

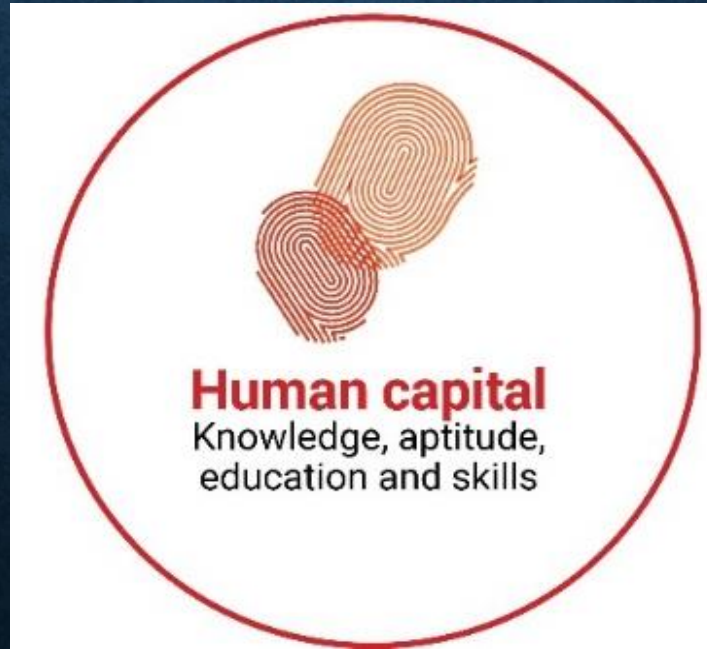
# Measuring sustainable progress: global outlook

Shunsuke Managi

Distinguished Professor of Technology and Policy & Director of Urban Institute

Kyushu University, Japan

Report Director of UNEP Inclusive Wealth Project (2014-present)





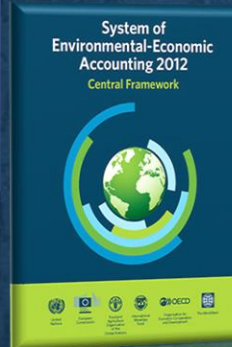
# Measurement Developed

*IW thoery:*  
*Partha Dasgupta*  
*Ken Arrow*  
*K.-G. Mäler*

*Index:*  
*Bill Nordhaus*  
*James Tobin*



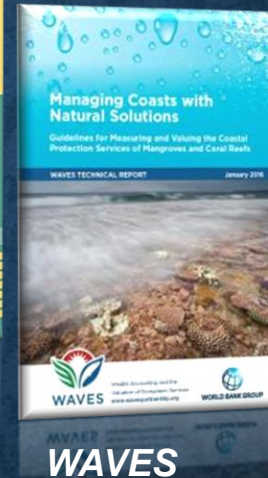
**System  
National  
Account  
(SNA)**



**System of  
Env.  
Accounting**



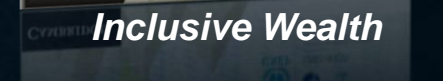
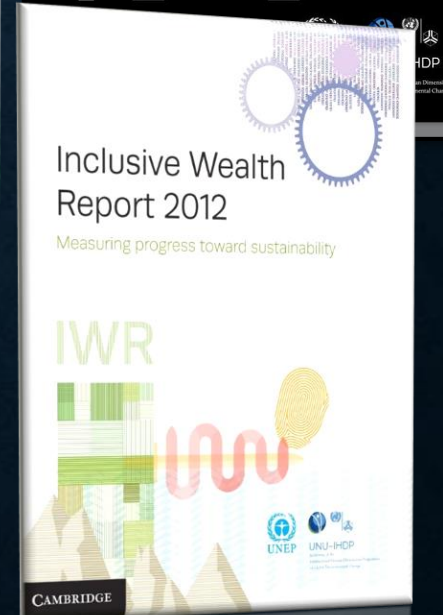
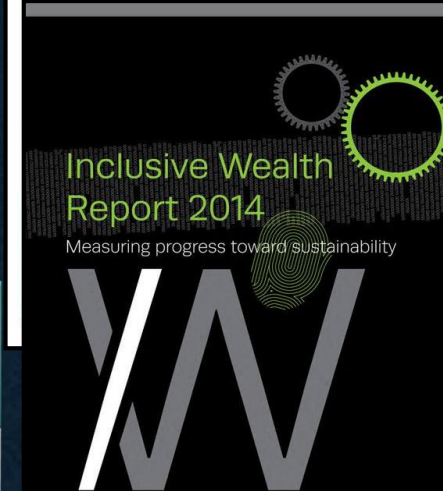
**Green Data**



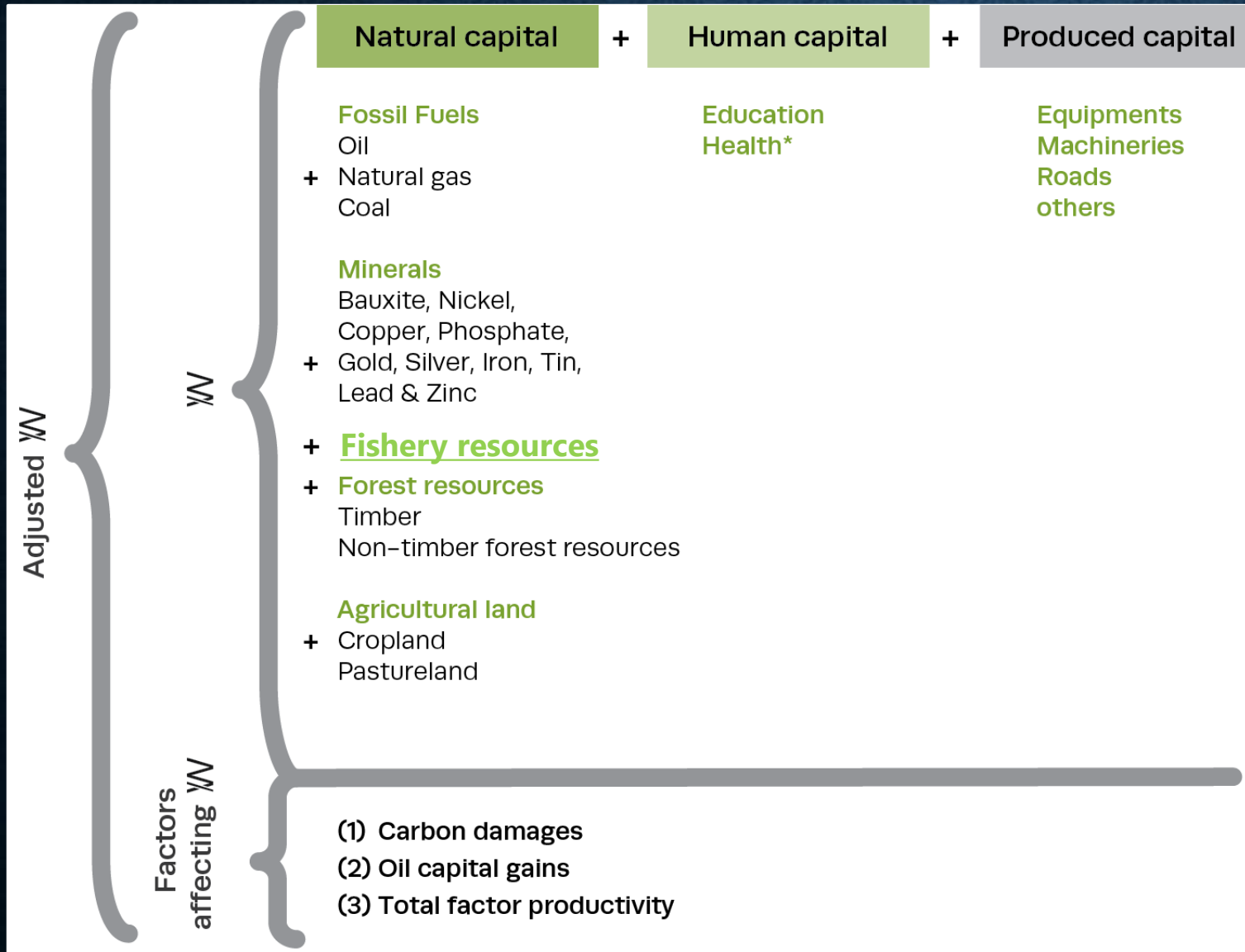
**WAVES**



**Green  
Growth**



# What to measure

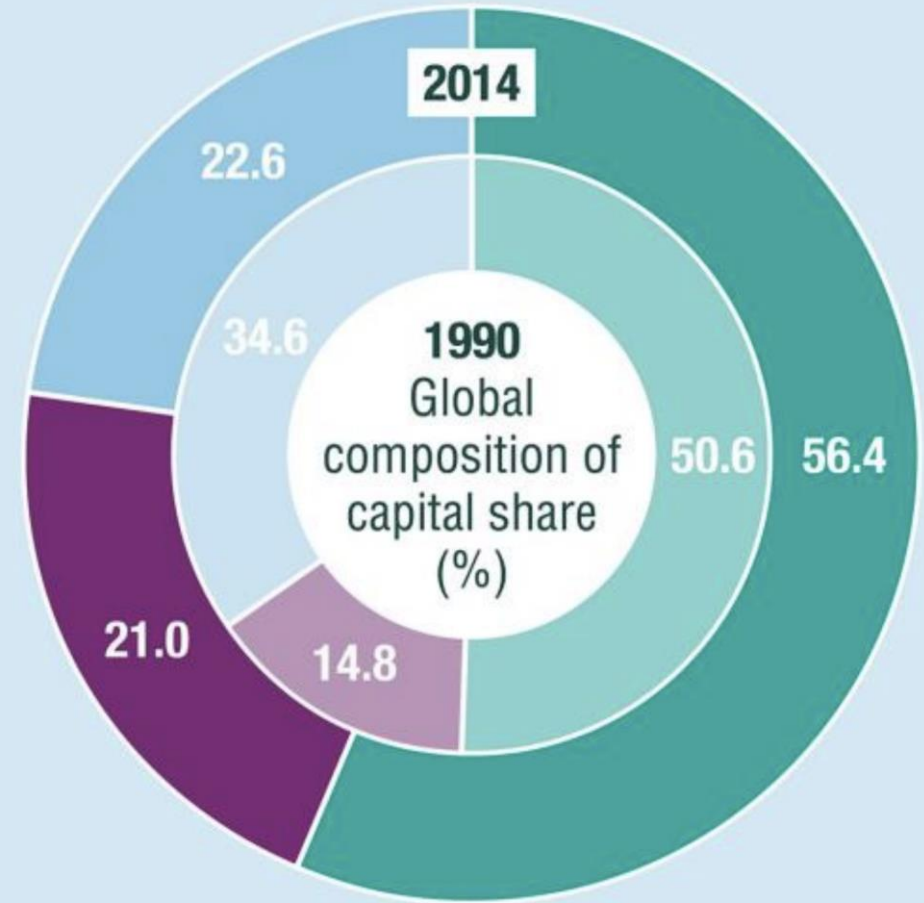
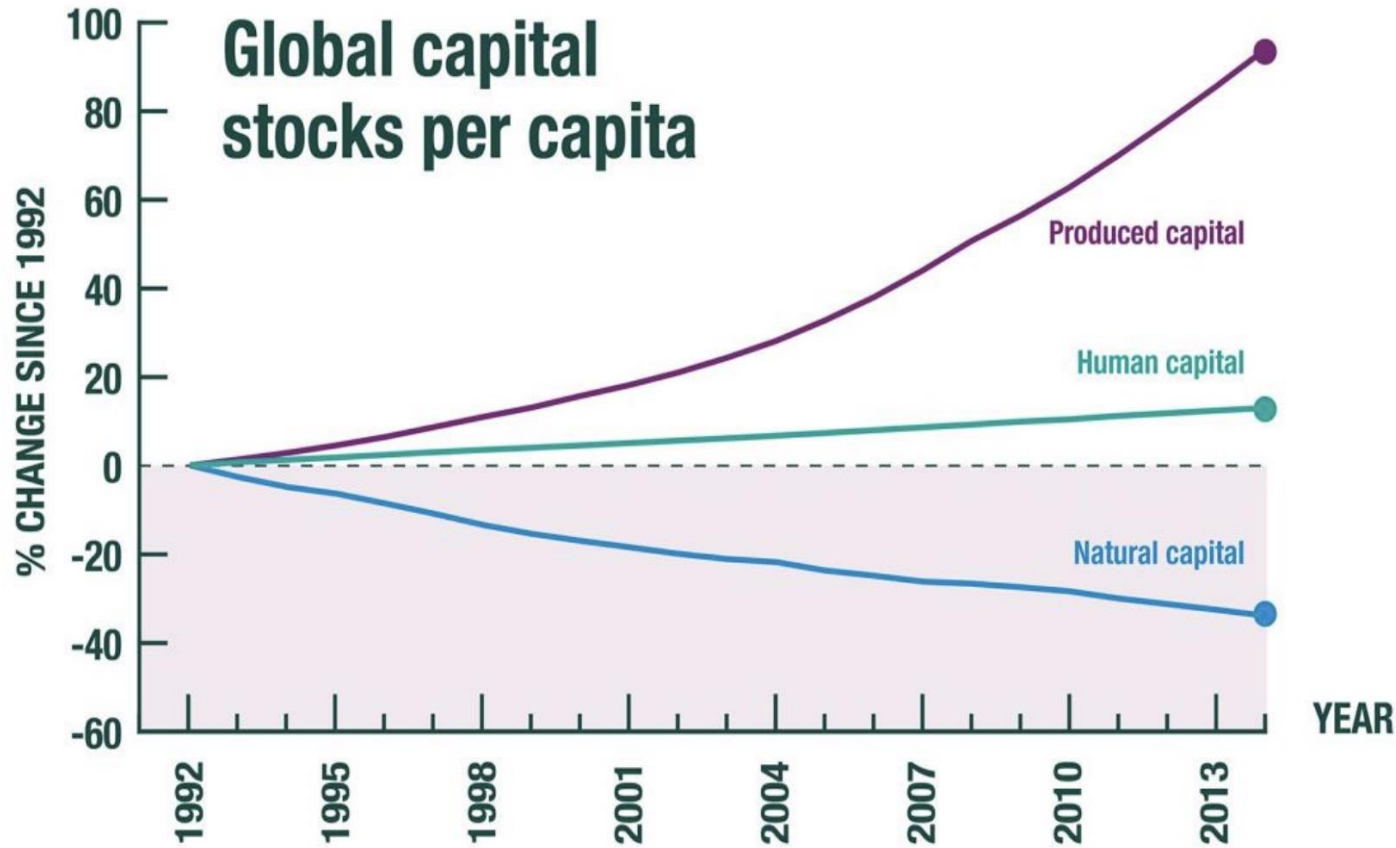


Chair of advisor group:  
Partha Dasgupta

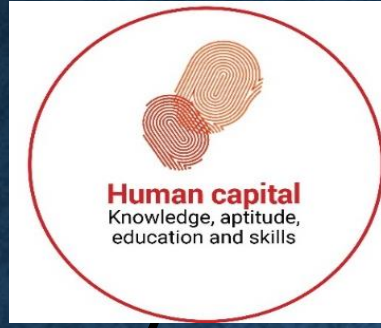
IWR2018 Authors:  
Edward Barbier  
David Barton  
Anantha Duraiappah  
Barbara Fraumani  
Haripriya Gundimeda  
Kristine Grimsrud  
Pushpam Kumar  
Henrik Lindhjem  
Gang Liu  
Ståle Navrud  
Rodney Smith  
Shunsuke Managi



# Track System Developed

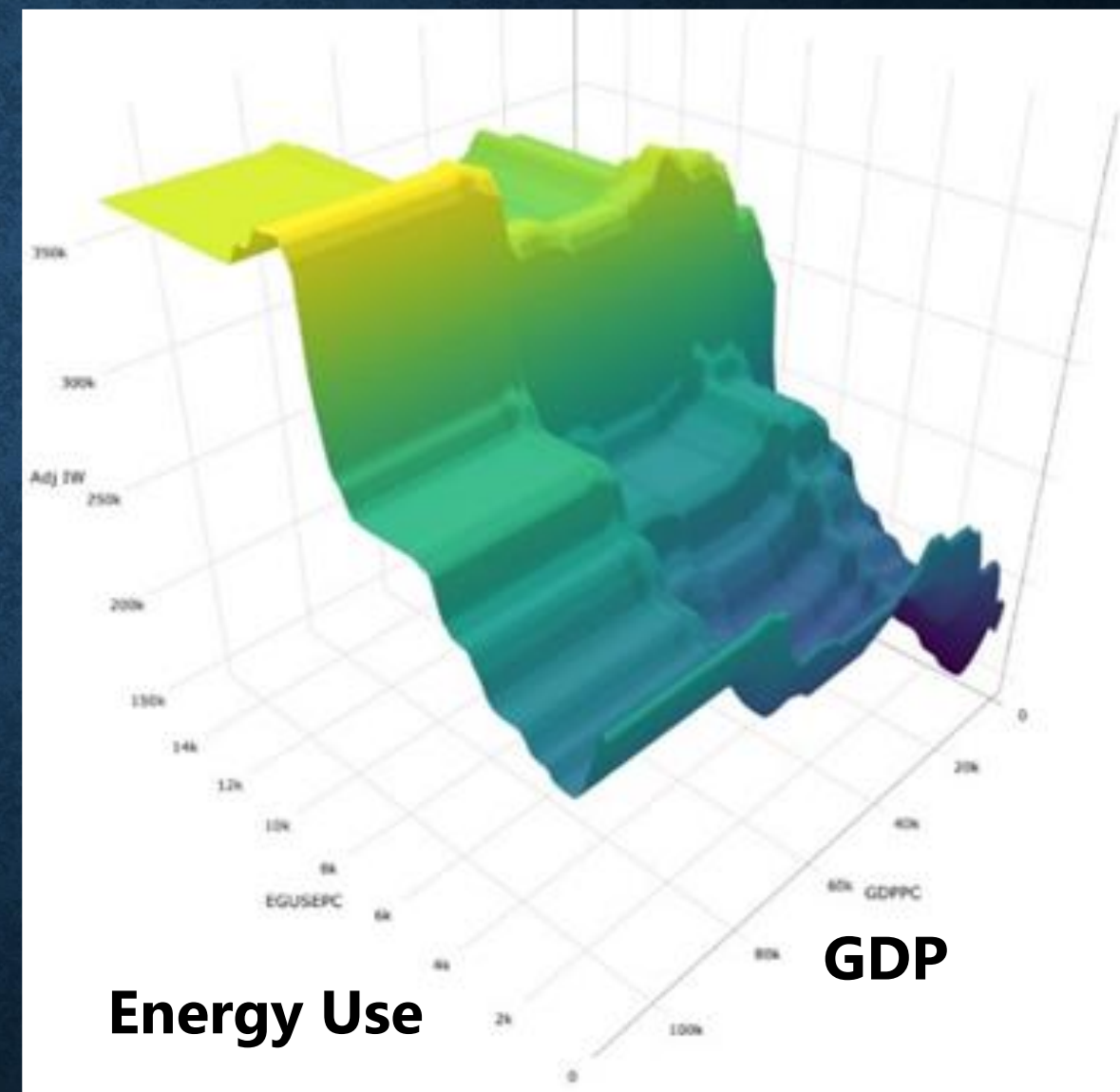


**Source:** Managi and Kumar. 2018. Inclusive Wealth Report 2018. UNEP.  
Dasgupta Review. UK Govt 2020., Managi, S. 2019. "Wealth, Inclusive Growth and Sustainability." Routledge.



## Large Change by GDP and Energy

Inclusive Wealth



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

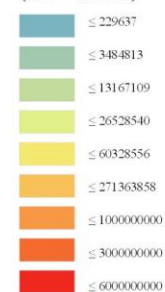
**Source:** Sugiawan, Kurniawan, Managi. 2019. **Applied Energy**



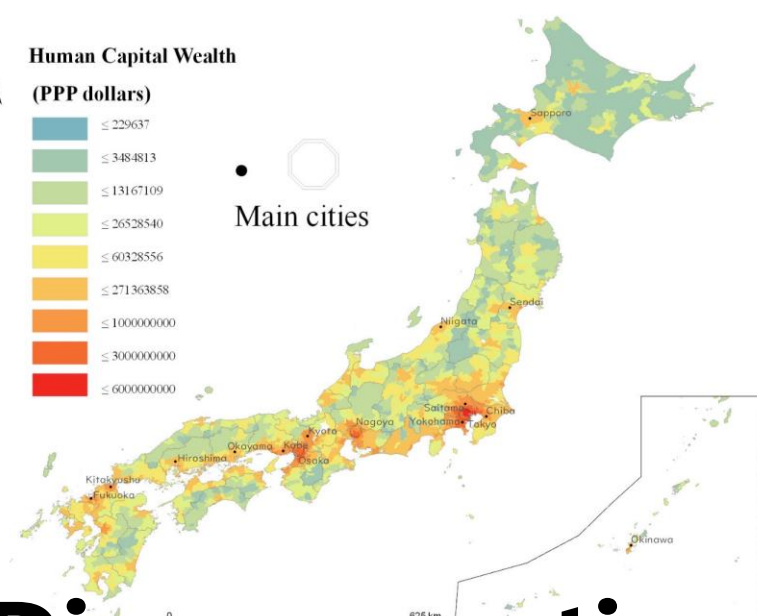


### Human Capital Wealth

(PPP dollars)



Main cities

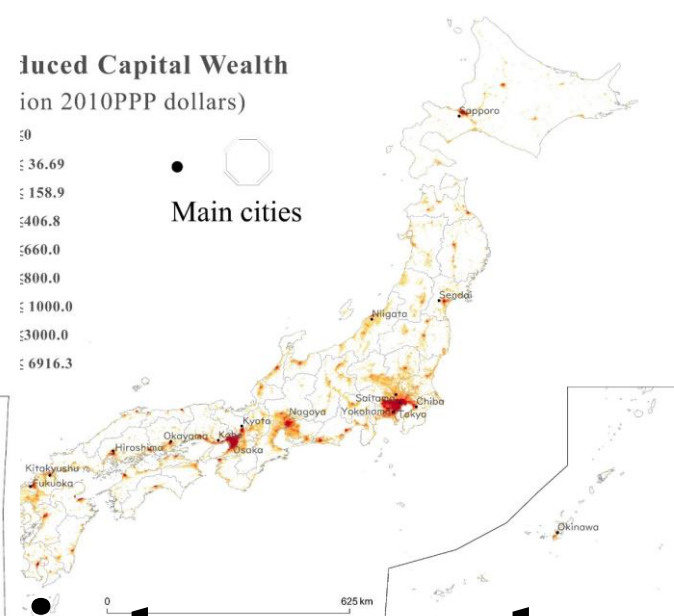


### Induced Capital Wealth

(10 thousand 2010PPP dollars)

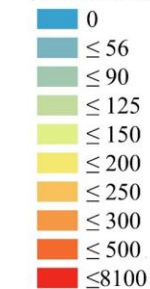


Main cities

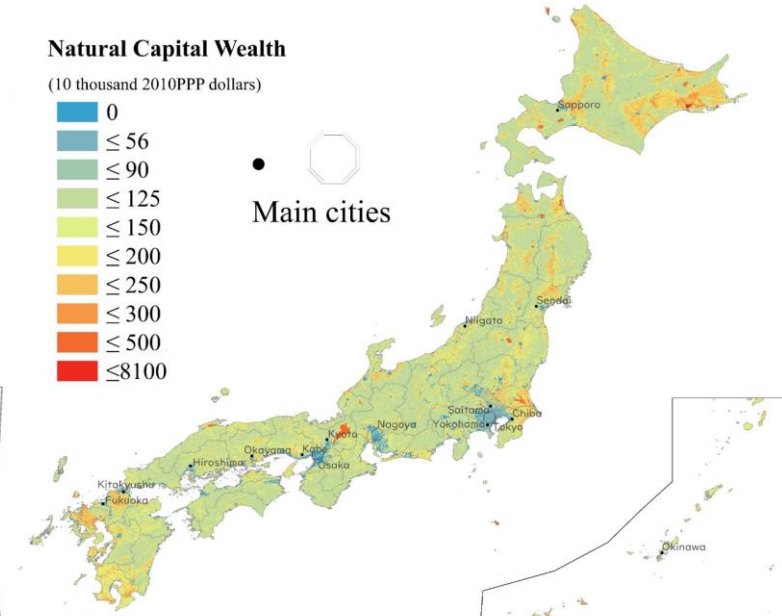


### Natural Capital Wealth

(10 thousand 2010PPP dollars)



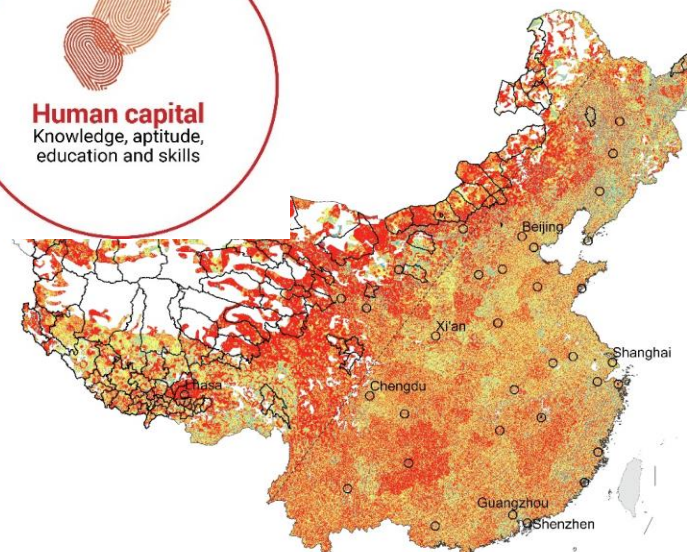
Main cities



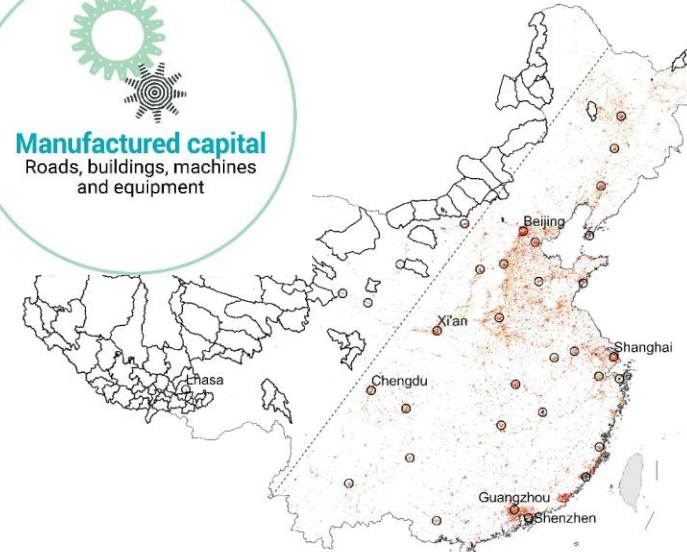
# Disaggregation into country



**Human capital**  
Knowledge, aptitude,  
education and skills

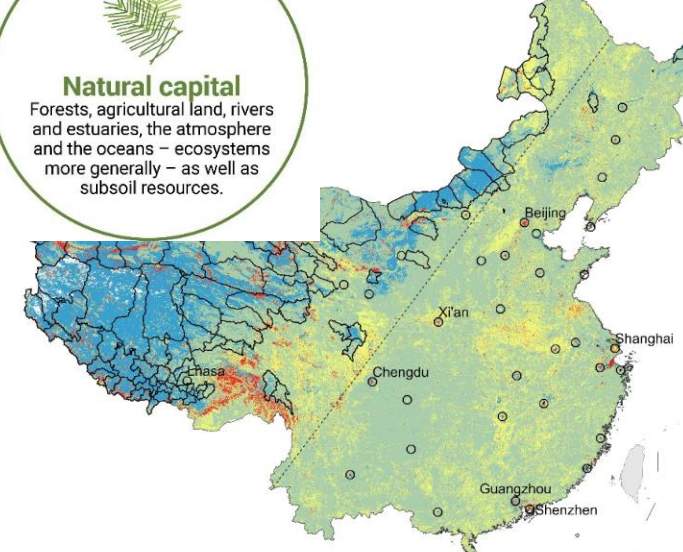


**Manufactured capital**  
Roads, buildings, machines  
and equipment



**Natural capital**

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



Source: Managi et al. 2019, 2018

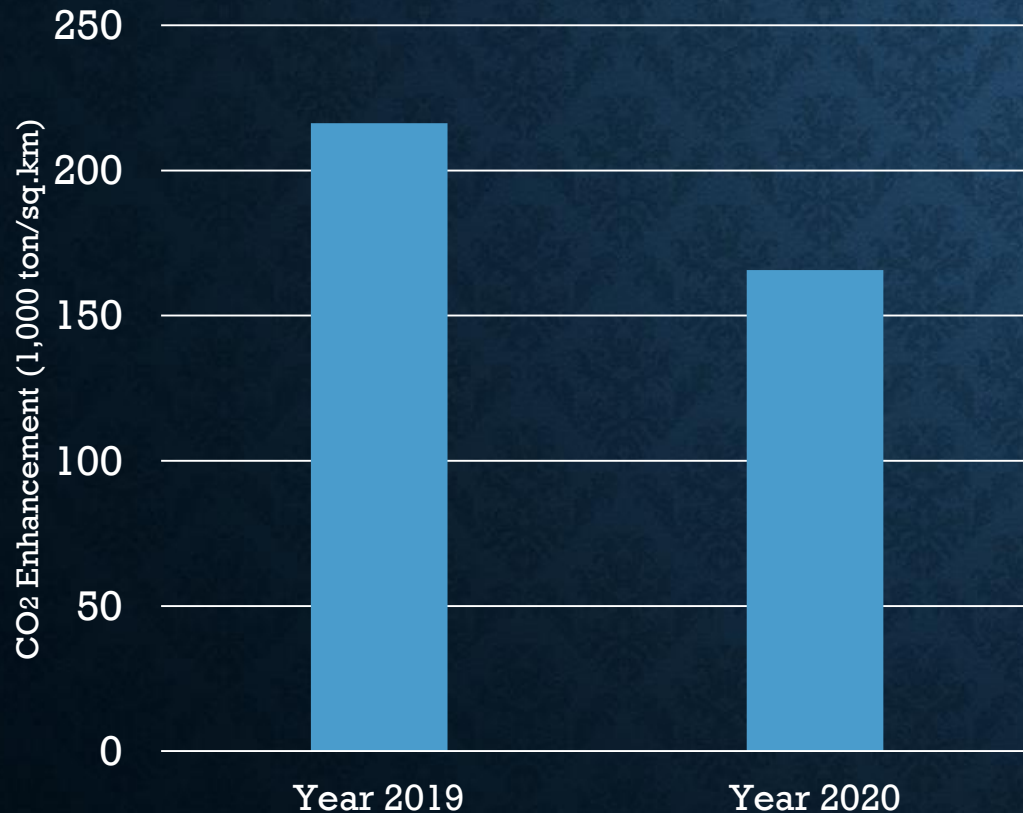


# Air to damage

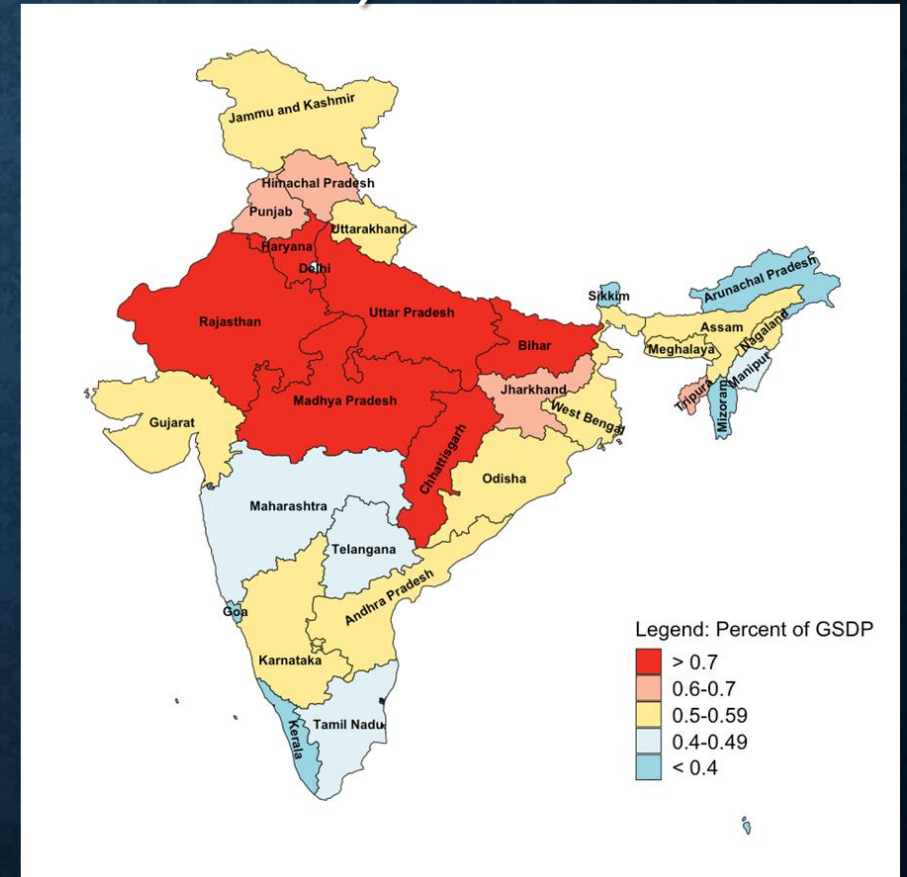
COVID-19 to CO2 damage loss

US\$36.8 billion (1.36% of India's GDP)

CO<sub>2</sub> Enhancement and Benefit



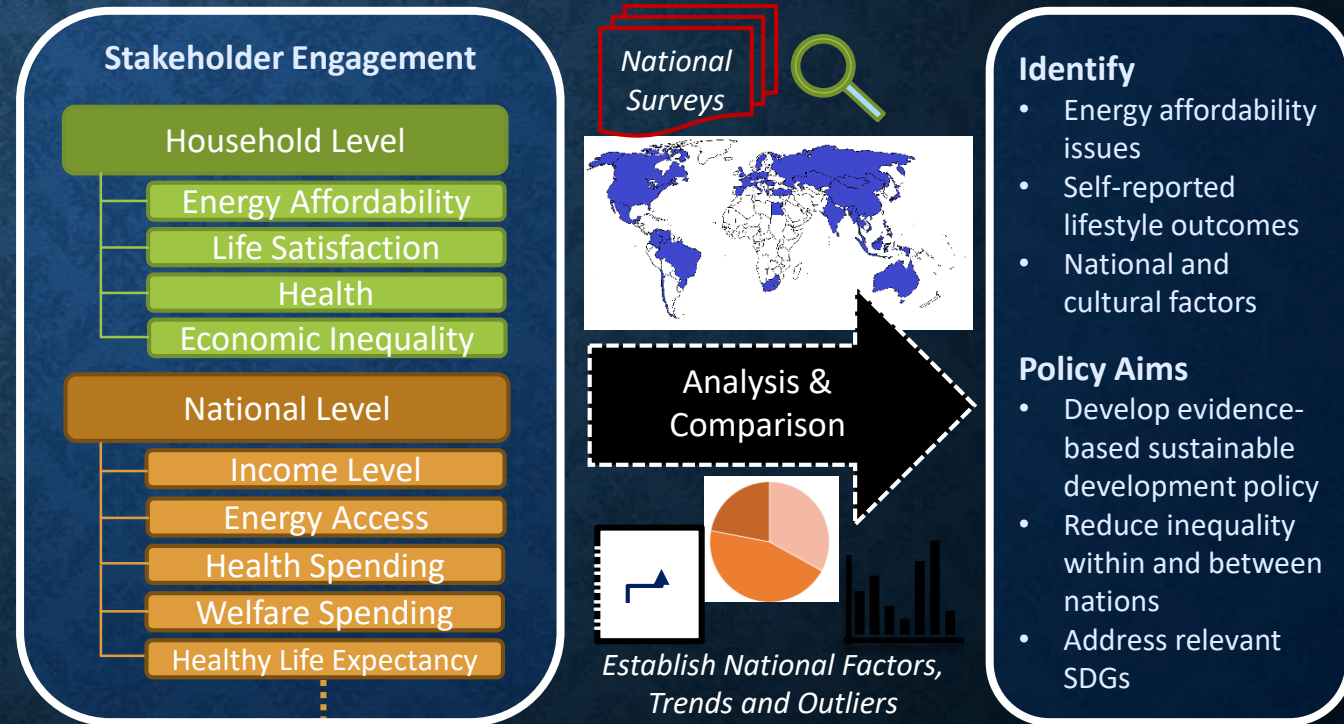
Source: Yoo, Kumagai, Shimamura and Managi, 2020



Source: India State-Level Disease Burden Initiative Air Pollution Collaborators. The health and economic impact of air pollution in the states of India

# Challenges

- More on global coverage
- IPCC-IPBES
- Policy evaluation (global, country, region, firm, and individual).
- Target setting (both national and regional plans).



**Source:** Chapman, Fujii, Managi. 2019 "Multinational Life Satisfaction, Perceived Inequality and Energy Affordability", Nature Sustainability.