***

**Safe Operating Space  
for the  
“Doughnut Economy”<sup>2</sup>  
of the  
Anthropocene**

**Equitable,  
Social  
*Floor***

Sources:

1. SRC [www.goo.gl/DkEwCX](http://www.goo.gl/DkEwCX)
2. Kate Raworth, 2017

# What is the *Framework* for Linking SDGs?

**“Development” = “Improving Well Being for All”**



- ❖ Structure: How do SDG's relate to each other?
- ❖ In what sequence, and why, should SDG's be implemented?



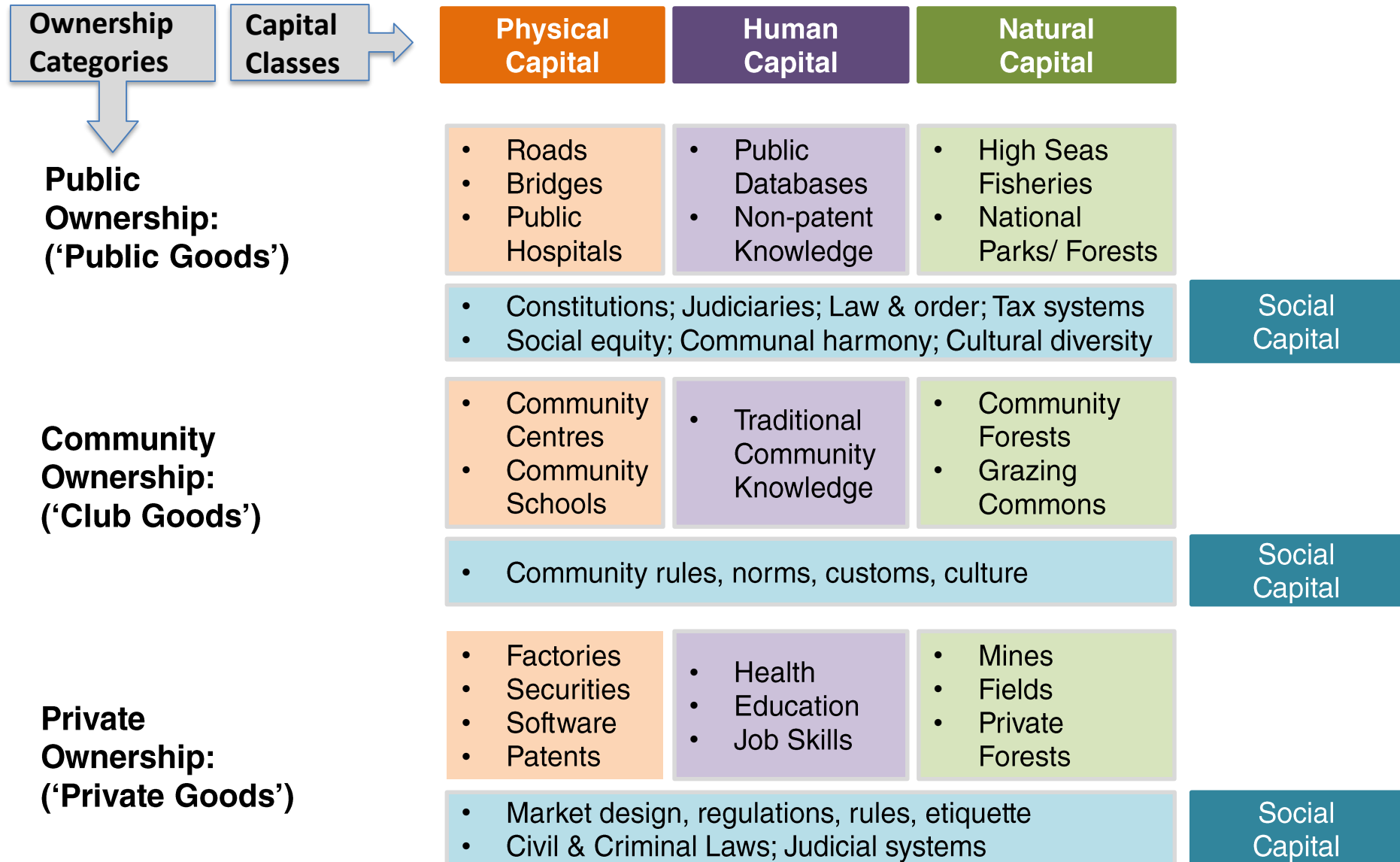
# “Natural Capital” Base in a Framework for SDGs

## “Development” = “Improving Well Being for All”



*Source: from J. Rockström/ P.Sukhdev presentation to EAT Forum, Stockholm, 2016*

# Dimensions of Wealth



# Thank You!

[www.gistindia.org](http://www.gistindia.org)

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