



KYUSHU
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Urban Institute

Inclusive growth: Measured evaluation in SDGs

Shunsuke Managi

Urban Institute, Kyushu University

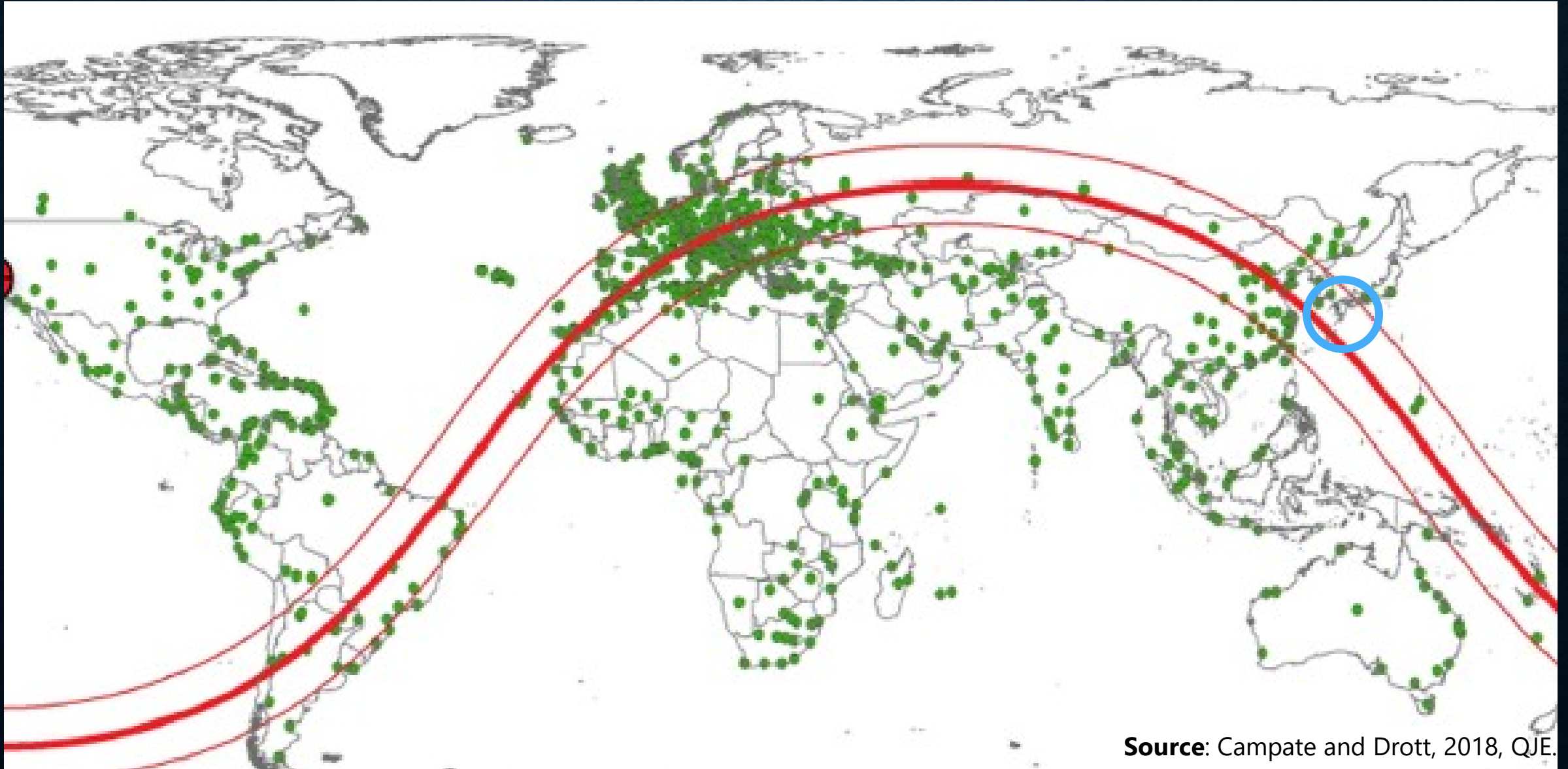
Director, UN Inclusive Wealth Report 2018

Coordinating Lead Author, IPBES & Lead Author, IPCC

Our behavioral science group (Urban Institute)

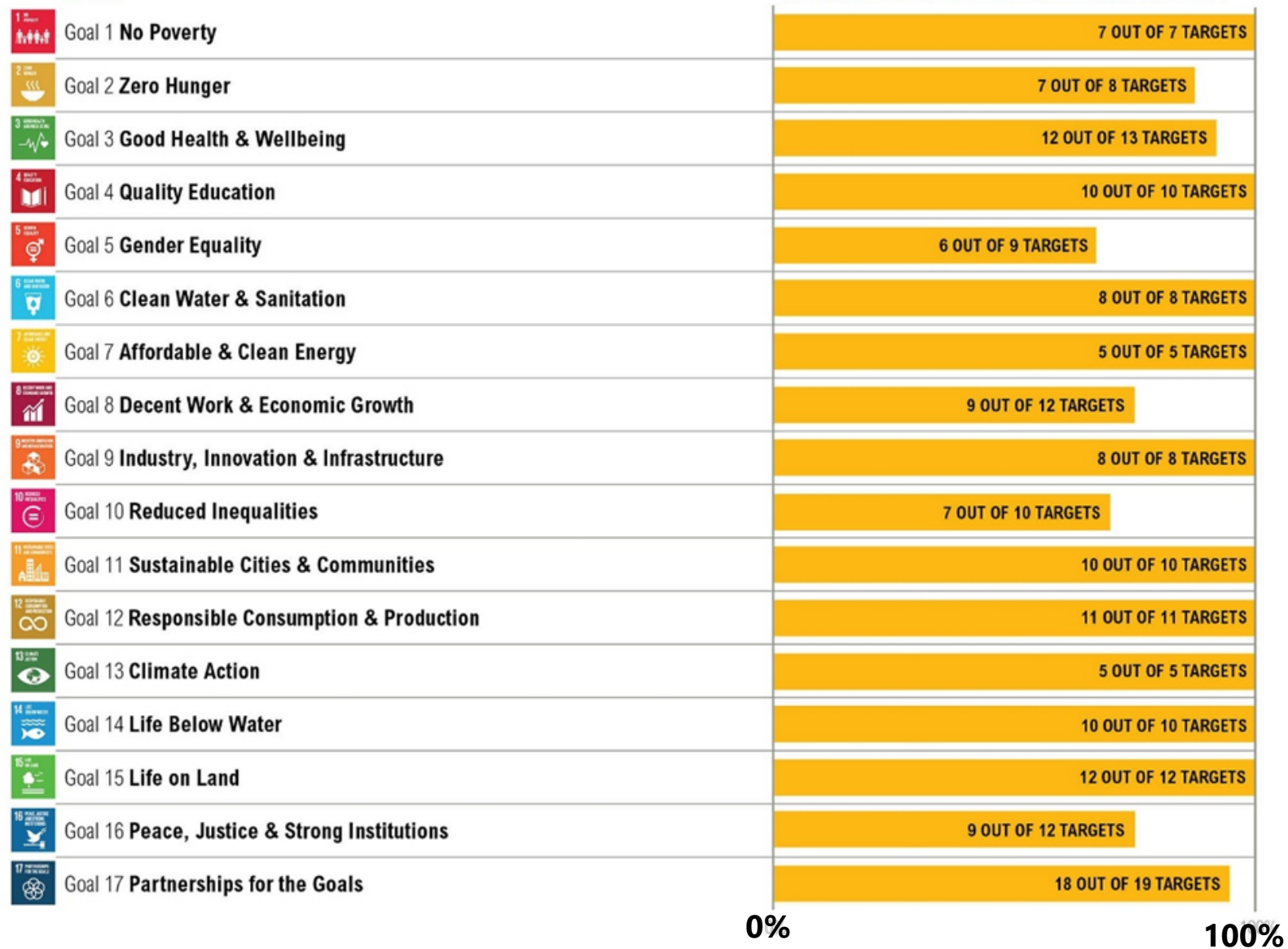
- **UN Inclusive Wealth Report** 2014, 2018 (Science 2015)
- **Global survey** (Nature Sustainability 2018)
- **Behavioral science** (JEBO, 2015; Global Environmental Change, 2019)
- **Lab experiment** (Experimental Economics, 2019)

Importance of Convenience



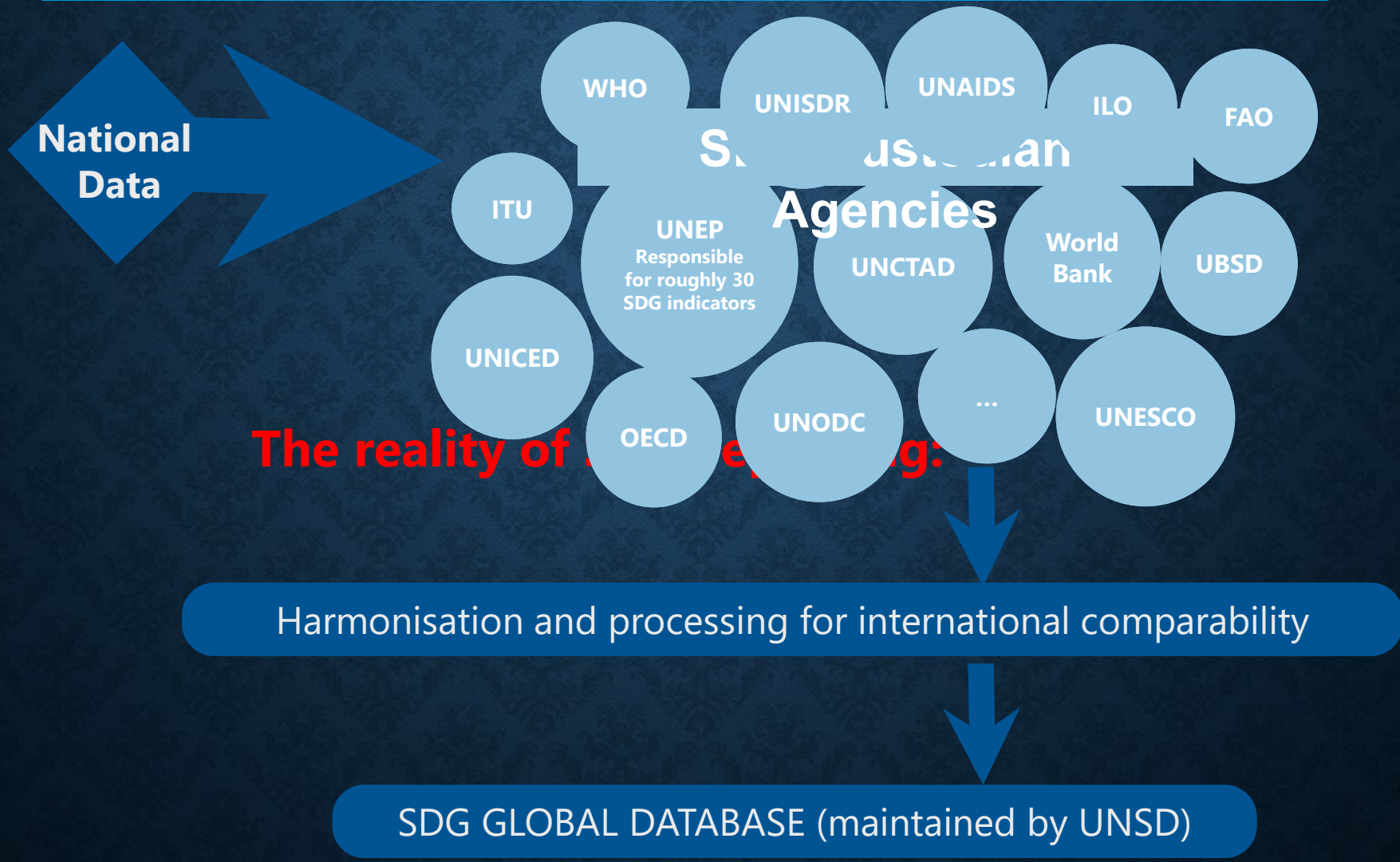
Source: Campate and Drott, 2018, QJE.

SDGs more toward climate action



Source:
World Resources Institute

Indicator Reporting Information System



Beyond GDP

- GDP disregard the environment
- A country could, for example, deplete its entire natural resource assets, while still recording a positive GDP change



Complement GDP (not substitute)

OUR COMMON FUTURE

THE WORLD COMMISSION

ON ENVIRONMENT

AND DEVELOPMENT

LIMITS - MEASURING OUR LIVES



WHY GDP DOESN'T ADD UP

Joseph E. Stiglitz

Amartya Sen

and Jean-Paul Fitoussi

THE REPORT BY THE COMMISSION ON THE MEASUREMENT
OF ECONOMIC PERFORMANCE AND SOCIAL PROGRESS

WITH A FOREWORD BY PRESIDENT NICOLAS SARKOZY

1.2 Inclusive Wealth (IW)



Manufactured capital

Roads, buildings, machines
and equipment

Physical Capital



Human capital

Knowledge, aptitude,
education and skills

Human Capital



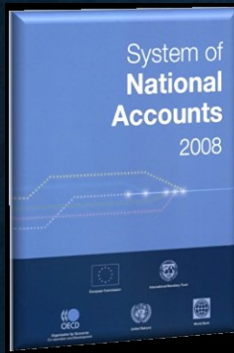
Natural capital

Forests, agricultural land, rivers
and estuaries, the atmosphere
and the oceans – ecosystems
more generally – as well as
subsoil resources.

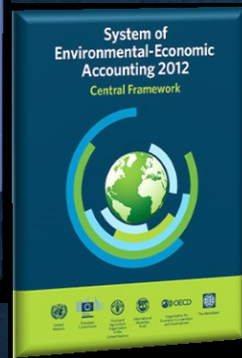
Natural Capital

Measurement developed

“There have been debates about how to define and measure sustainable”



System National Account (SNA)



System of Env. Accounting



Green Data



WAVES



Green Growth



Inclusive Wealth

“Environmental consider as capital”

IW for sustainability

- 1. IW is a measure of the aggregate wealth of society, including the value of natural capital along with the values of human capital, manufactured capital, and social capital.*
- 2. IW is a sufficient statistic for showing whether or not global society is on a sustainable trajectory.*

IW for sustainability

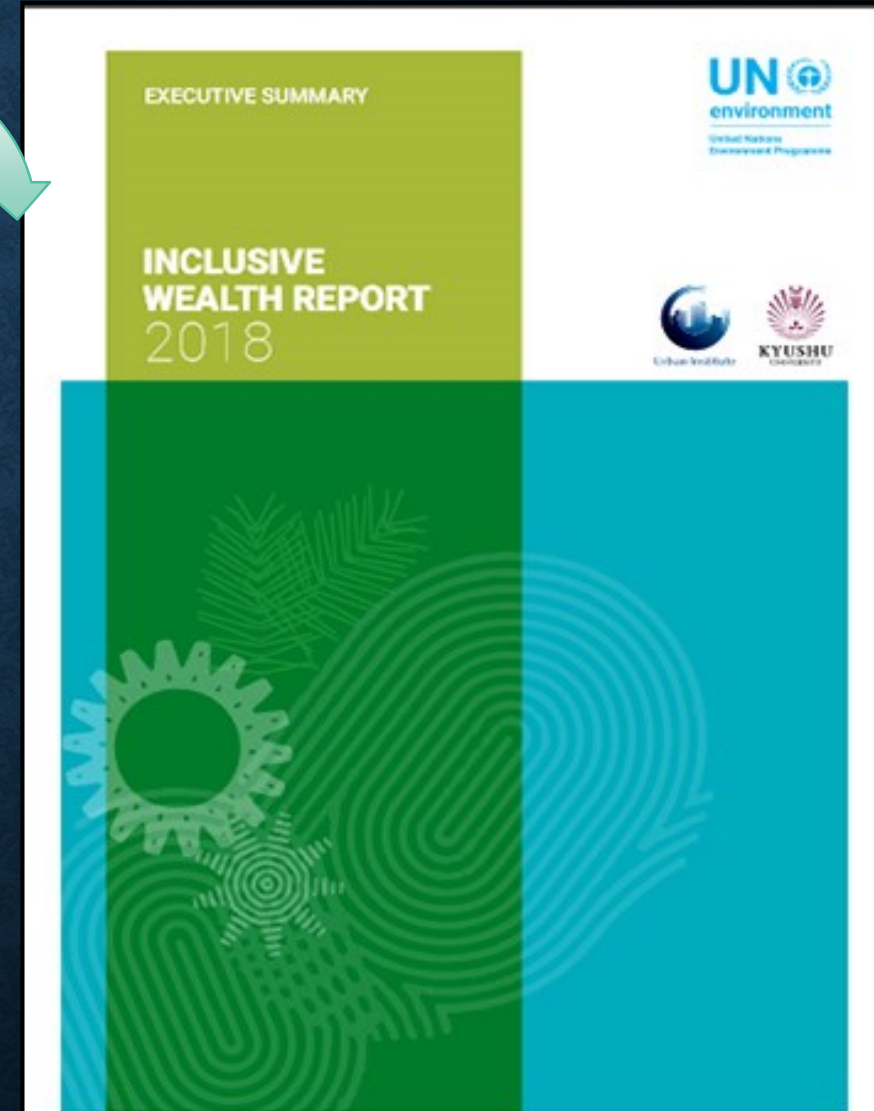
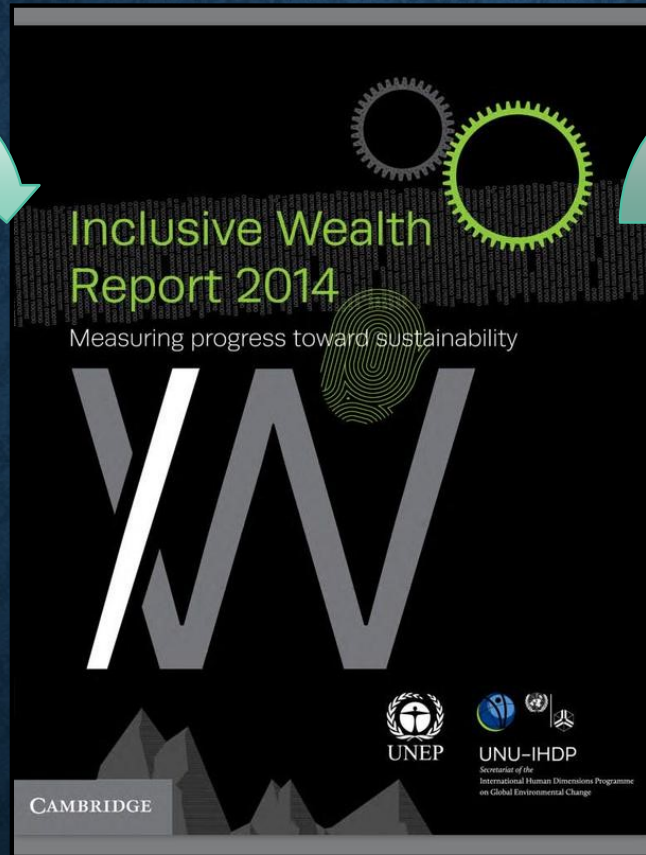
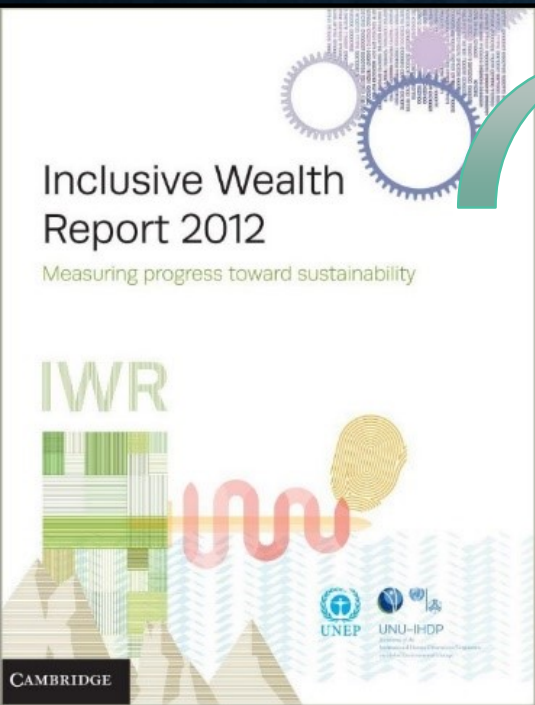
"As nations work to meet the SDGs, UN Statistical Offices should begin to prepare IW accounts and track movements in wealth through time"

Source: Dasgupta, Duraiappah, Managi et al. 2015. "How to measure sustainable progress". **Science**

"Ken Arrow, Nobel Prize winner, was a leader in this field. It is also notable that the intellectual roots of IW trace to work of two Nobel Prize, William Nordhaus and James Tobin."

Source: Polasky et al. 2019. "Role of economics in analyzing the environment and sustainable development". **PNAS**

History of Inclusive Wealth (IW)



Director

Shunsuke Managi, Kyushu University



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Anantha Duraiappah, UNESCO

Barbara Fraumeni, NBER

Harold Mooney, Stanford University

Hamid Zakri, Science Advisor to the

Prime Minister of Malaysia



Policy Advisory Board

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Natural capital

Forests, agricultural land, rivers and estuaries, the atmosphere and the oceans – ecosystems more generally – as well as subsoil resources.



Manufactured capital

Roads, buildings, machines and equipment



Human capital

Knowledge, aptitude, education and skills

13 CLIMATE ACTION



14 LIFE BELOW WATER



9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



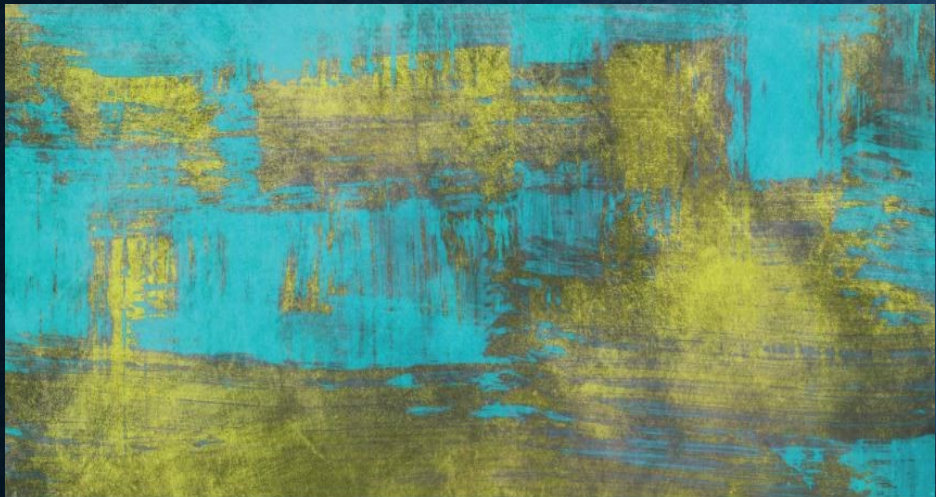
3 GOOD HEALTH AND WELL-BEING



4 QUALITY EDUCATION



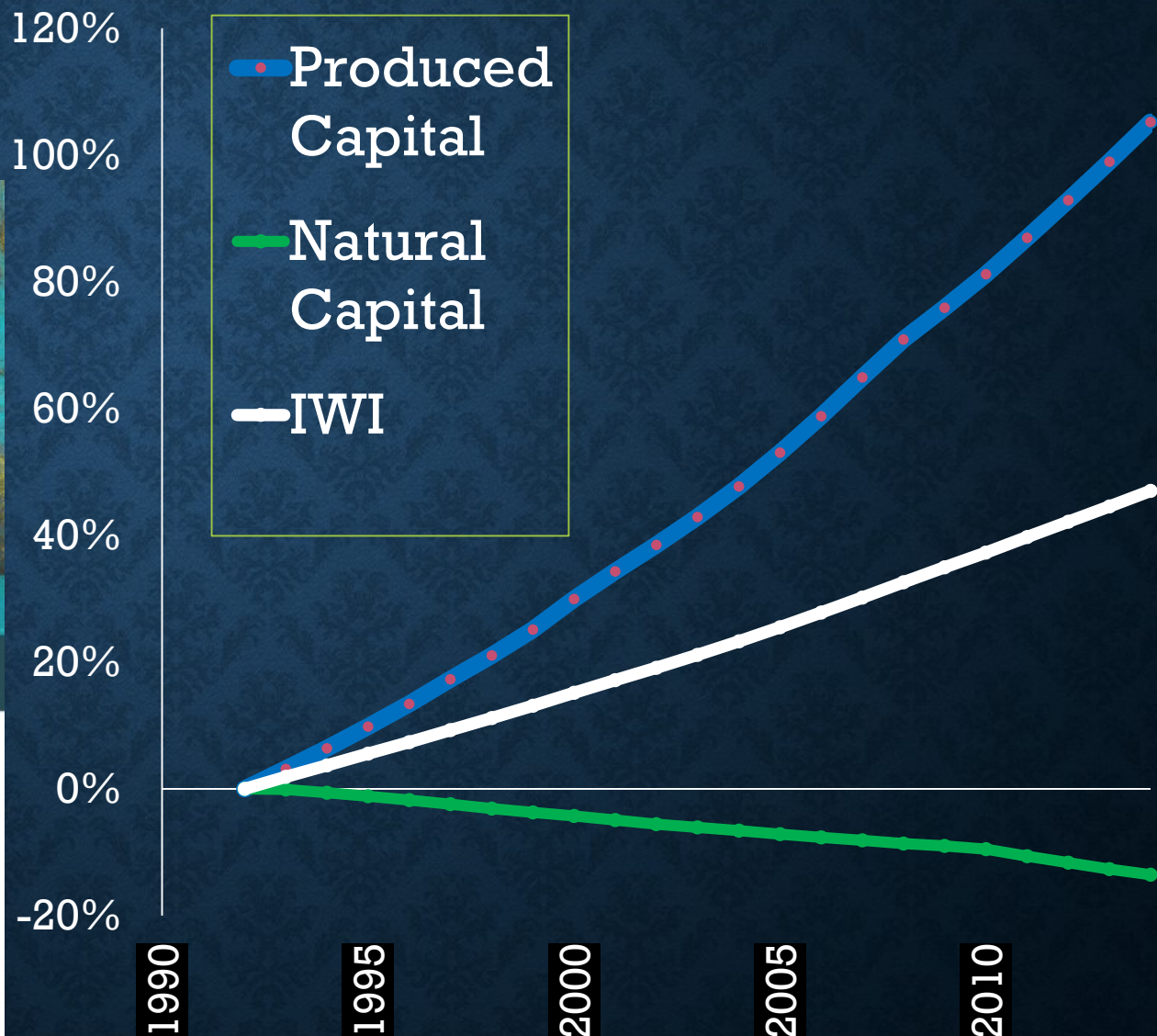




INCLUSIVE WEALTH REPORT 2018

MEASURING PROGRESS TOWARDS SUSTAINABILITY

Edited by
Shunsuke Managi and Pushpam Kumar



**UNITED
NATIONS**



**United Nations
Environment Assembly of the
United Nations Environment Programme**

**United Nations Environment Assembly of the
United Nations Environment Programme**
Second session
Nairobi, 23–27 May 2016

**Sustainable management of natural capital for sustainable
development and poverty eradication**

Consider Tiger as Natural Capital to Achieve Development: PM

Data Evidence in India



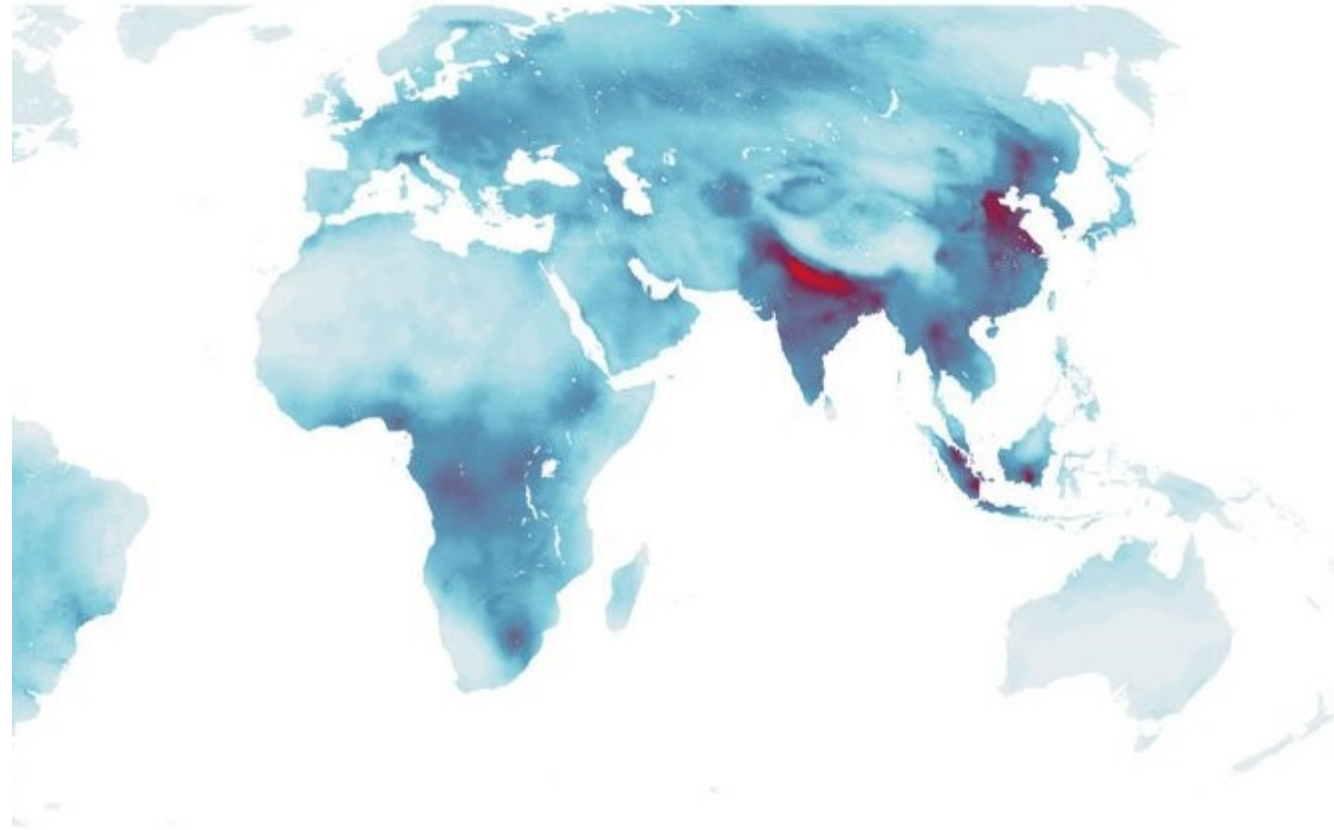
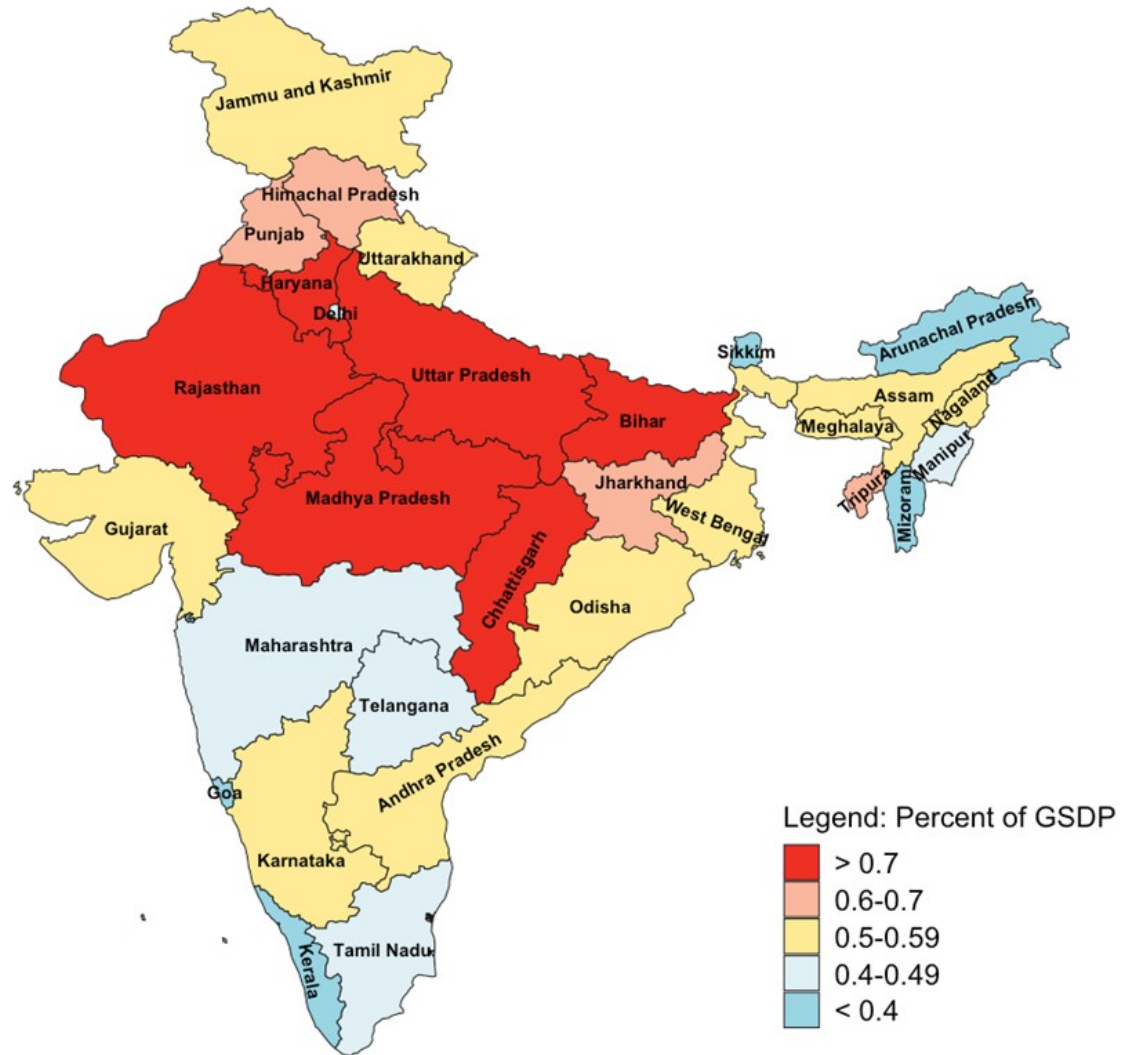
Source: Islam and Managi. 2019. *Resources, Conservation & Recycling*

Managi & UNEP (2019) Natural Capital of India: Assessment and Accounting for Achieving Sustainable Development Goals, Accepted by Ministry of Finance (India)



Human capital Lost Due to Pollution-Related Premature Death

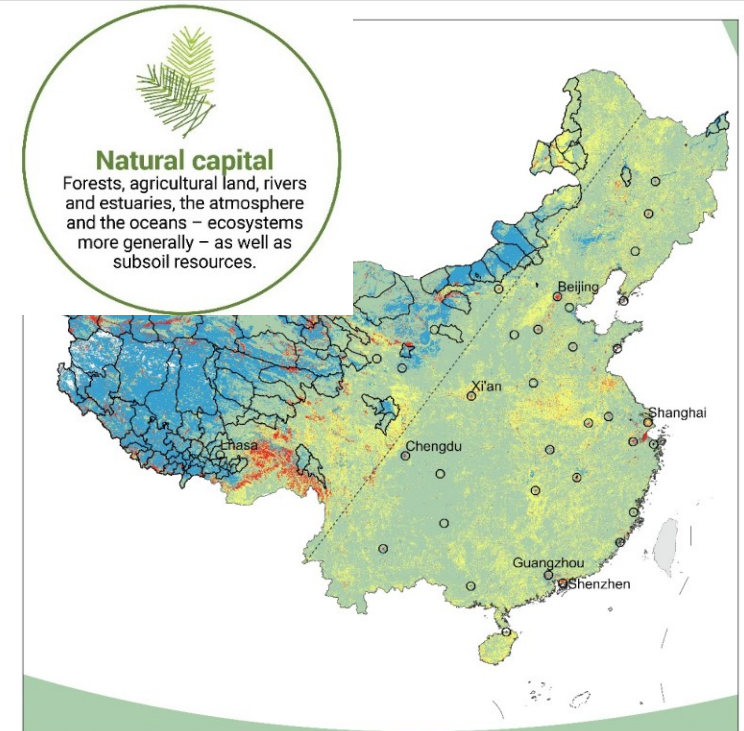
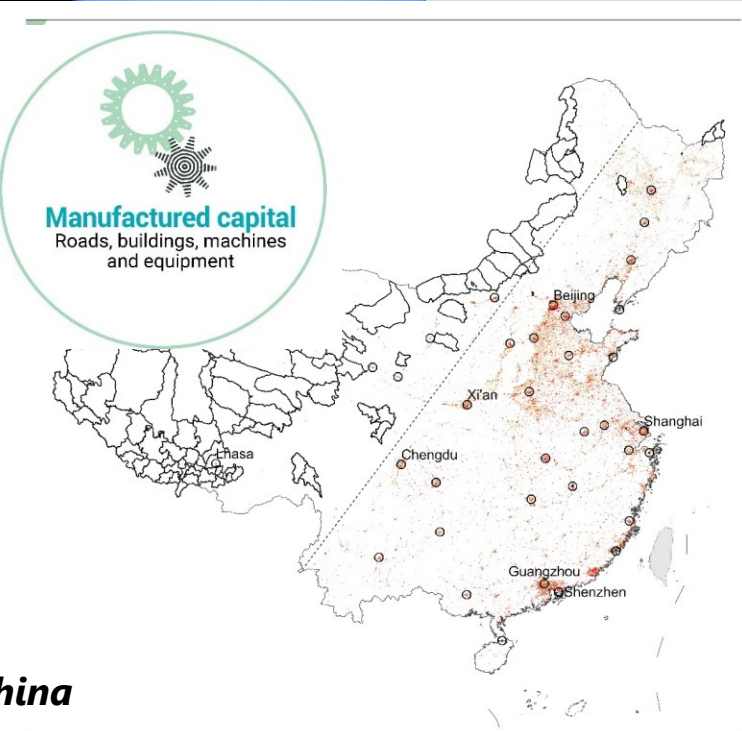
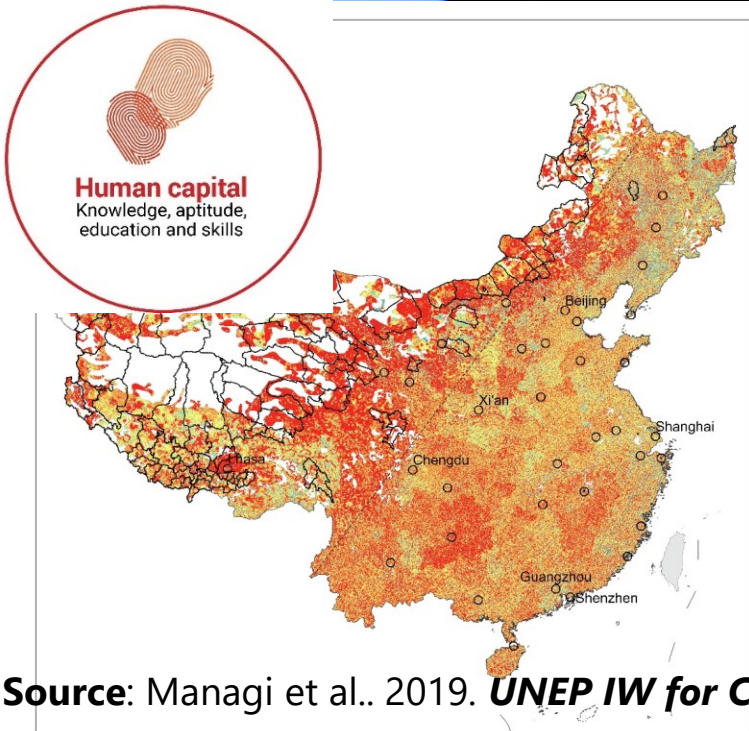
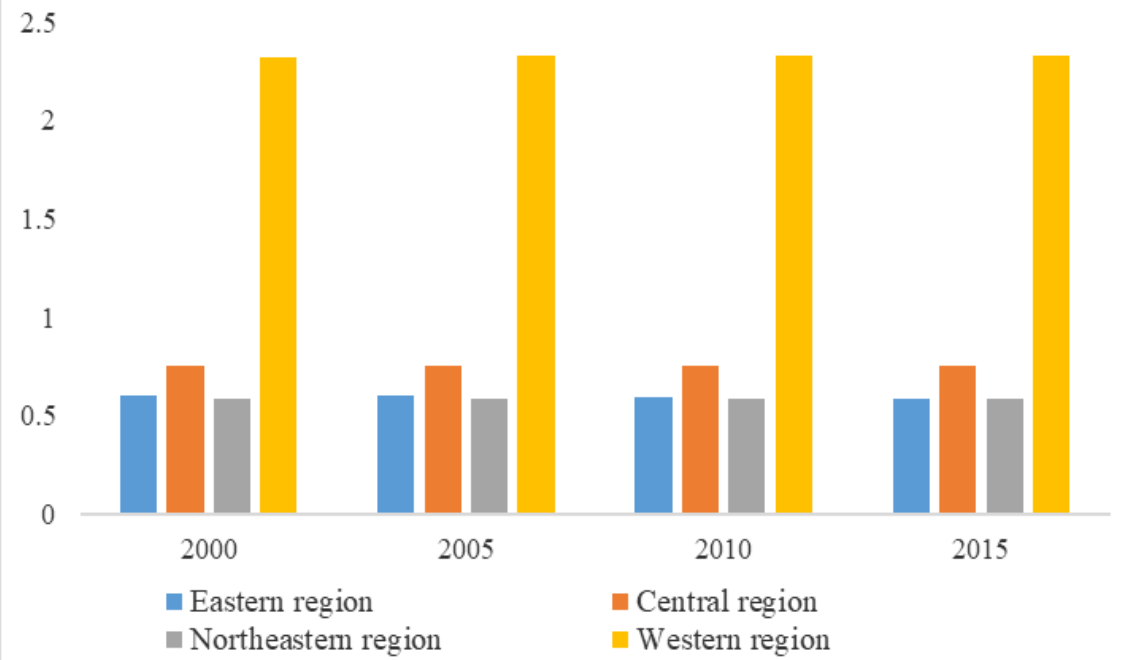
\$18.4 billion USD (2017)



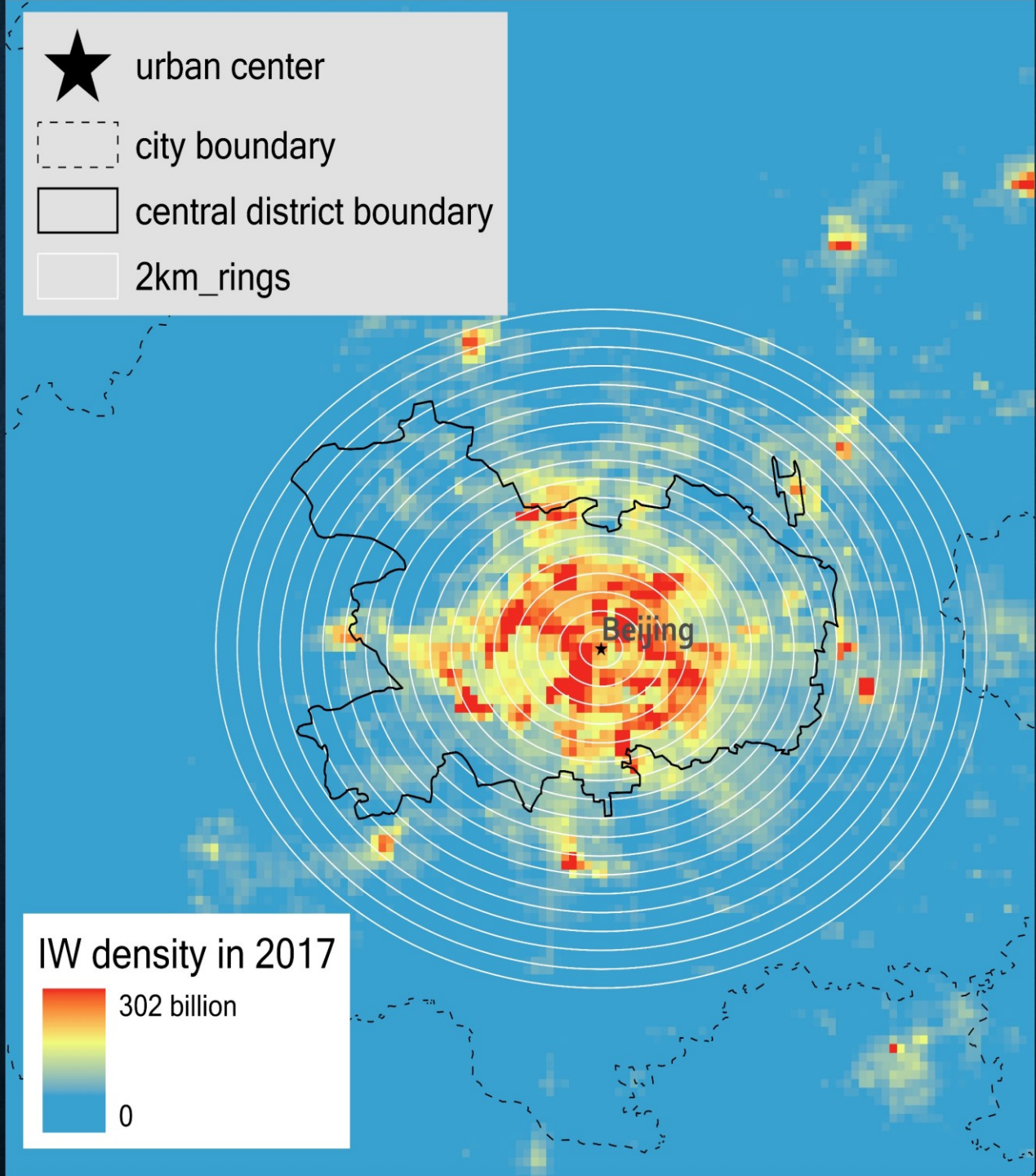
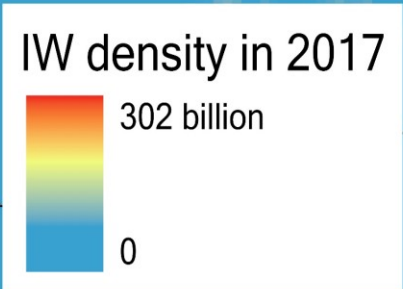
Source: Lancet commission project with UNEP & Managi et al. 2019 **Sus Sci**

BELT and ROAD — 帶 — 路

Concept in China



Source: Managi et al.. 2019. **UNEP IW for China**



Bottom up success in Japan

- Regional success needed (two cities budget system changed)

- Ministry of Environment Basic book “...sustainable use of natural, human and physical capital for region...”

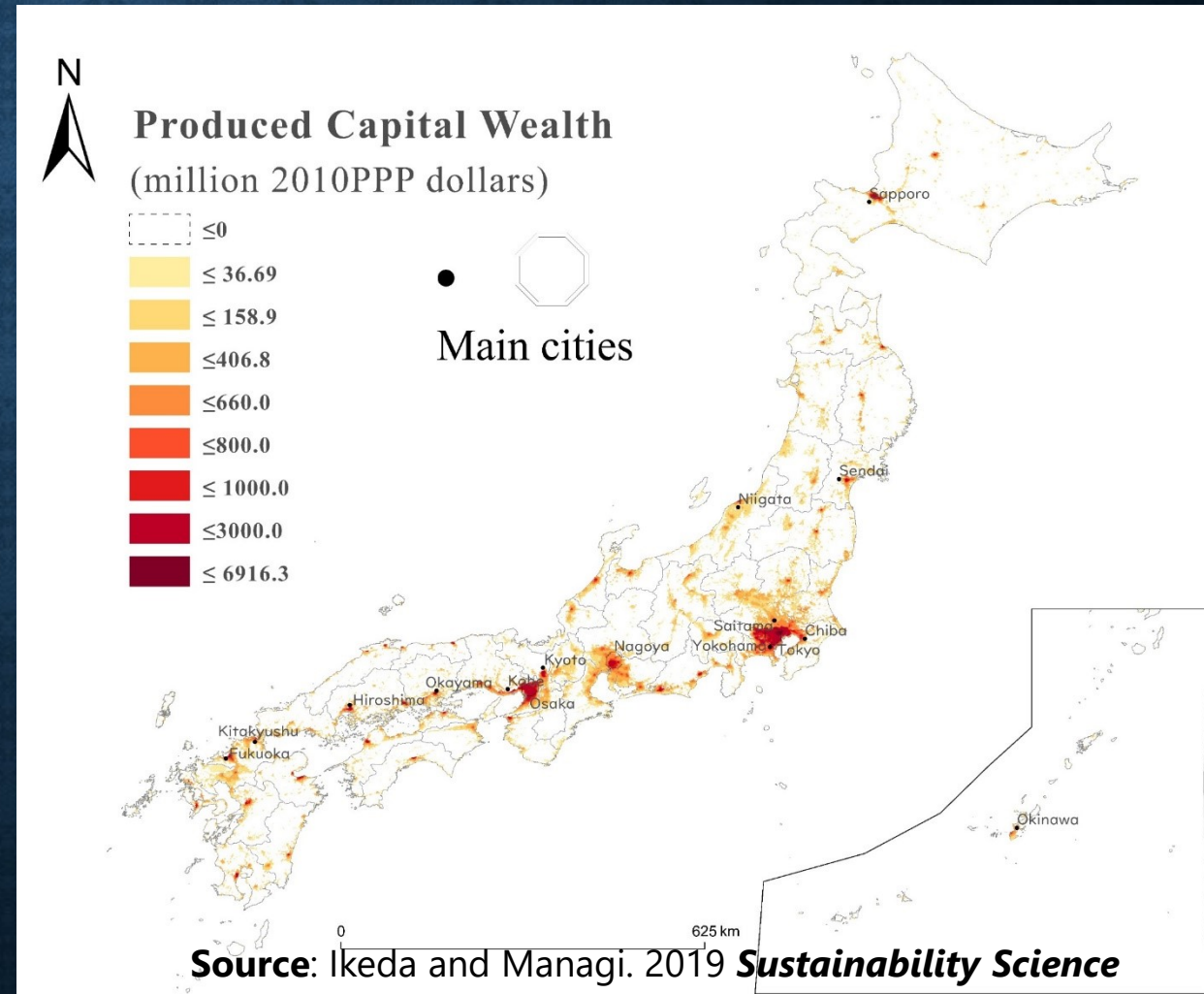
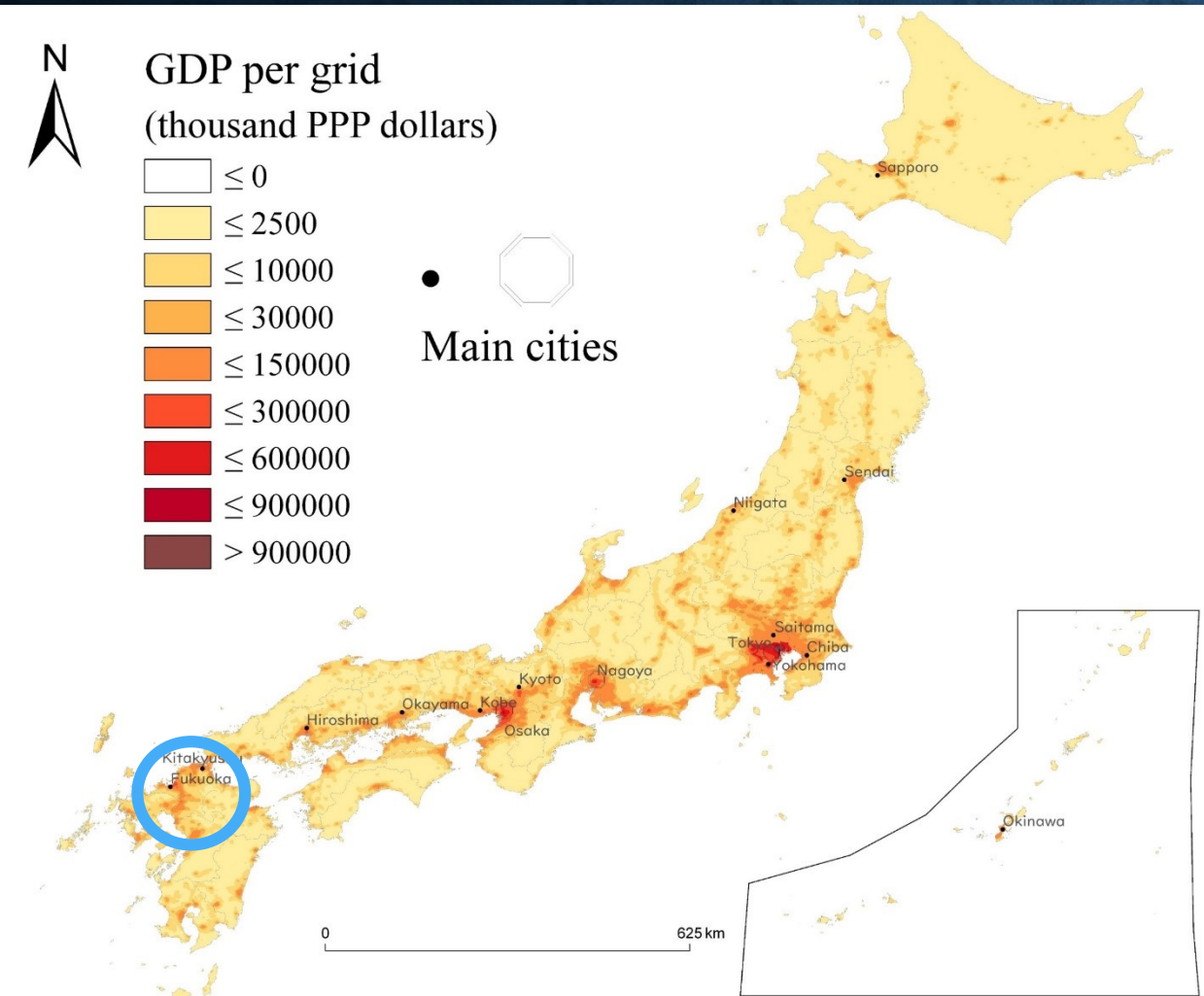
Open database



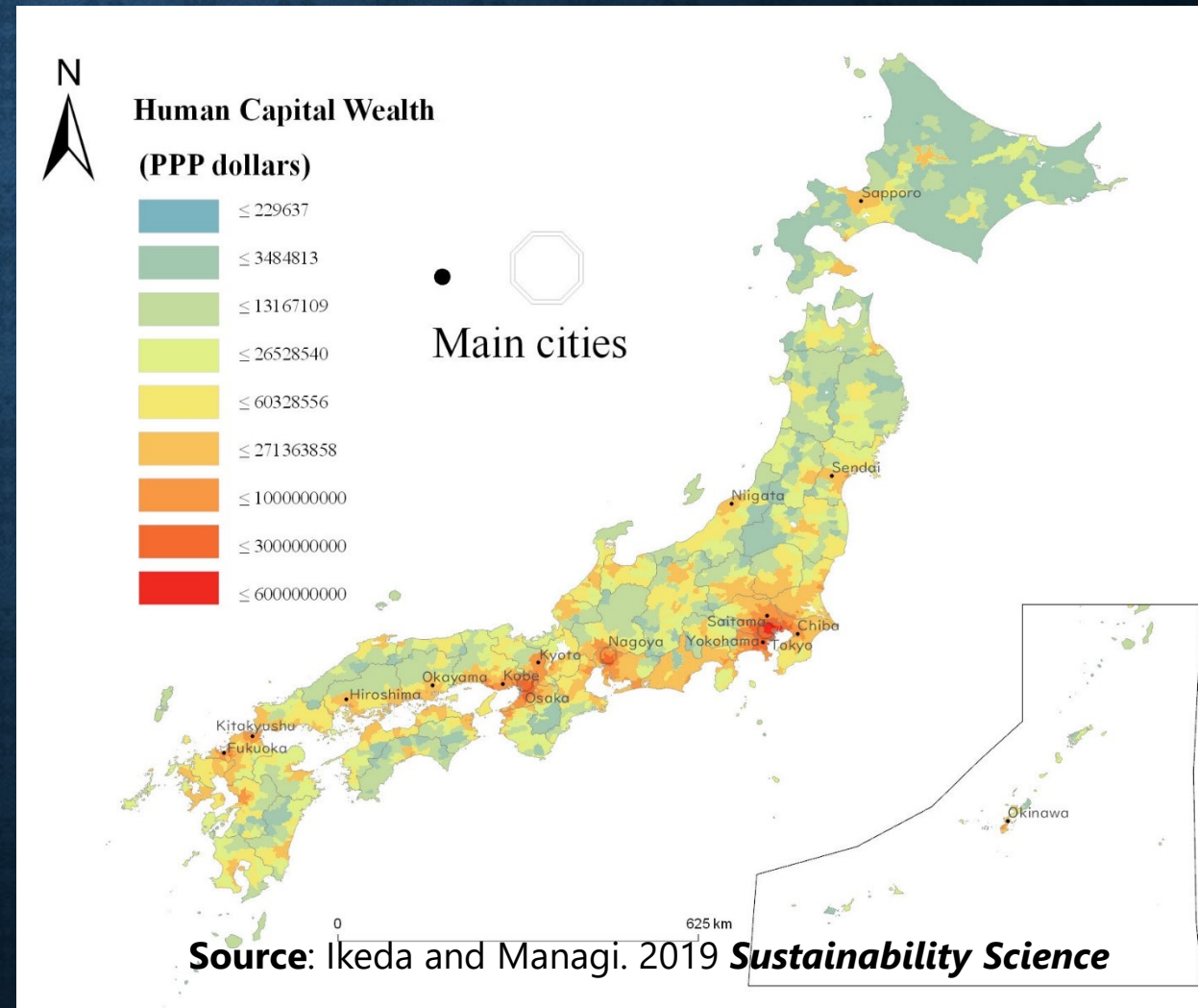
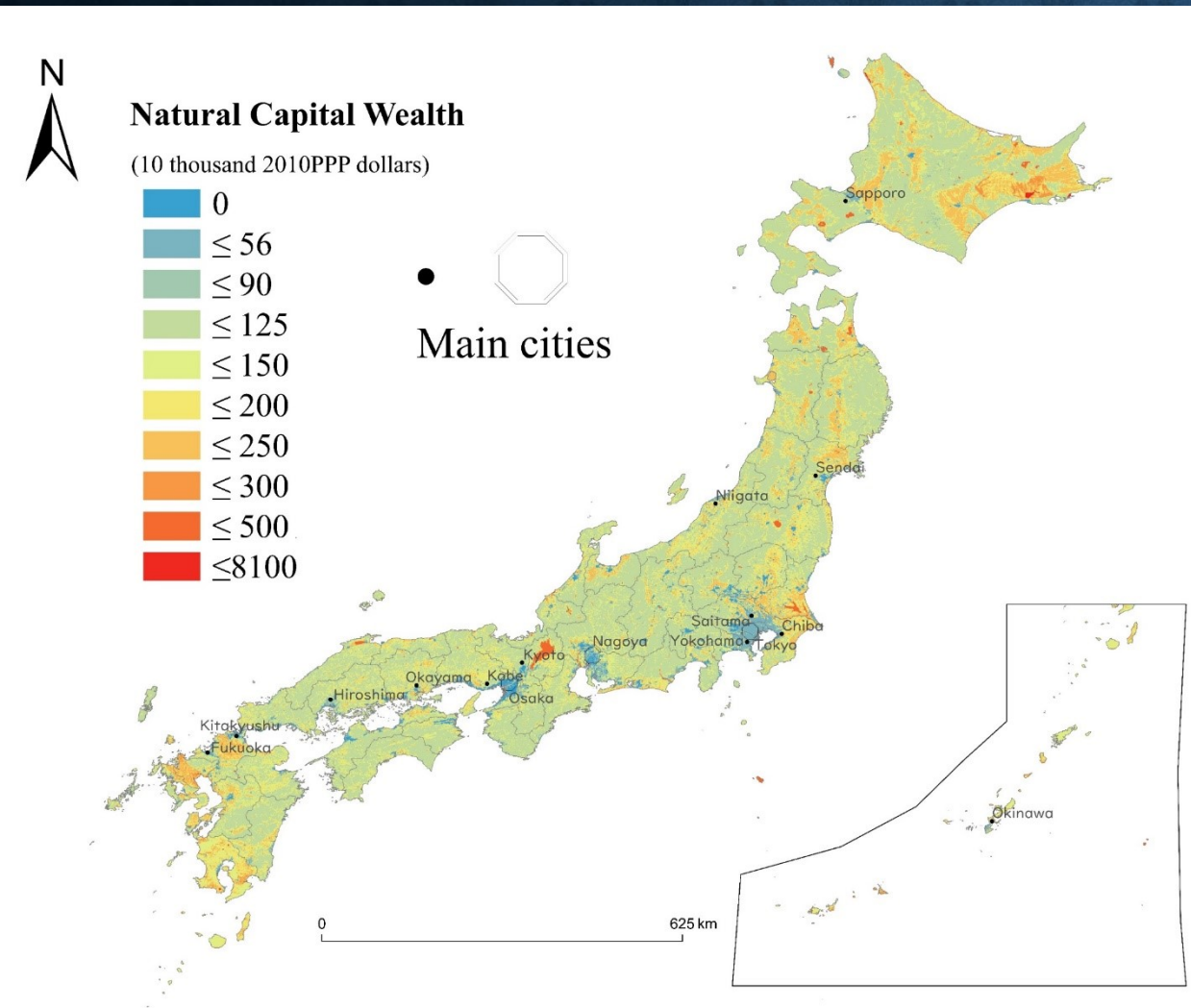
九州地域の豊かさ分析



City based decision support system (\$)



City based decision support system (Nature and human)



Innovation

- Flow of natural resources as waste has a negative growth rate in the long run
- Uniform subsidy is superior to a selective subsidy in R&D
- Regional stock value of IW helps in forecasting firm growth

Efficiency improvement

- Market: Uniform CO2 permit market better (lab)
- Incentive: Higher price (EU ETS) and stringent environmental regulation (OECD) associated with more energy efficiency gain

Institution structure

- Event characteristics and socio-political context markedly influenced the discourse.
- People reacts to relative (even happiness from relative income)

lity Commu 🔍

Much difference of preference b/w and within countries

CONTRIBUTOR NATURE SUSTAINABILITY

BEHIND THE PAPER

Multinational Life Satisfaction, Perceived Inequality and Energy Affordability

This joint research was undertaken to uncover the linkage between energy

ARTICLES
<https://doi.org/10.1038/s41893-019-0303-5>

nature sustainability

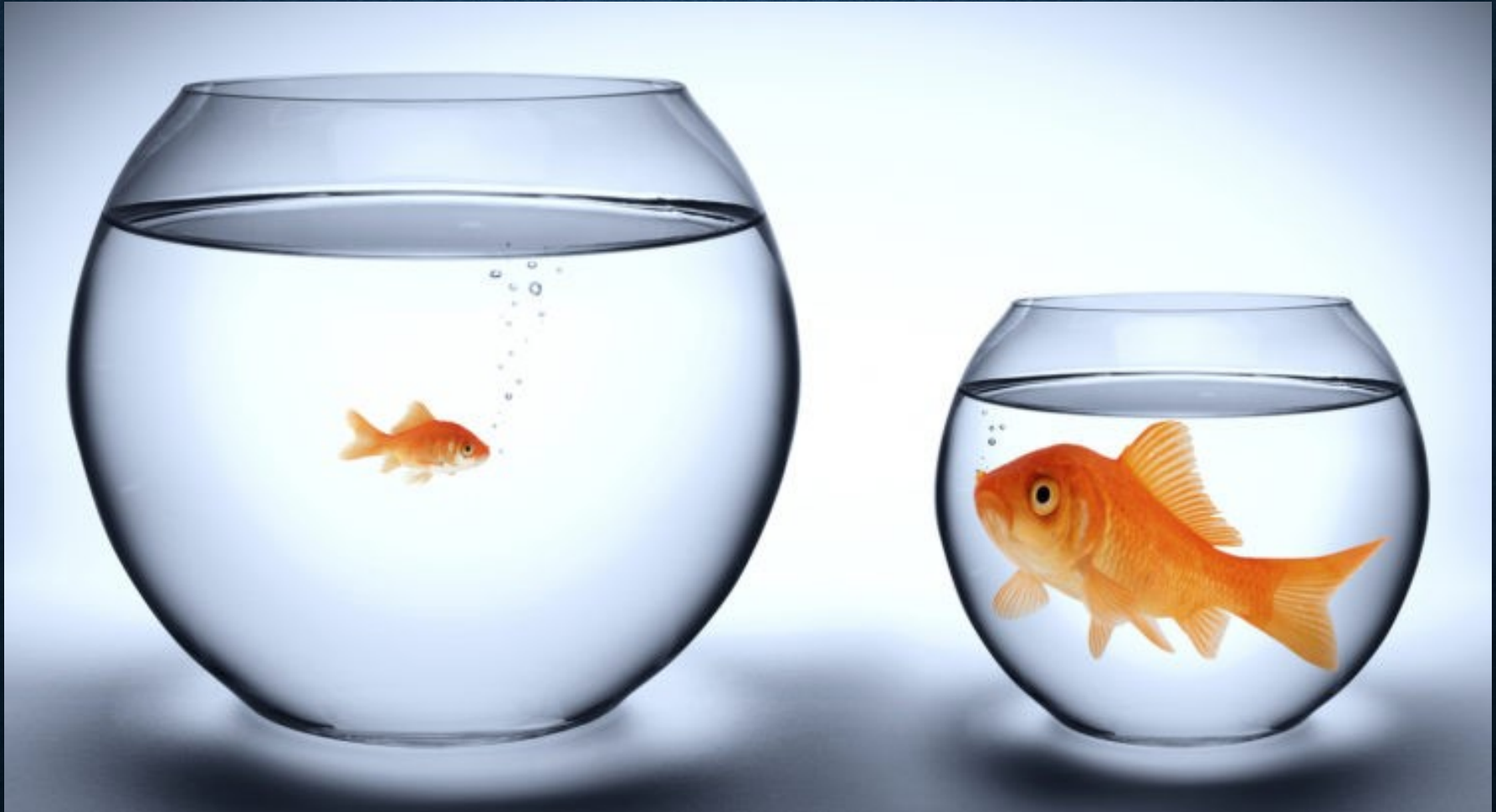
Multinational life satisfaction, perceived inequality and energy affordability

Andrew Chapman^{1*}, Hidemichi Fujii² and Shunsuke Managi³

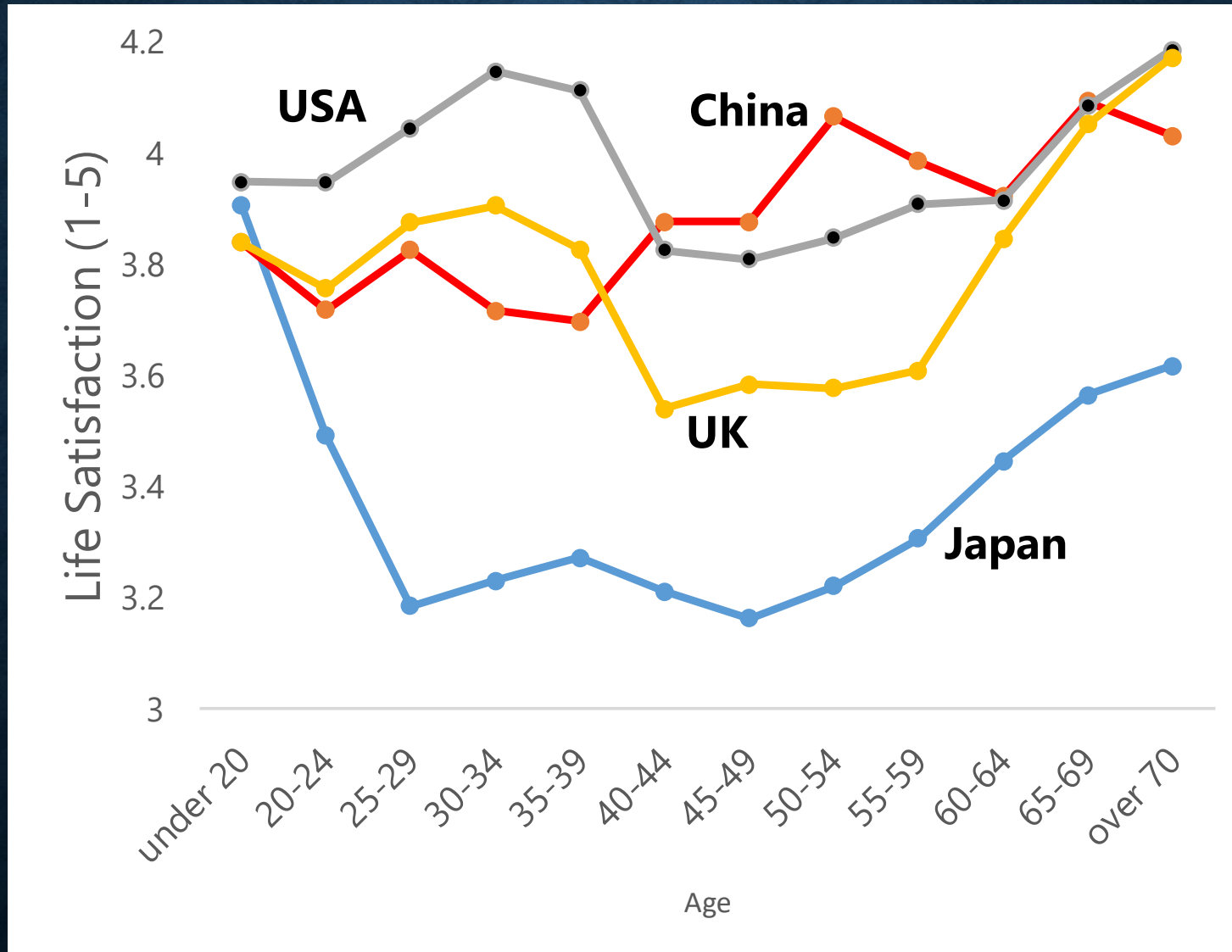
We analyse subjective experiences of energy poverty to address the limitations of existing observable indicators as evidence for policy. We investigate the linkage between self-reported energy affordability and life satisfaction, health and economic inequality. A large-scale survey of 100,956 respondents across 37 nations shows that energy affordability concerns individuals

Source: Chapman, Fujii, and Managi. 2019. Nature Sustainability

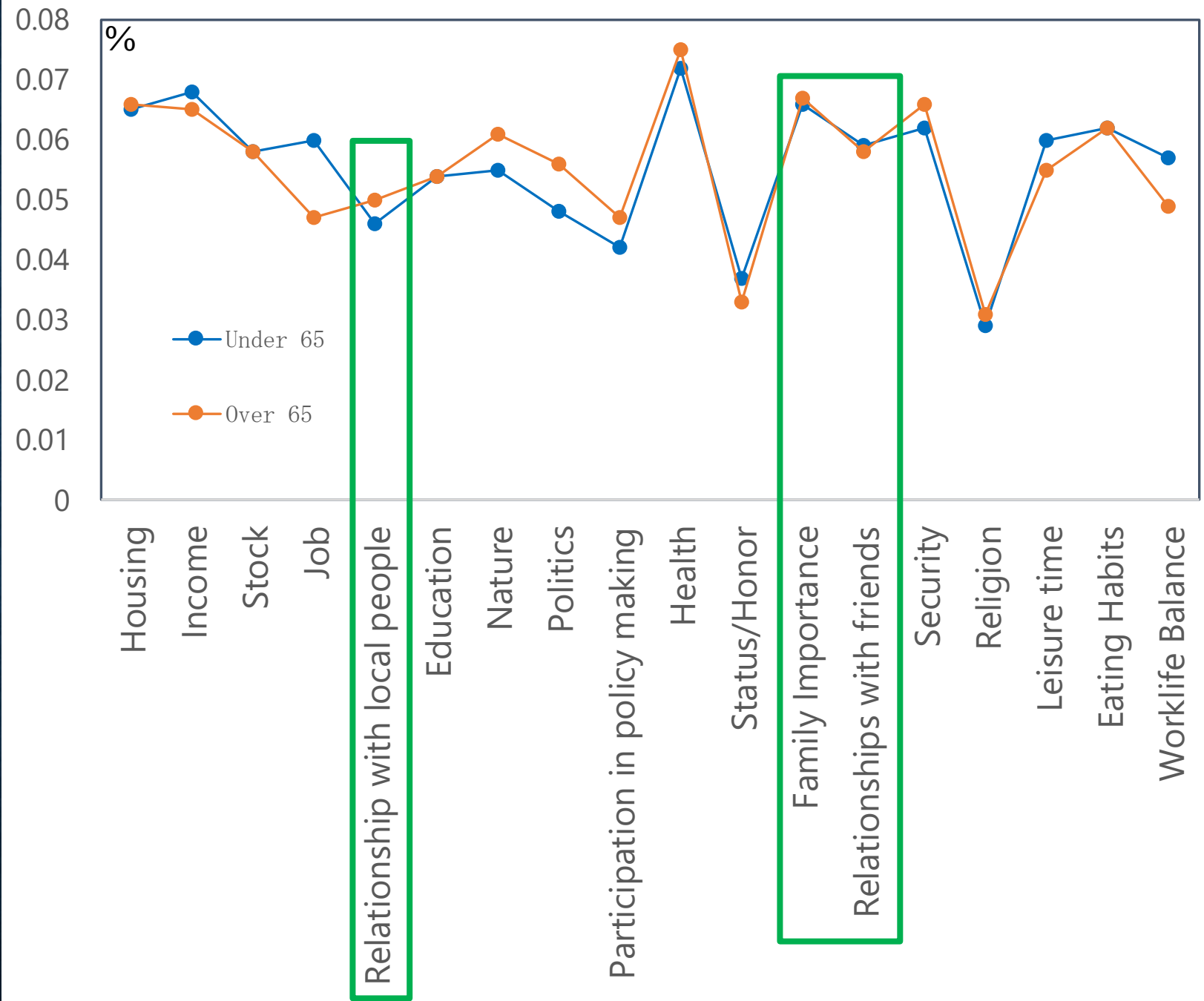
~~One size fits all~~



Happiness

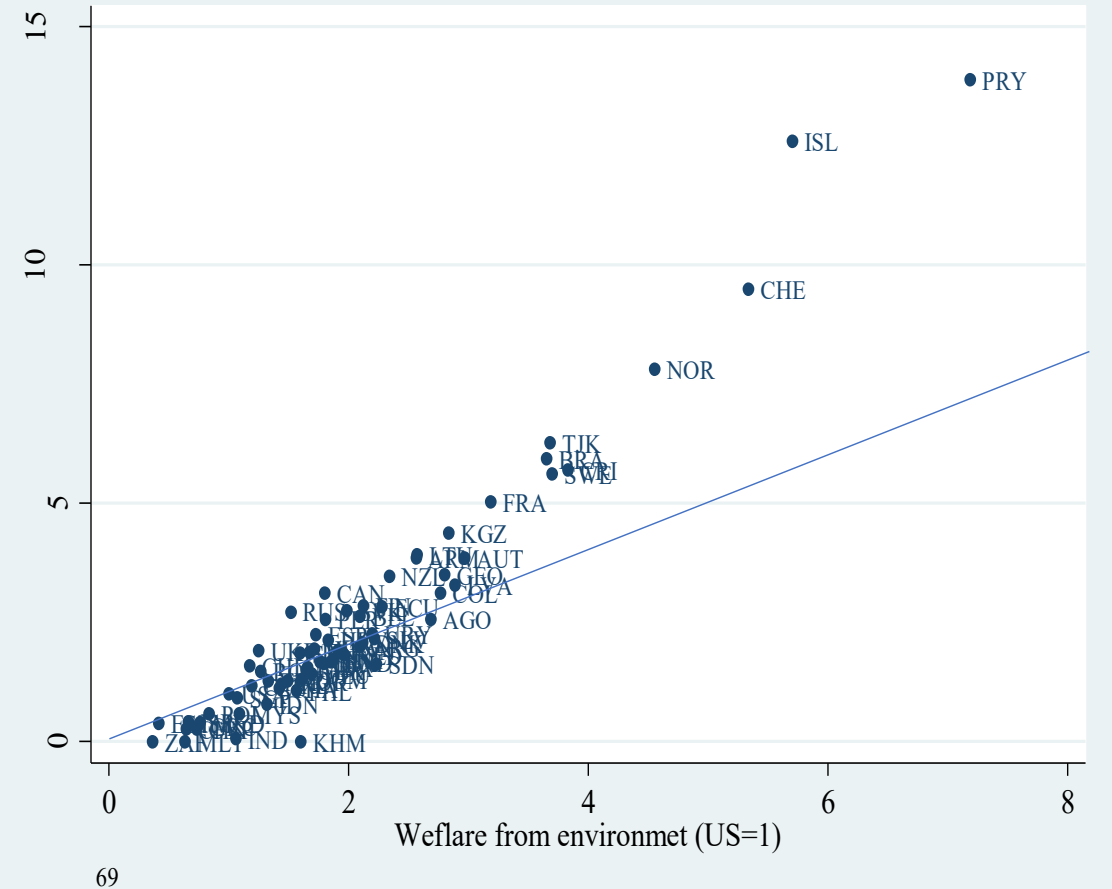
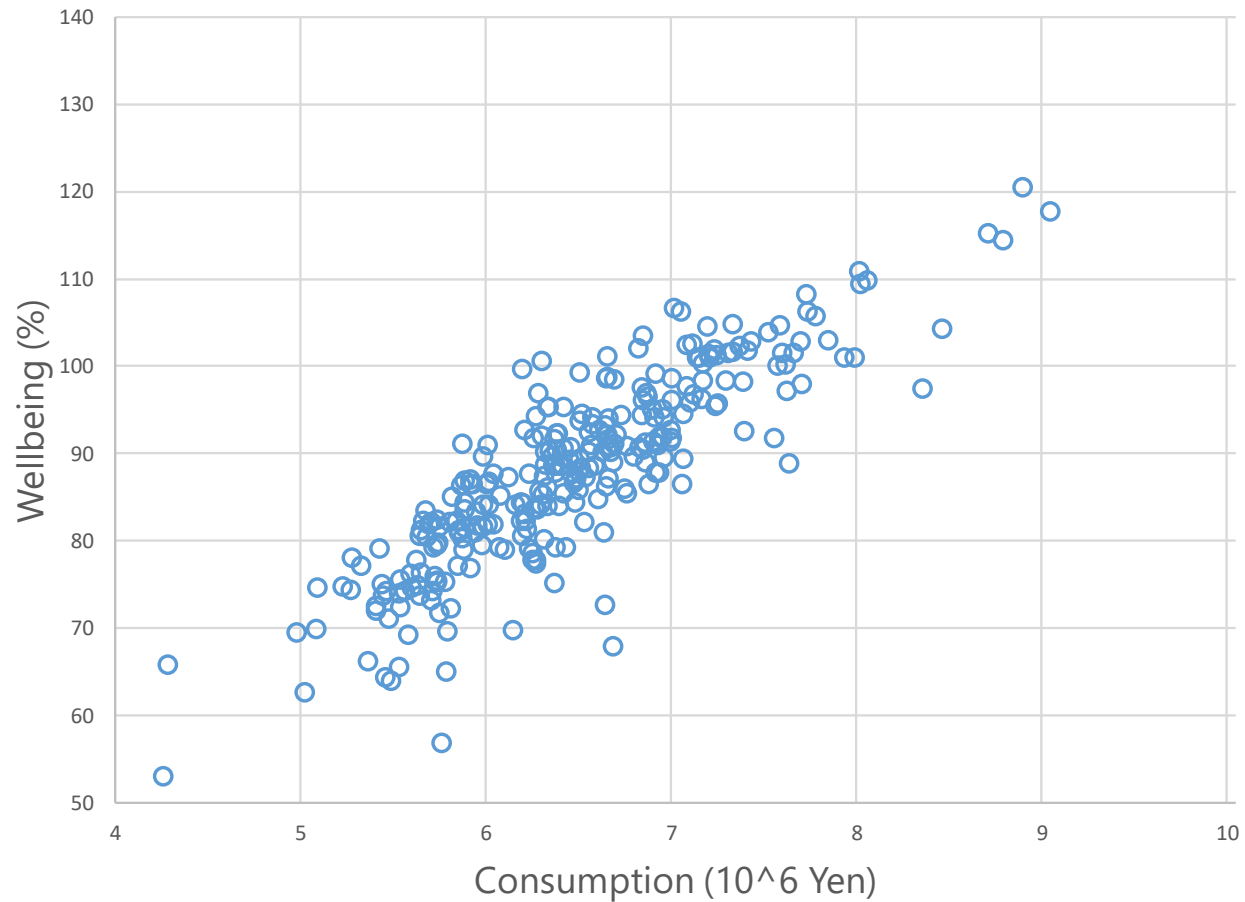


Relationship involvement



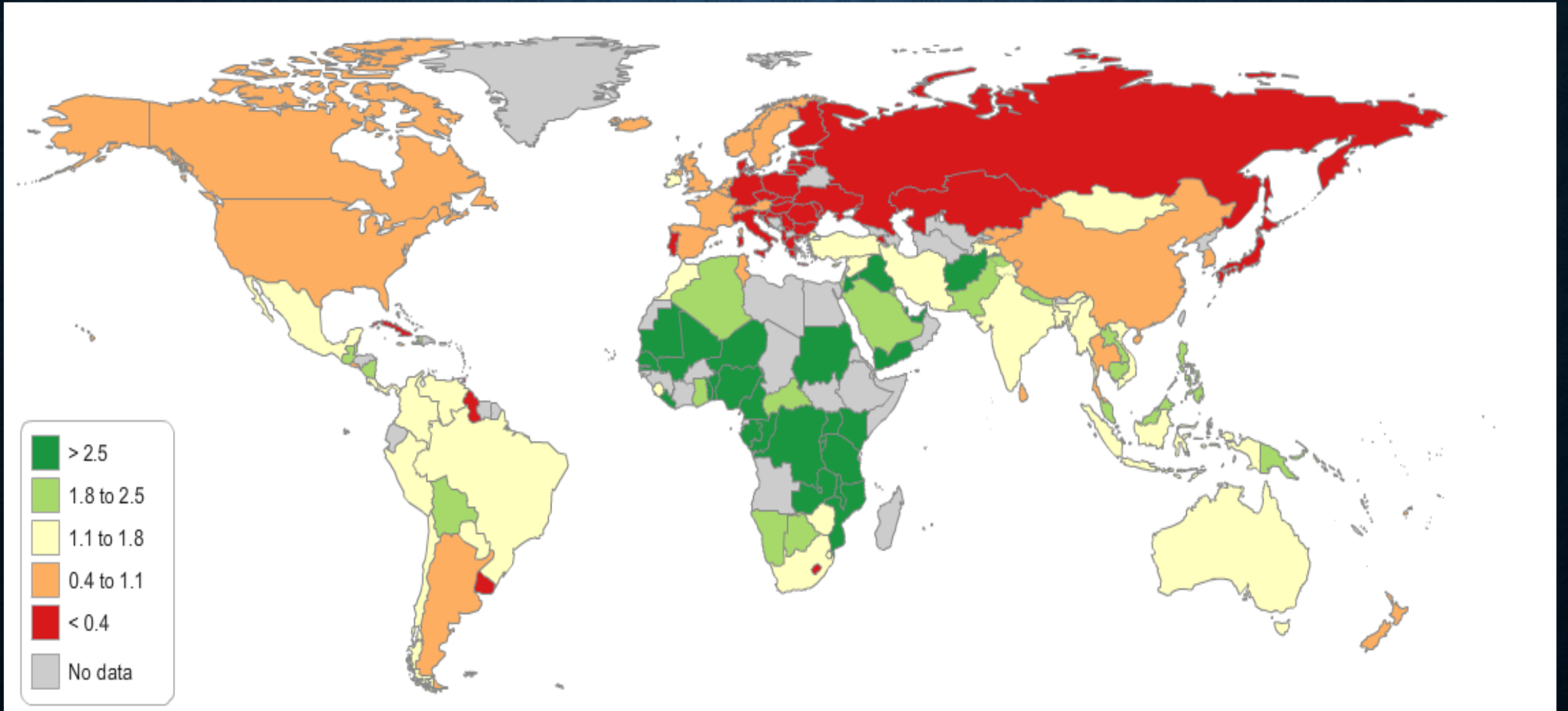
Source: Kitsuki, Matsushita, and Managi, 2019.

Much non-economic factor important



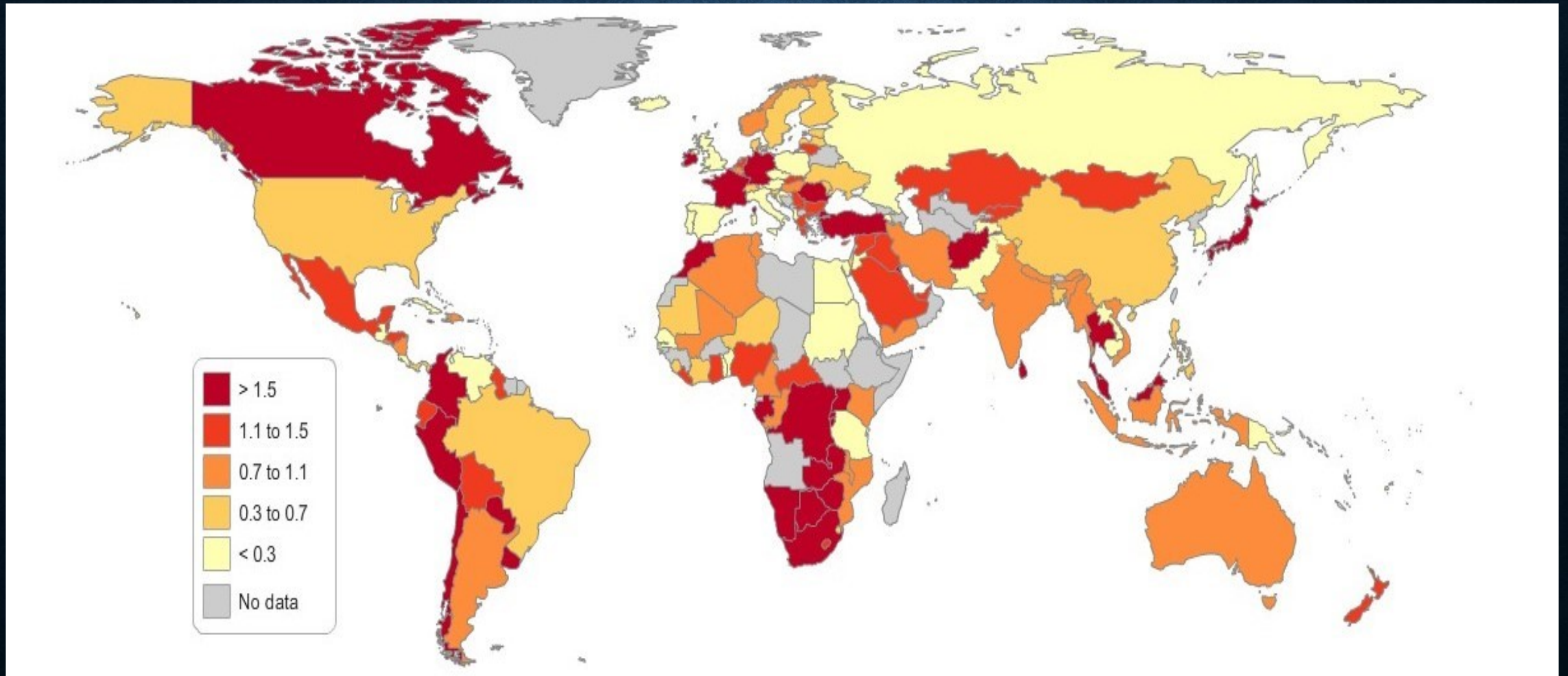
Source: Kitsuki and Managi, 2019; Sakamoto and Managi, 2019.

Health induced human capital (1990-2015)

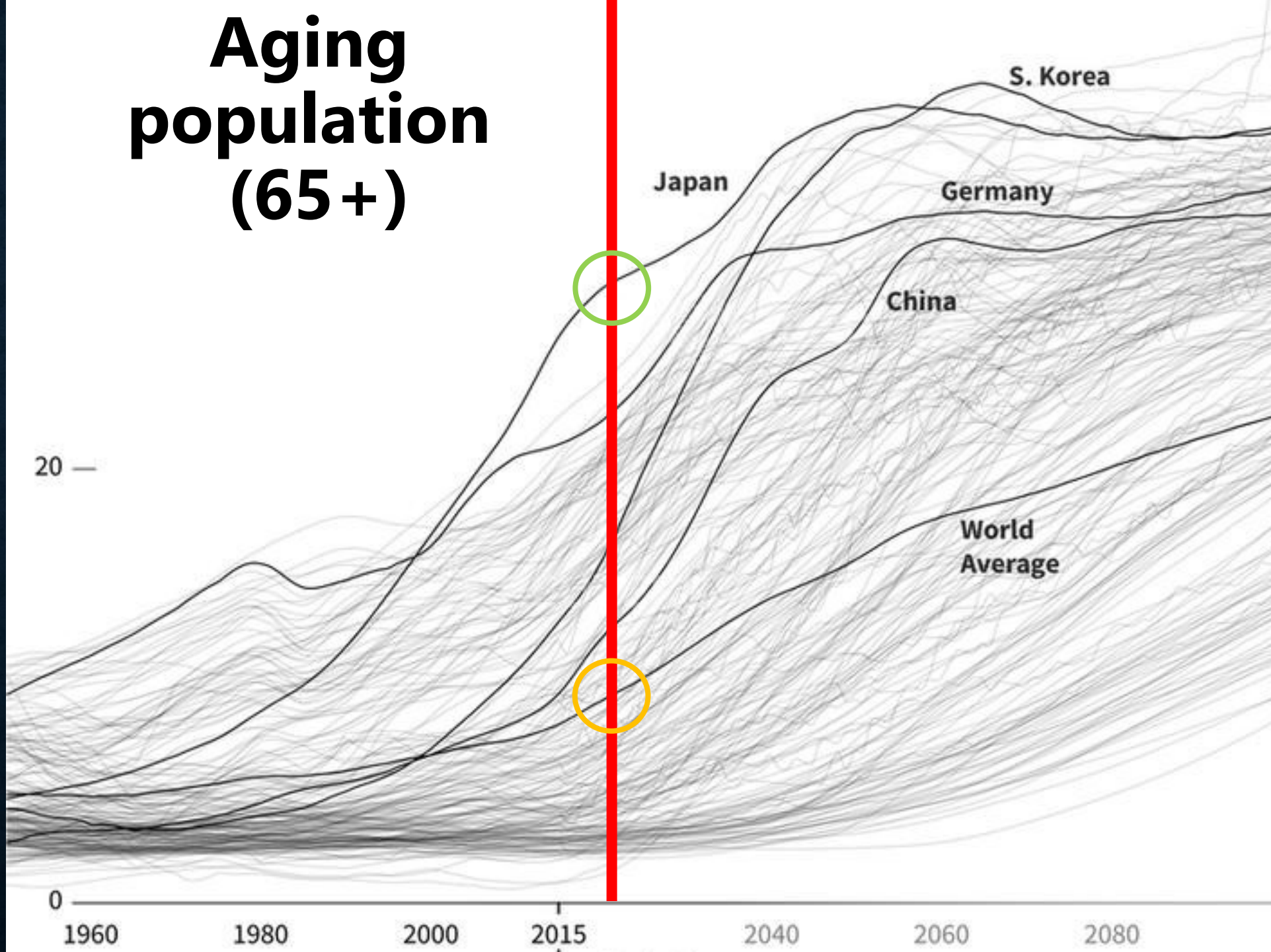


Source: Jumbri, Ikeda, and Managi. 2018,. Archives of Public Health

Health forecasting to 2100

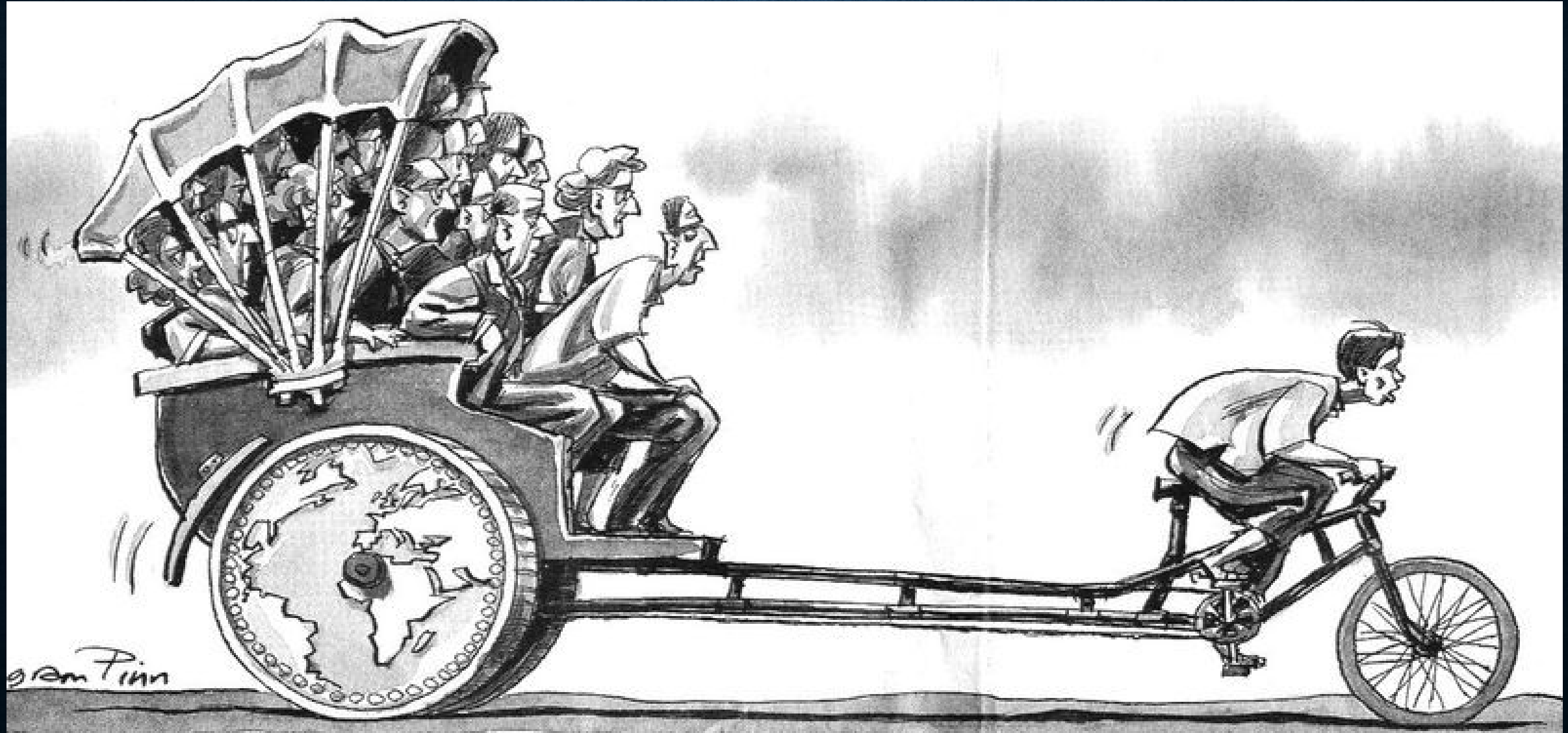


Aging population (65+)



Source:
UN
Population
Division &
Reuters

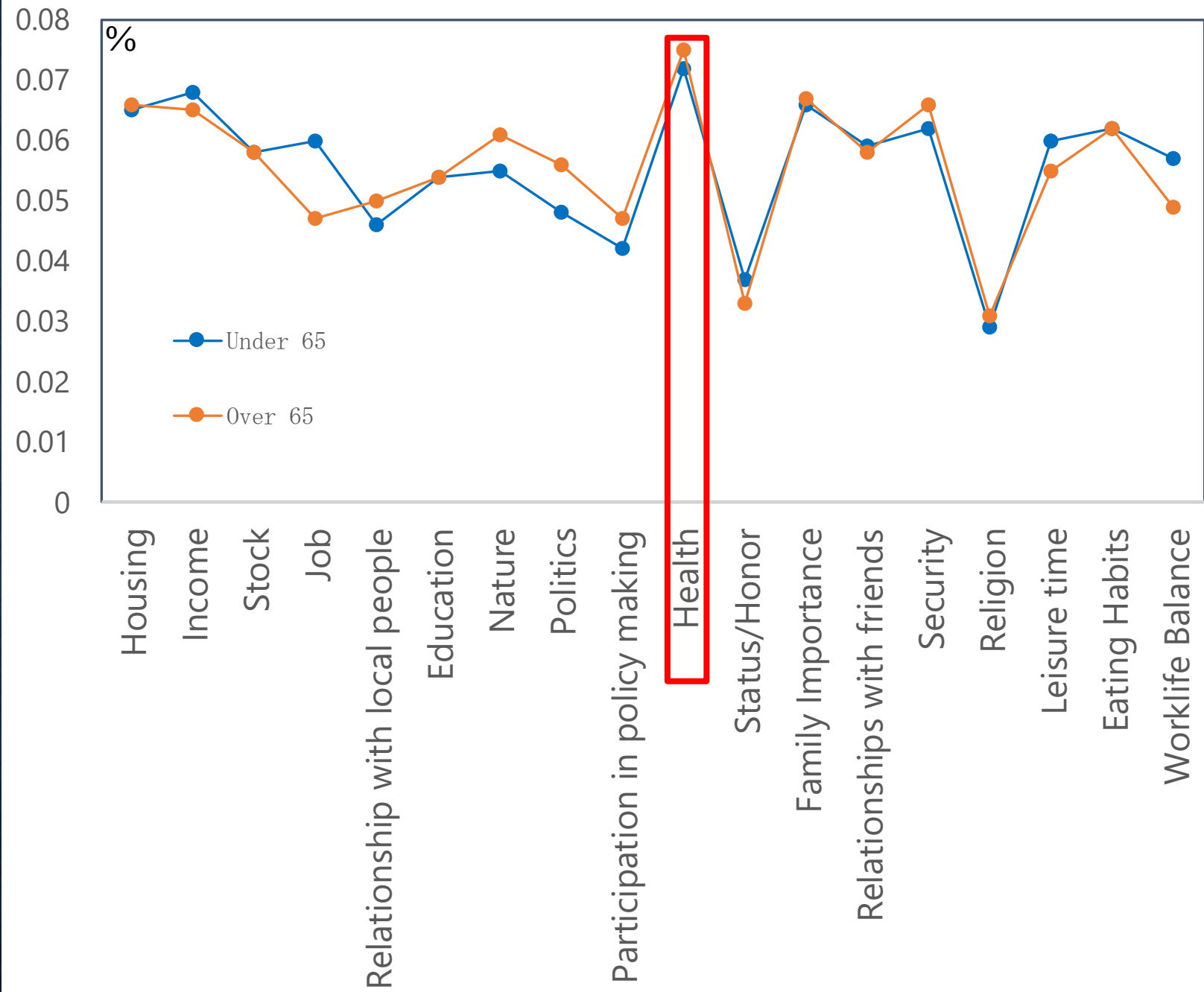
Ratio of workers to pensioners



Challenge for senior

- **Budget problem:** More migration to local
- **Payment policy:** Fee-for-service policy more efficient in medical quality (Nakata, Yan, Managi, 2016).
- **Quality of life:** Still good in life, then how to make it better

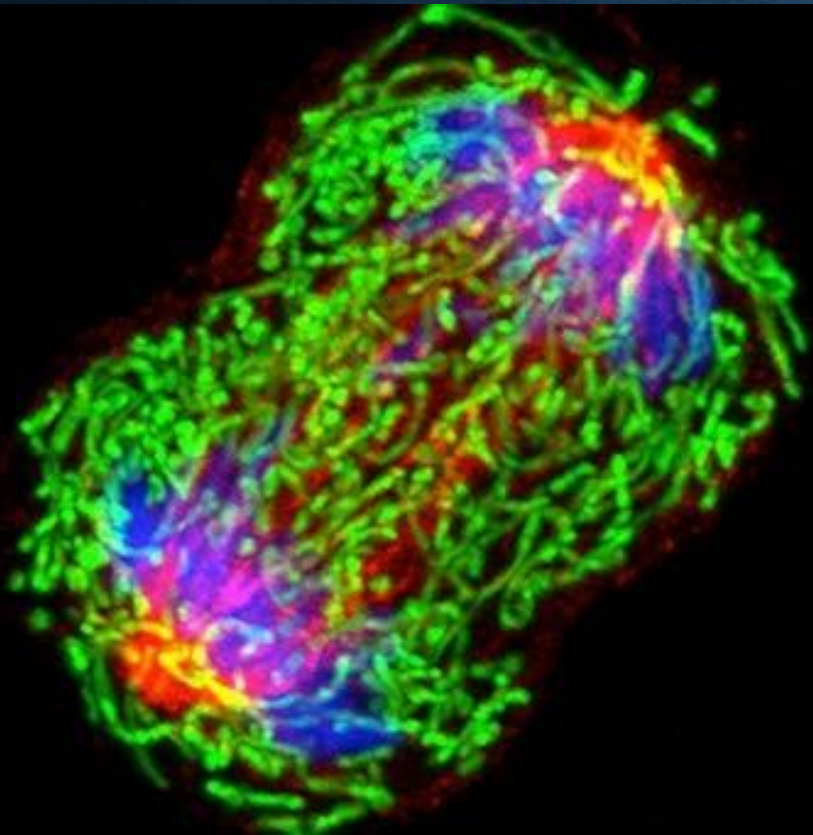
Health as key



Source: Kitsuki, Matsushita, and Managi, 2019.

Value of health: Japan

Cancer = Depression



Caner or depression > Lifestyle-related diseases

DIABETES

KNOW THE SYMPTOMS

The infographic features a central illustration of a man sitting in a chair, holding a glass of beer and a smartphone. Surrounding him are various icons and text boxes representing symptoms of diabetes. The symptoms include: Always tired (sad face icon), Always thirsty (glass of water icon), Sudden weight loss (waistline icon), Frequent urination (toilet icon), Wounds that won't heal (wound icon), Numb or tingling hands or feet (foot icon), Sexual problems (male symbol icon), Always hungry (stack of coins icon), and Blurry vision (eye icon). A central box titled 'Diabetes' provides a general definition of the condition.

Always tired.
Lorem ipsum dolor sit amet, consectetur adipiscing elit.

Always thirsty.
Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat.

Sudden weight loss.
Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat.

Frequent urination.
Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat.

Wounds that won't heal.
Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat.

Numb or tingling hands or feet.
Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat.

Sexual problems.
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Always hungry.
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Blurry vision.
Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat.

Diabetes
Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat.

Next step in health

- **Possible to solve:** Cancer and Heart disease
- **Need to solve:** Dementia (cost of 3-3.5% of GDP)
 - community involvement instead of only additional facility construction

GREEN BONDS



49% of Asian G3 bonds investors are investing or have plans to invest in **green bonds**, the issuers they prefer include:



Corporates

60%



Financial institutions

23%



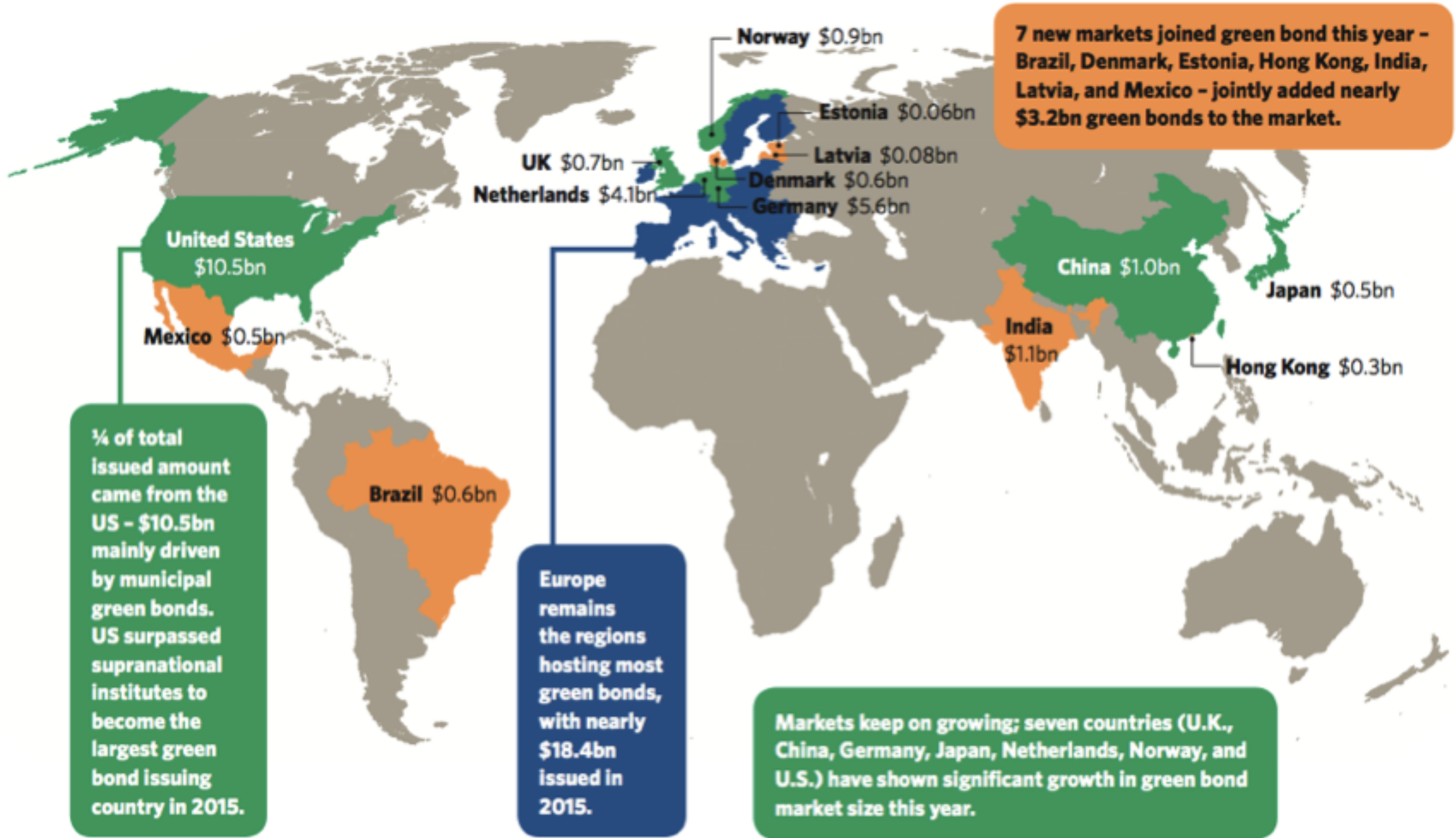
Multilateral institutions

15%

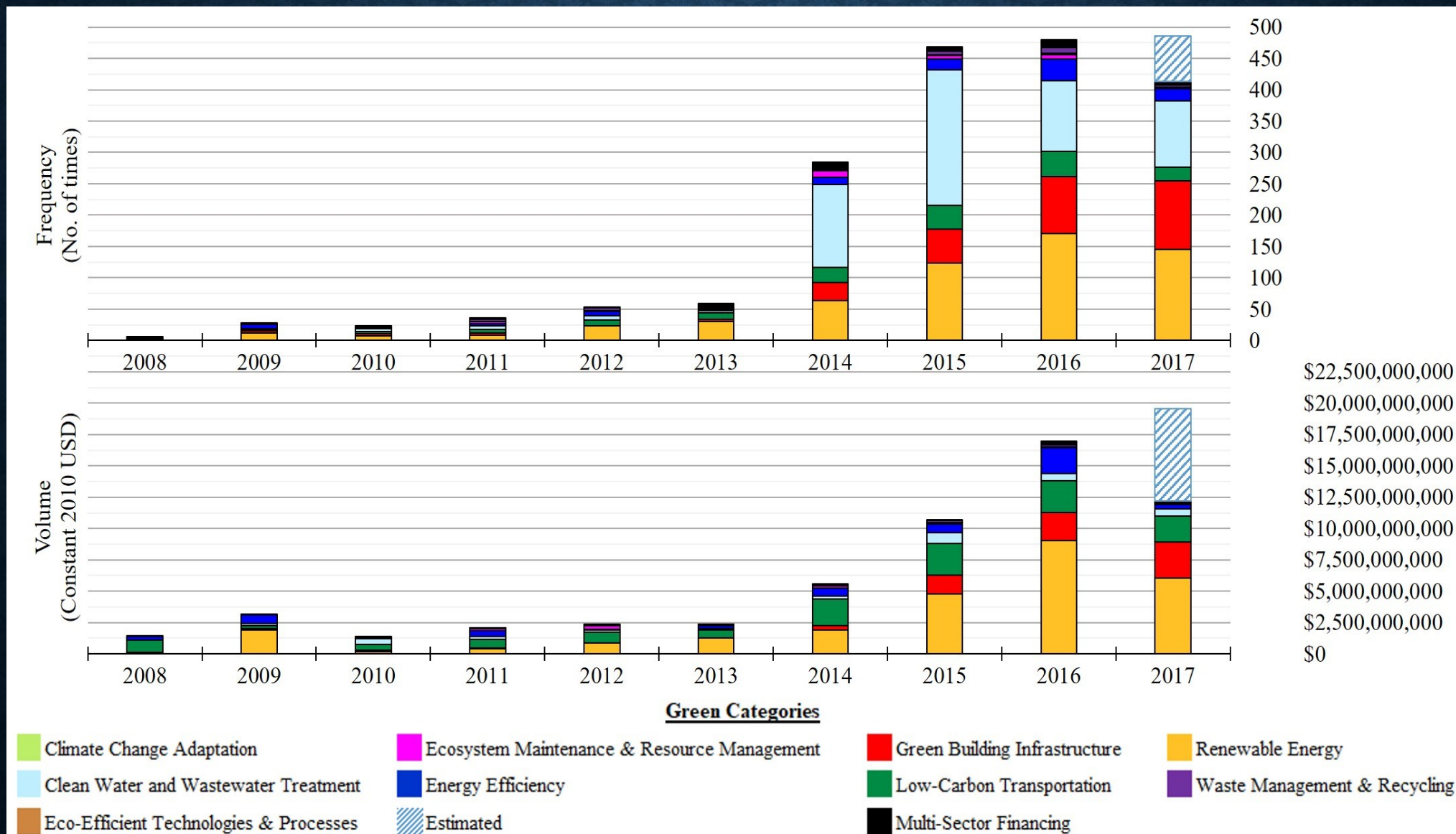
Source: Asset Benchmark Research



From tall trees to green shoots: green bonds are spreading across the world

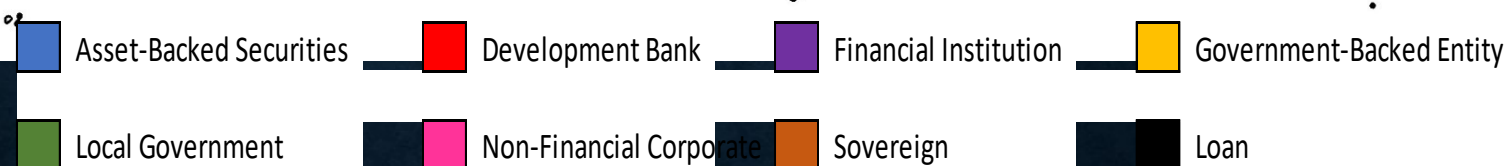
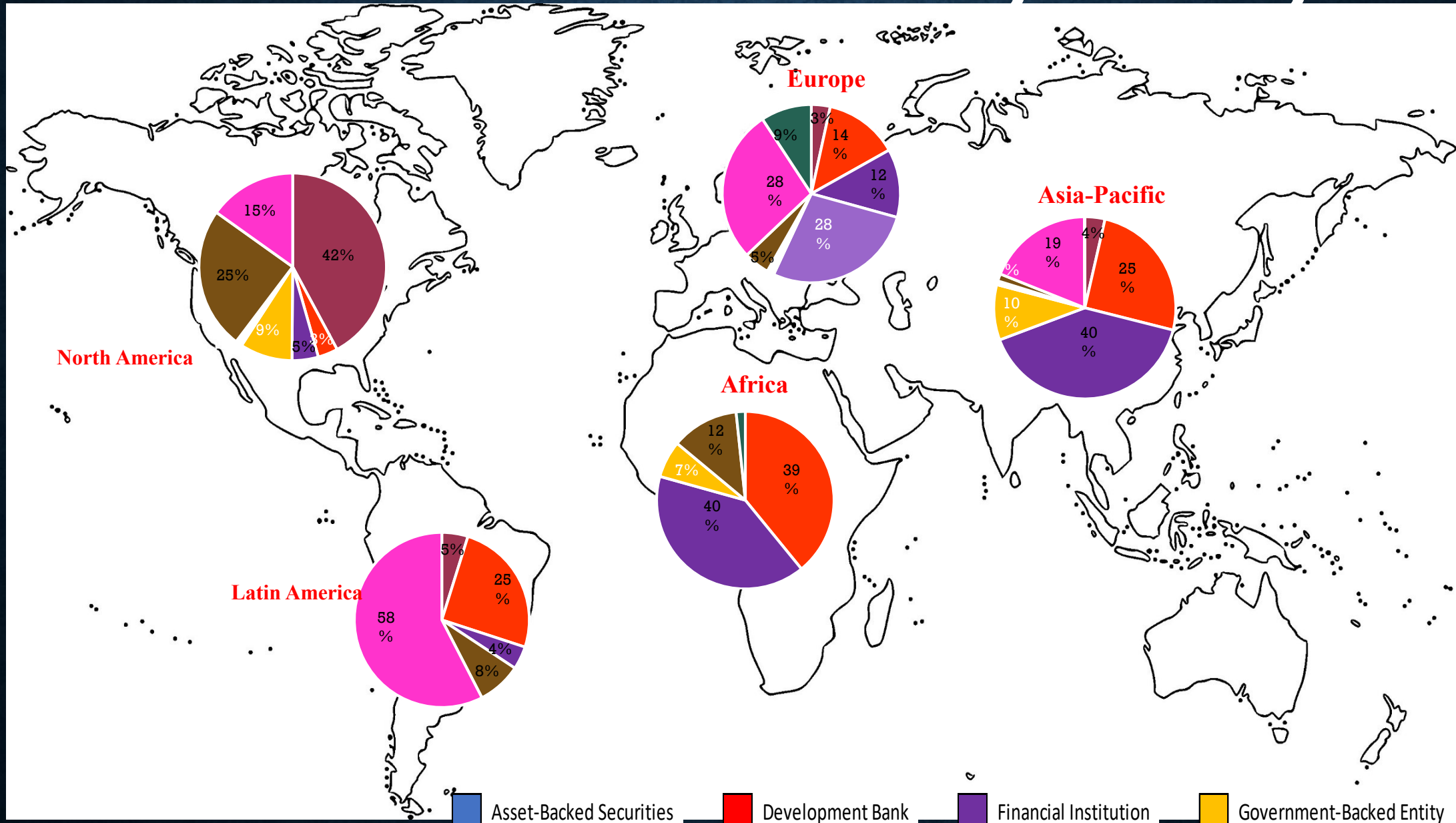


Green bond proceeds allocations per Category

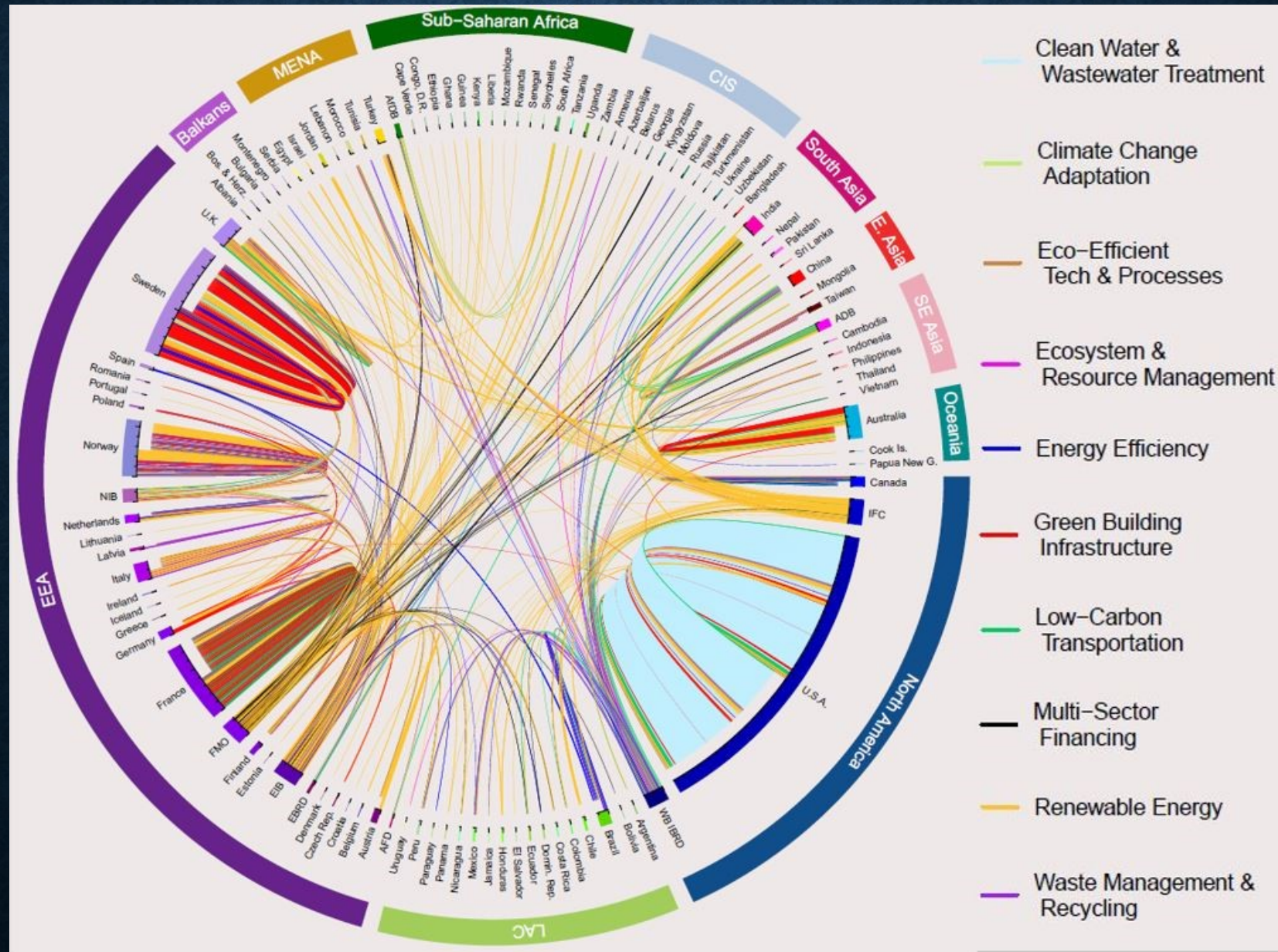


Source: Tolliver, Keeley, and Managi. 2019. Environmental Research Letters.

Green bond different by country

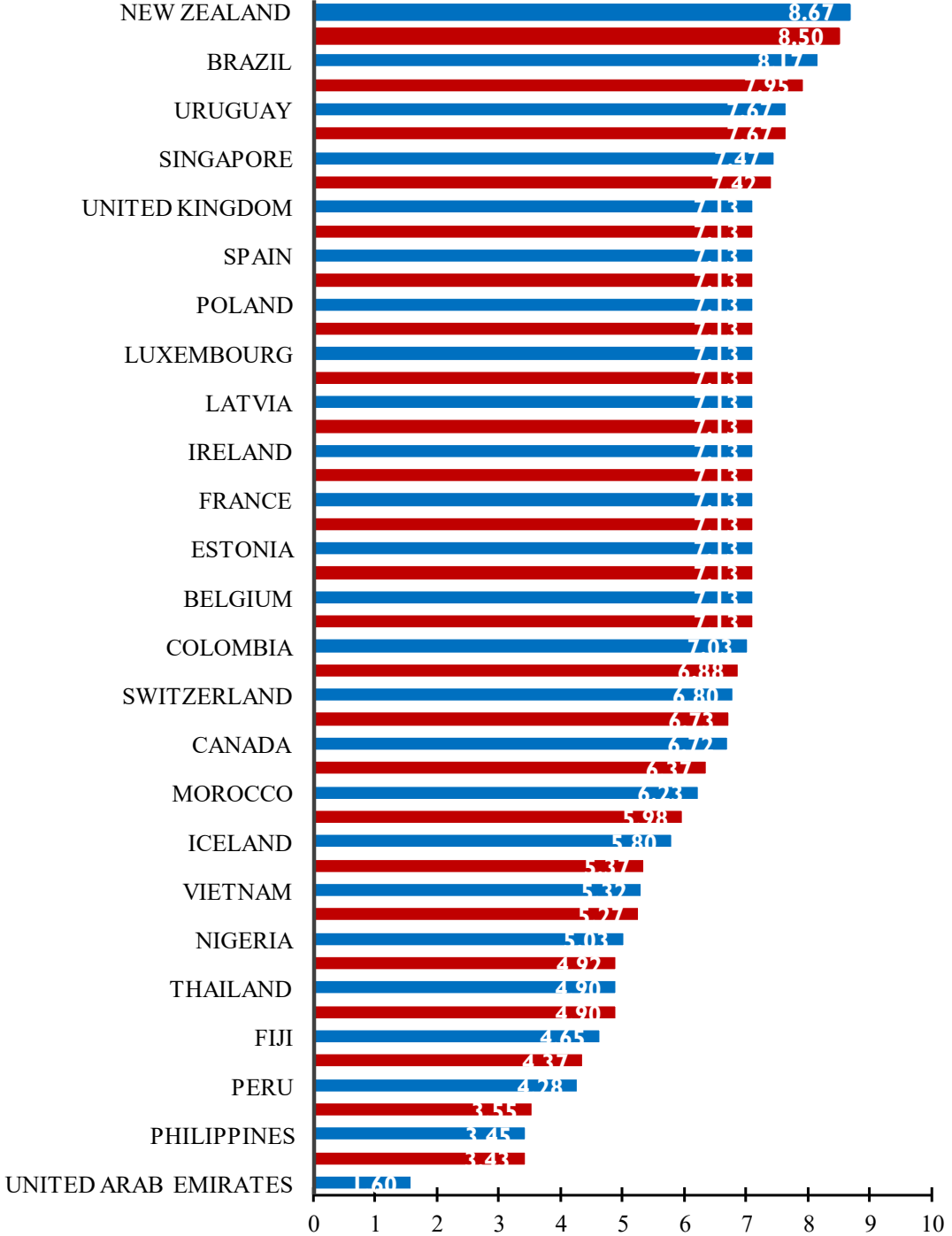


Global green goes beyond border



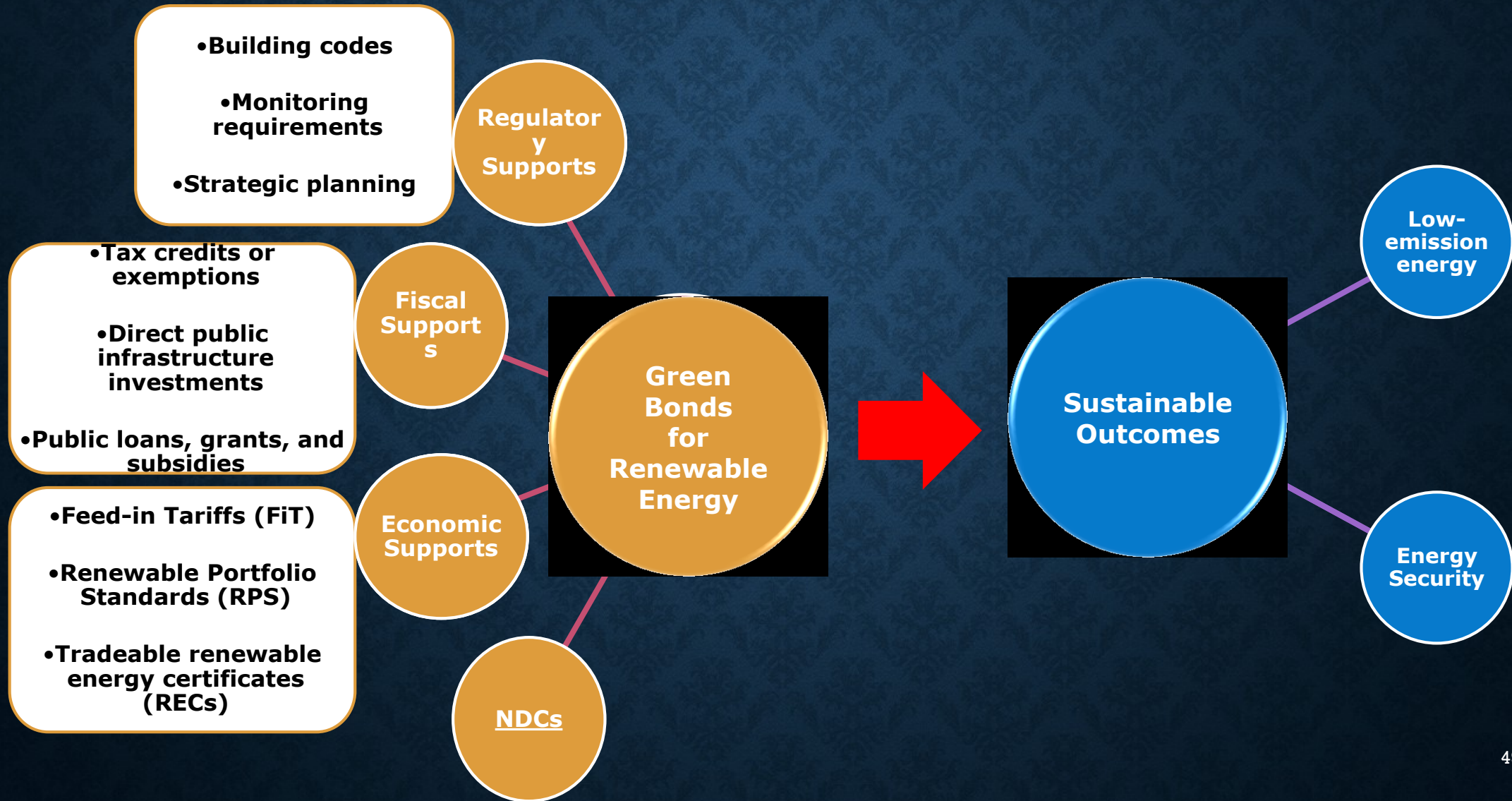
Nationally Determined Contribution (NDC)

➤ Many developing countries (Brazil, Uruguay, Costa Rica) are among the top scorers.



Source: Tolliver, Keeley, and Managi. 2019. Environmental Research Letters.

Potential linkage



Final

- Possible to improve welfare as we know how to measure
- Hope to use behavioral science for improve each capital.



Special issues call for papers

Managi, S., D. Broadstock, and J. Wurgler. 2020. “Green Finance – Closing the Gap”, **International Review of Financial Analysis** (Q1).

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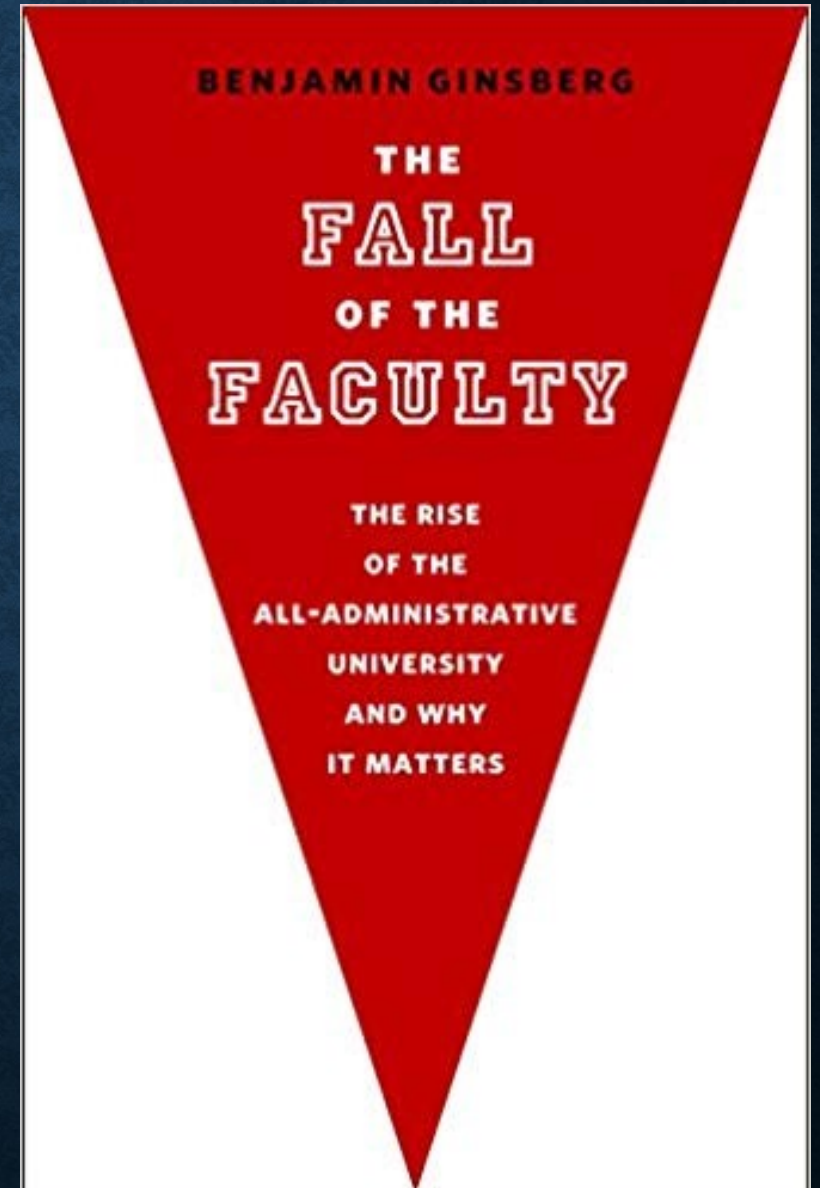
Managi, S., M. Islam, O. Saito, M. Stenseke, L. Dziba, S. Lavorel, U. Pascual, and S. Hashimoto. 2020. “Valuation of Nature and Nature’s Contributions to People”, **Sustainability Science** (Q1).

University changes in good direction?

Poorly managed pseudo-corporations controlled by bureaucrats so far removed from research and teaching

V.S.

Research & Teaching (R&T) for our vision of countries and students



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- Löschel, A., and S. Managi. 2019. "Economic Analysis of Energy Demand: Insights for Industries and Households", *Resource and Energy Economics* 56.
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- Managi, S., R. Lindner, and C. Stevens. 2020. "Sustainable Development Goals and Technology Policy", *Technological Forecasting and Social Change* (In progress).