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Net Zero Emissions and the role of research in Universities

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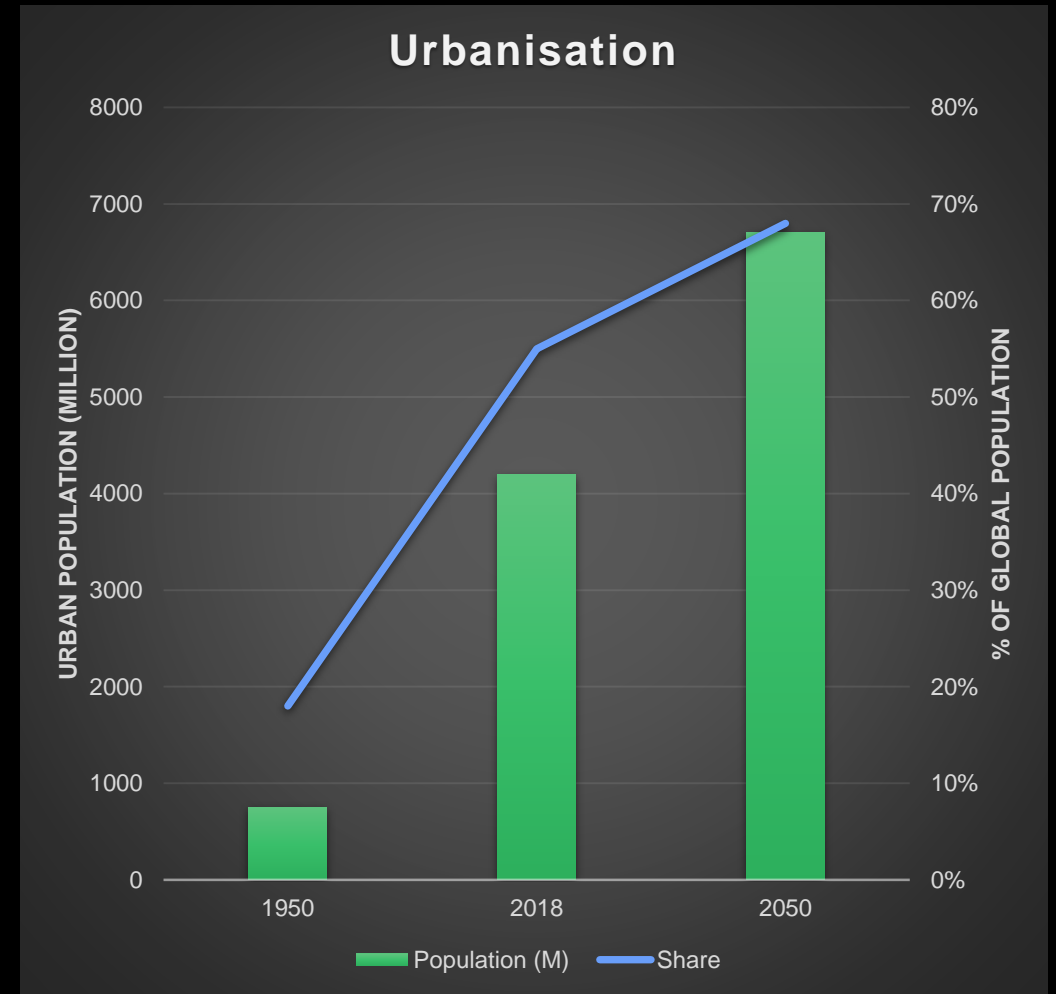
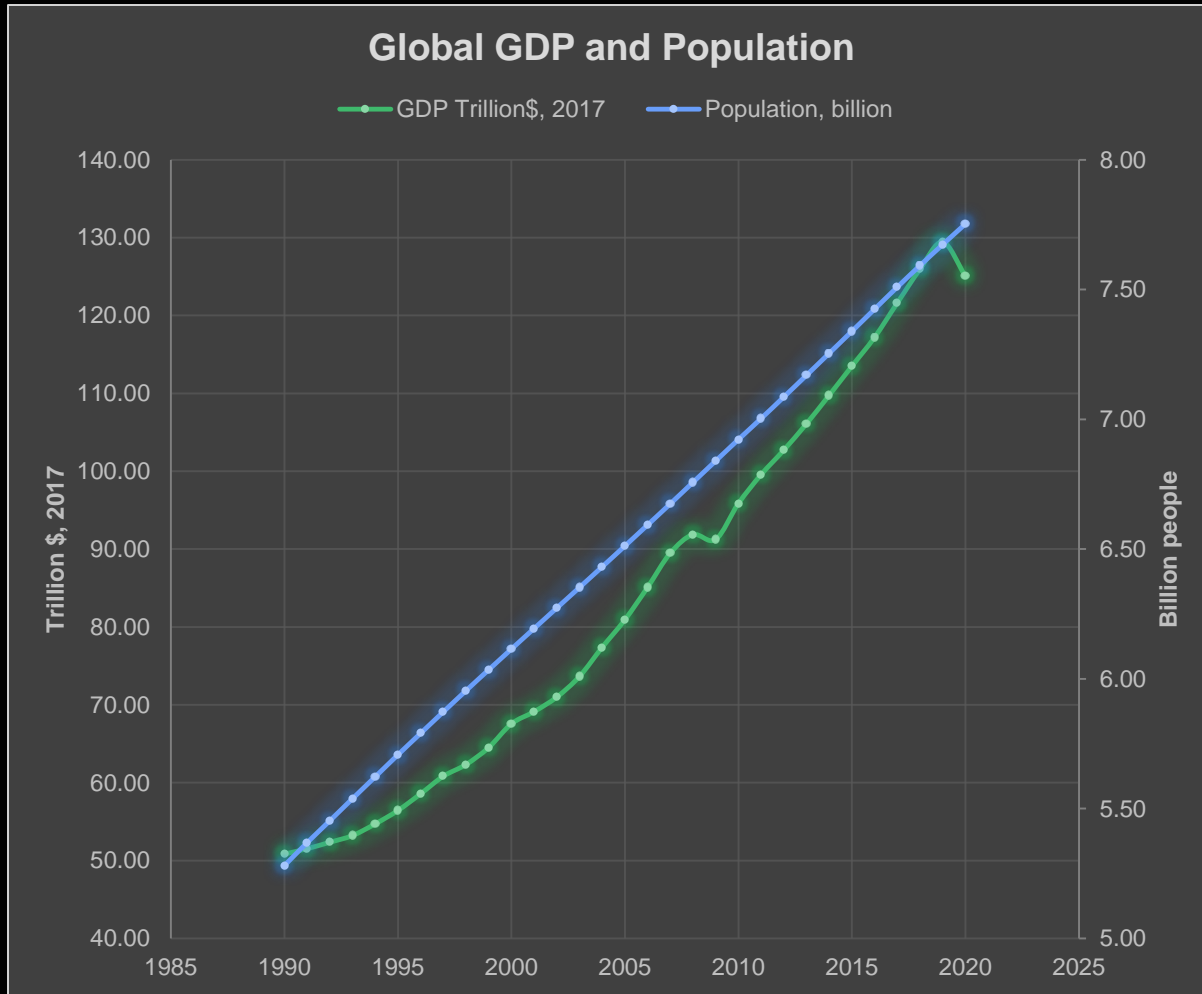
In this presentation

- Net Zero agenda
- Research and Development Needs
- Role for Universities

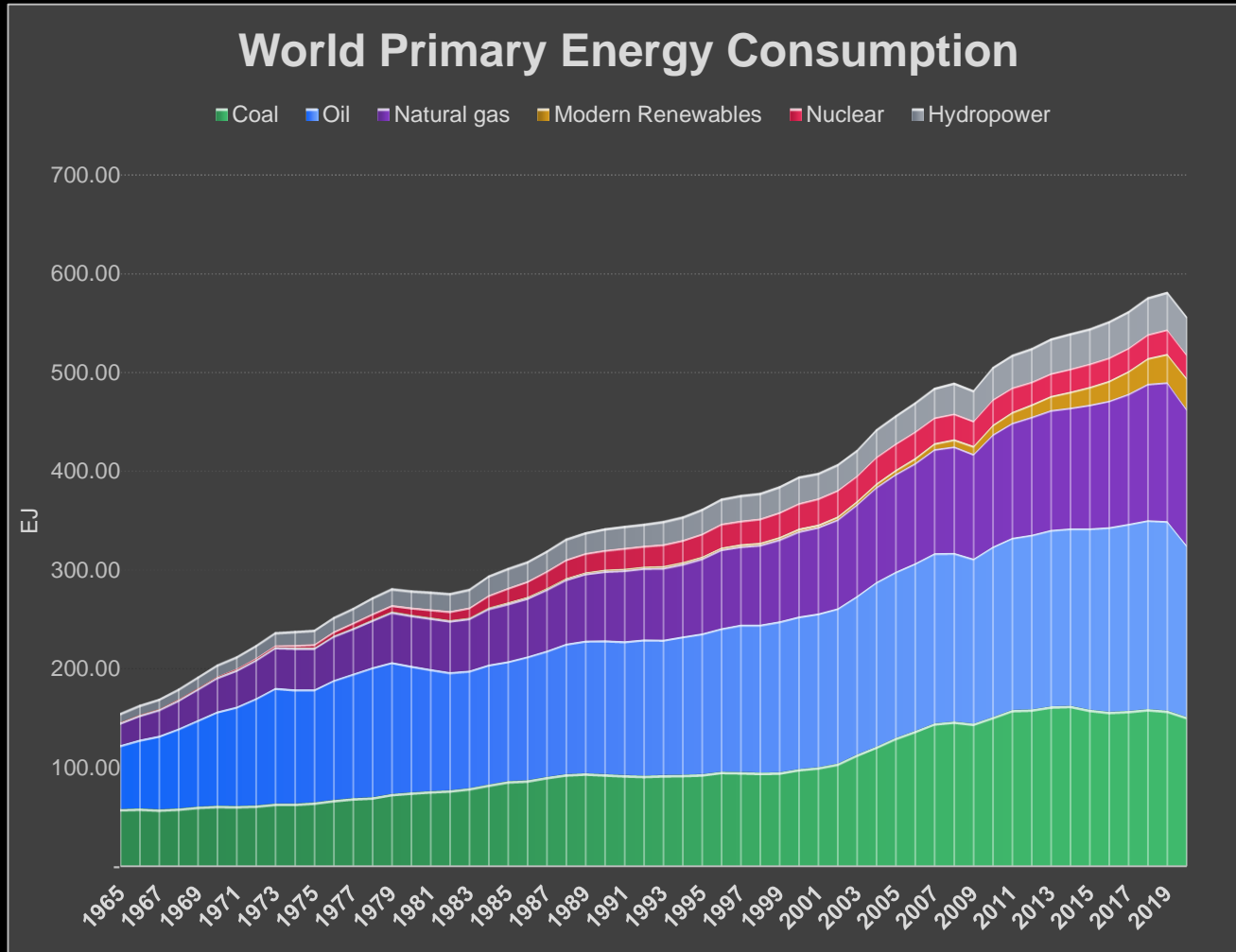


The Net Zero Agenda

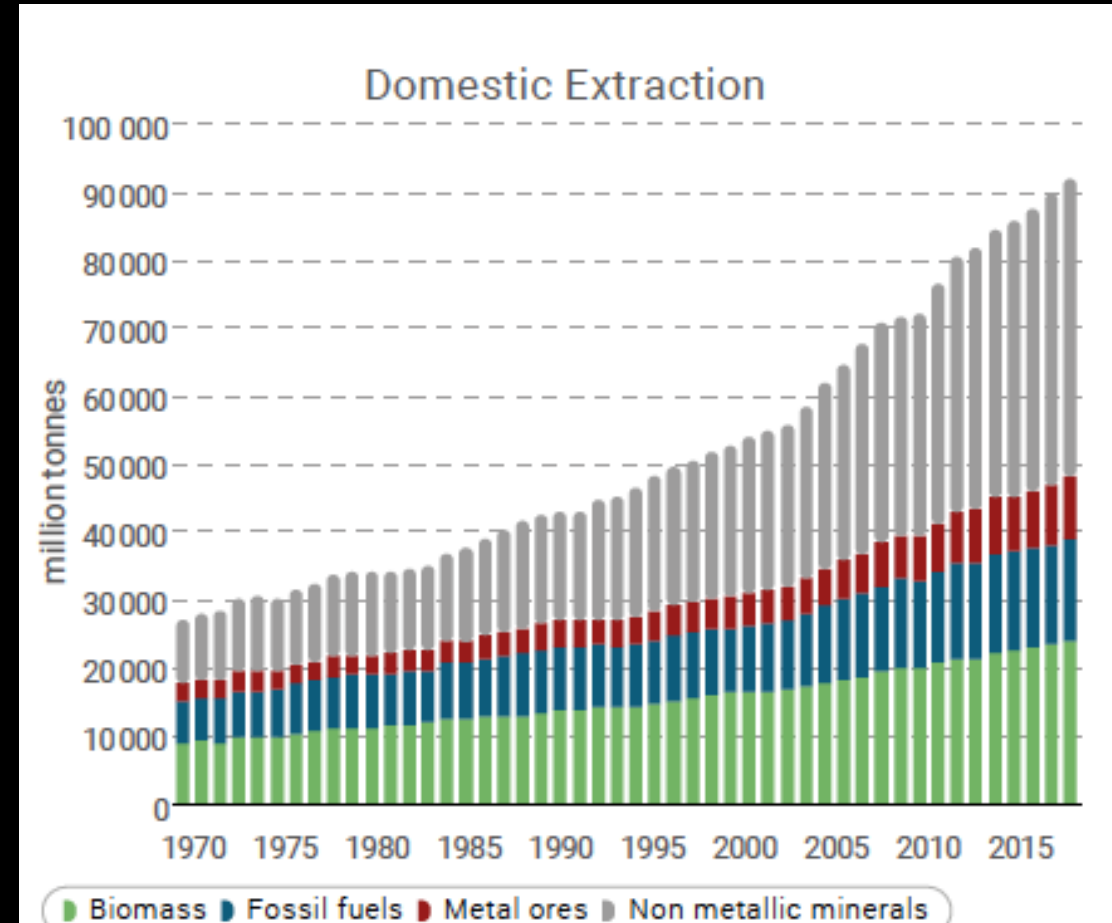
Development paradigm



Resource intensive

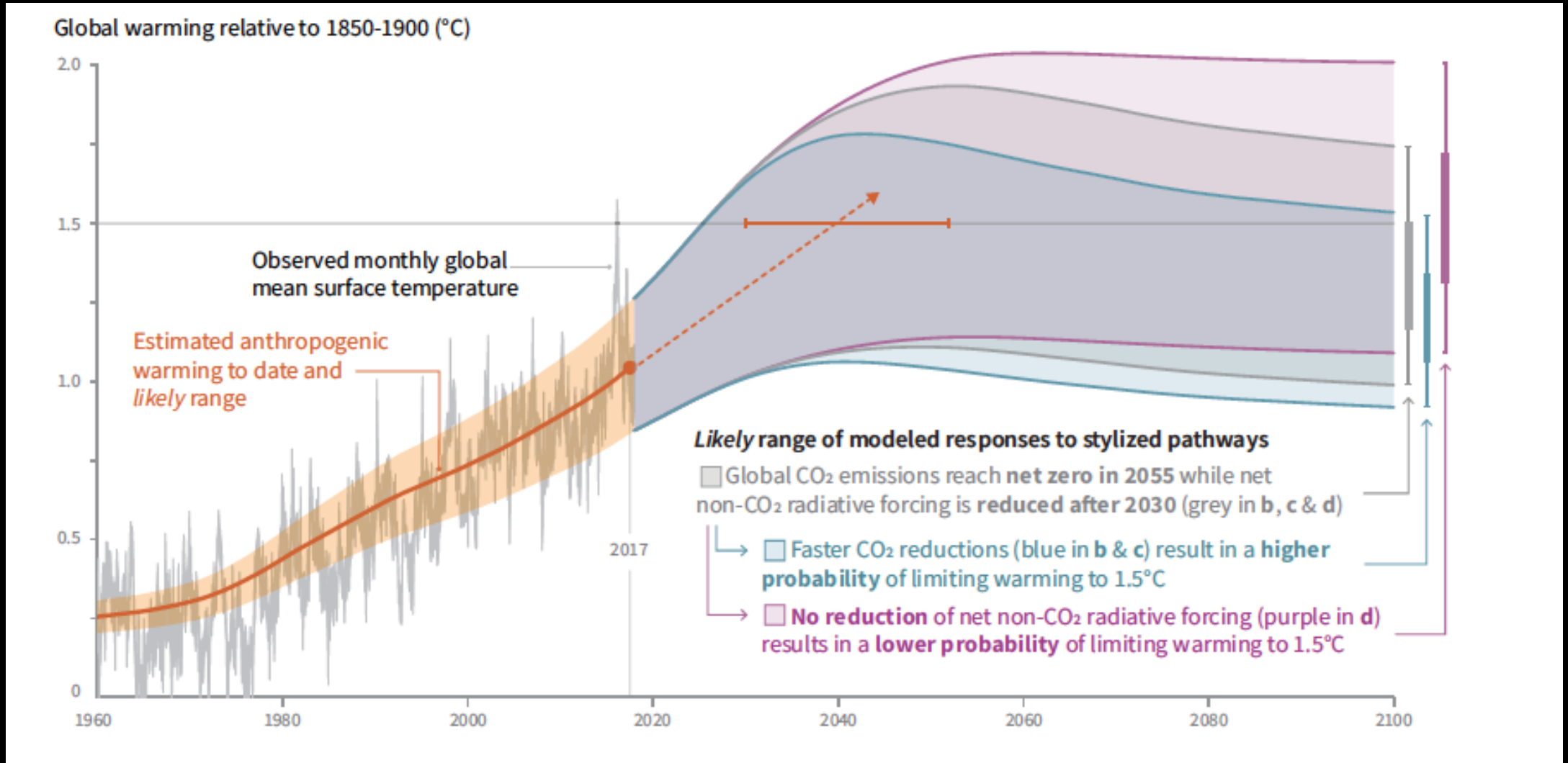


BP Statistical Review of World Energy, 2021



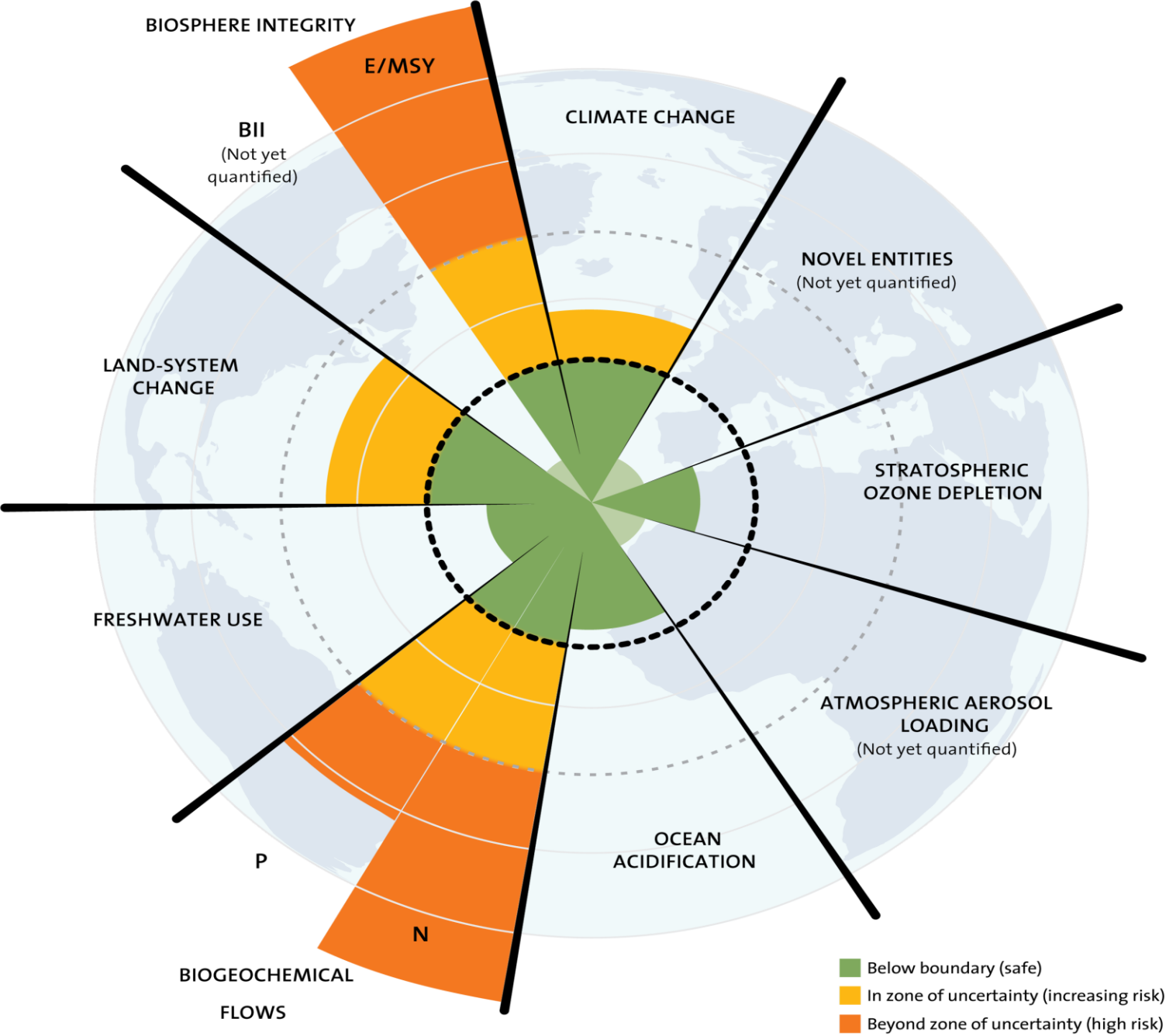
Global Resources Outlook 2019, UNEP

Global warming



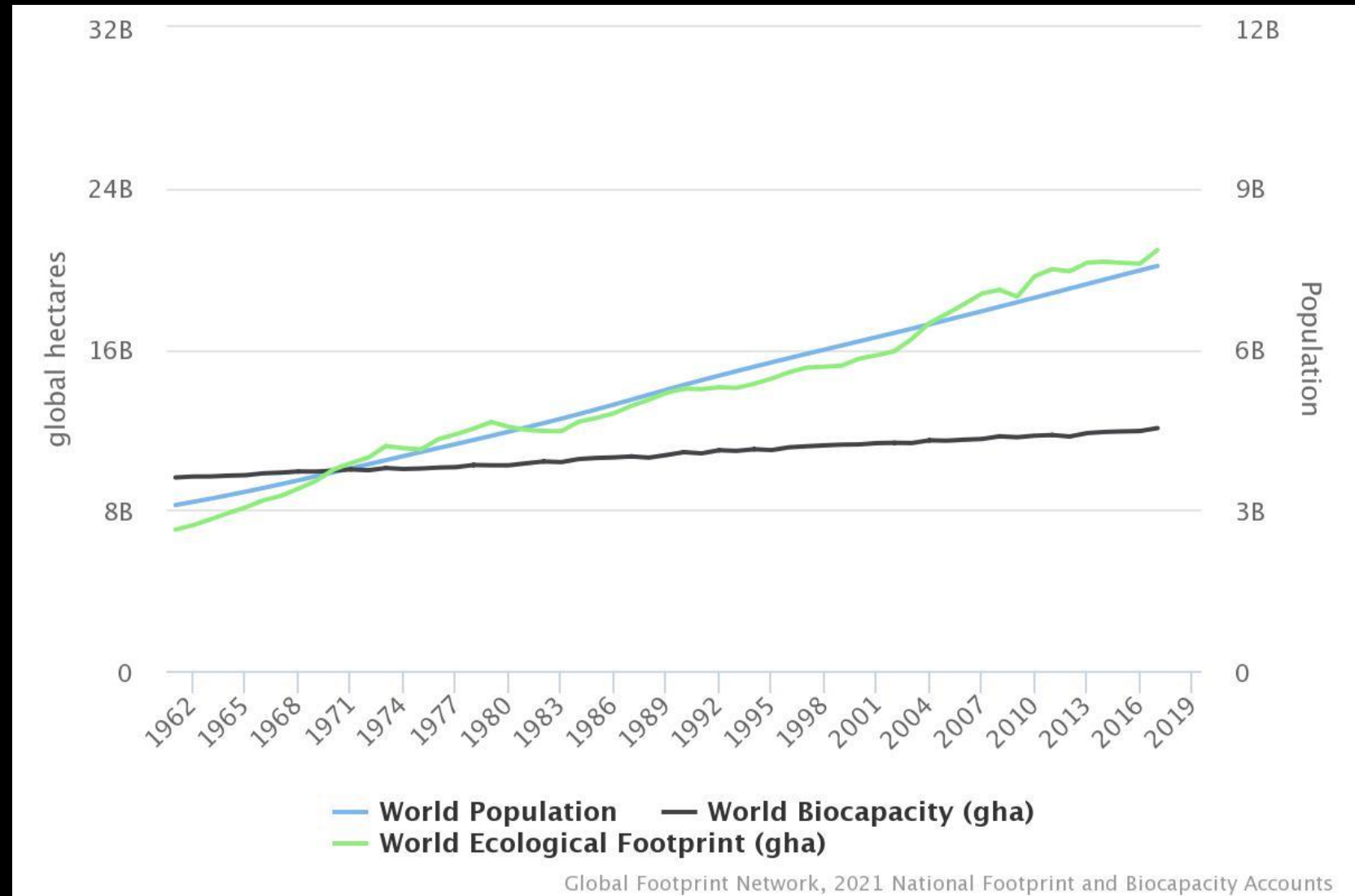
Planetary boundaries

Credit: J. Lokrantz/Azote
based on Steffen et al. 2015



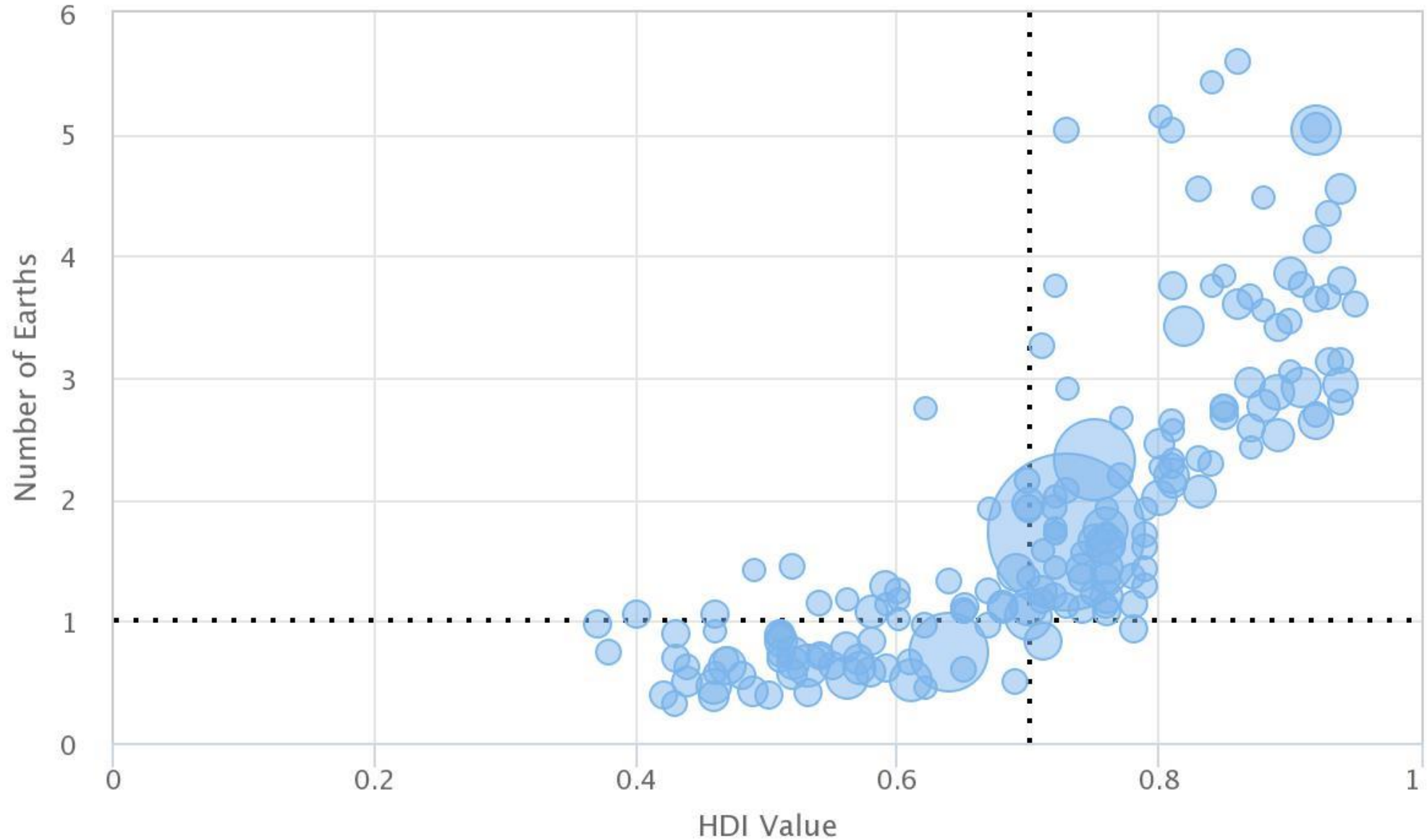
Global Ecological Footprint

- Footprint highly correlated with population
- Growing divergence between biocapacity and footprint



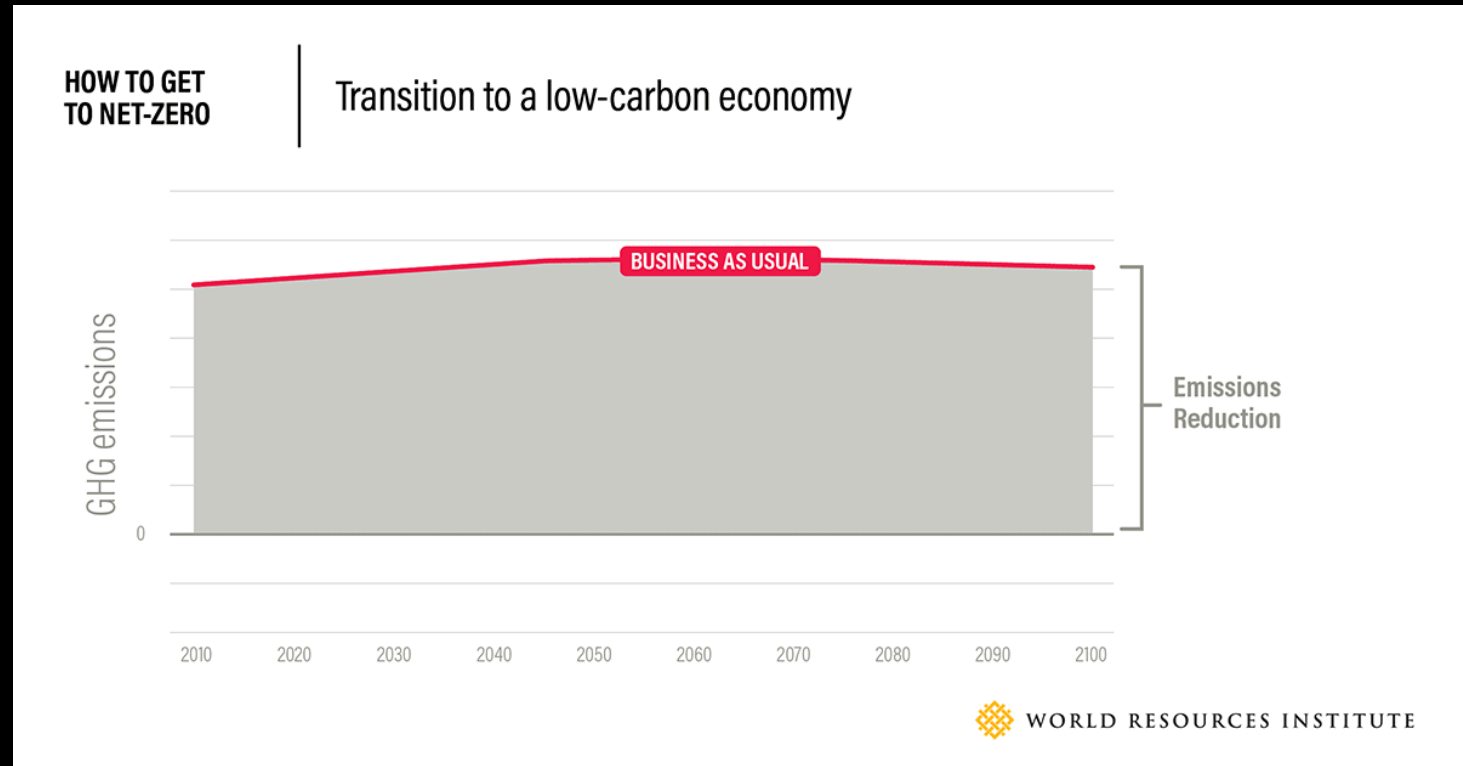
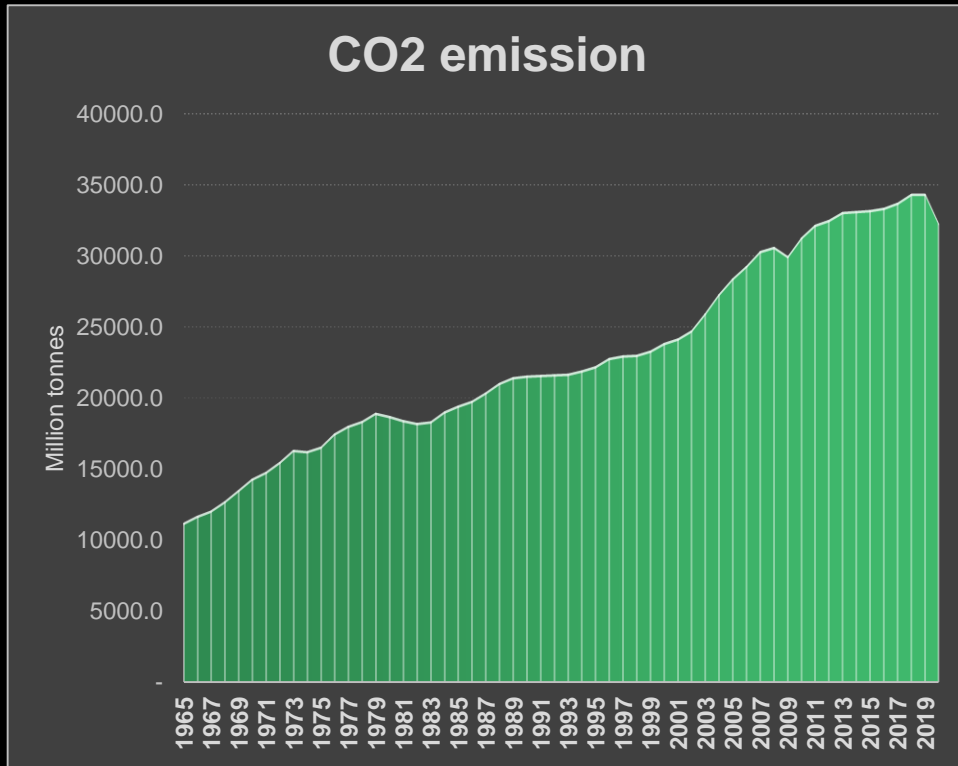
HDI and Ecological footprint

Human Development Index and Ecological Footprint (2017)



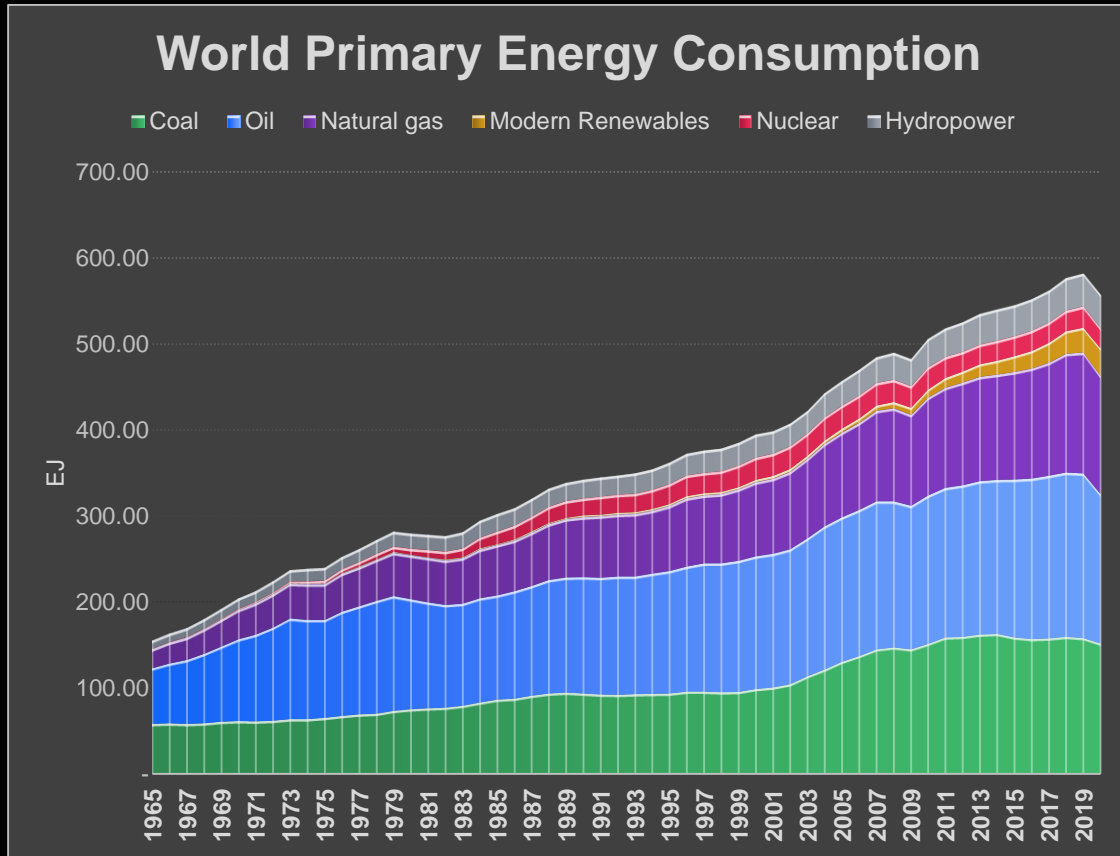
Global Footprint Network, 2021 National Footprint and Biocapacity Accounts

Net zero

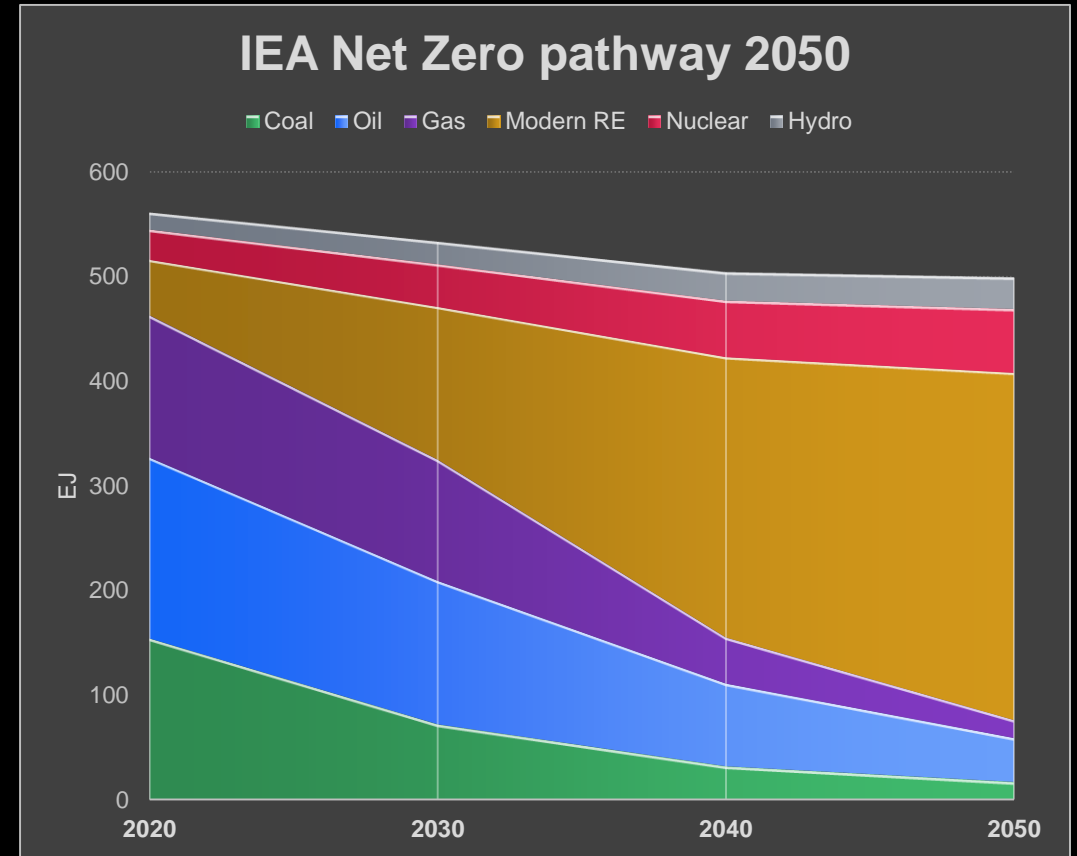


Research and Development needs

Transformation of the energy system

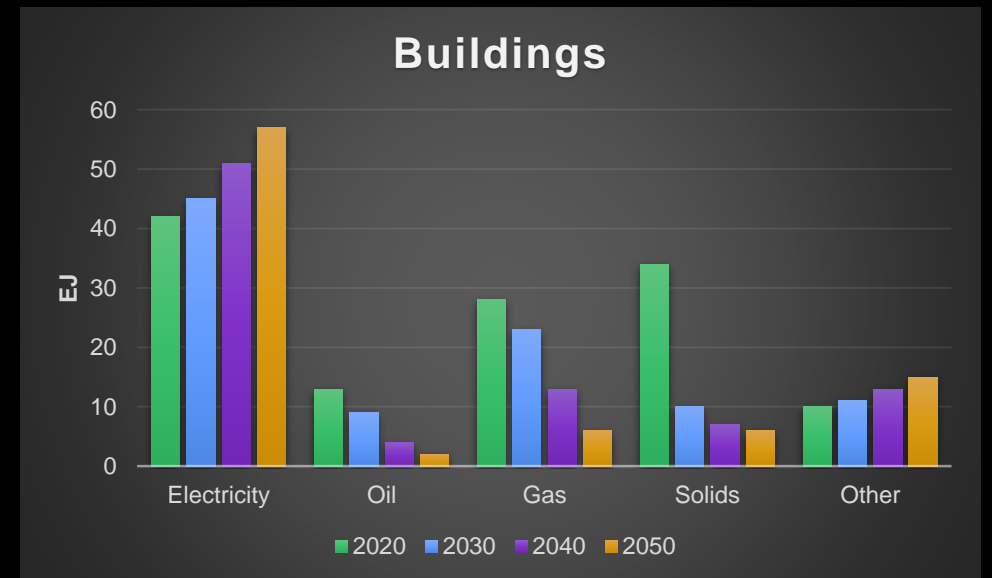
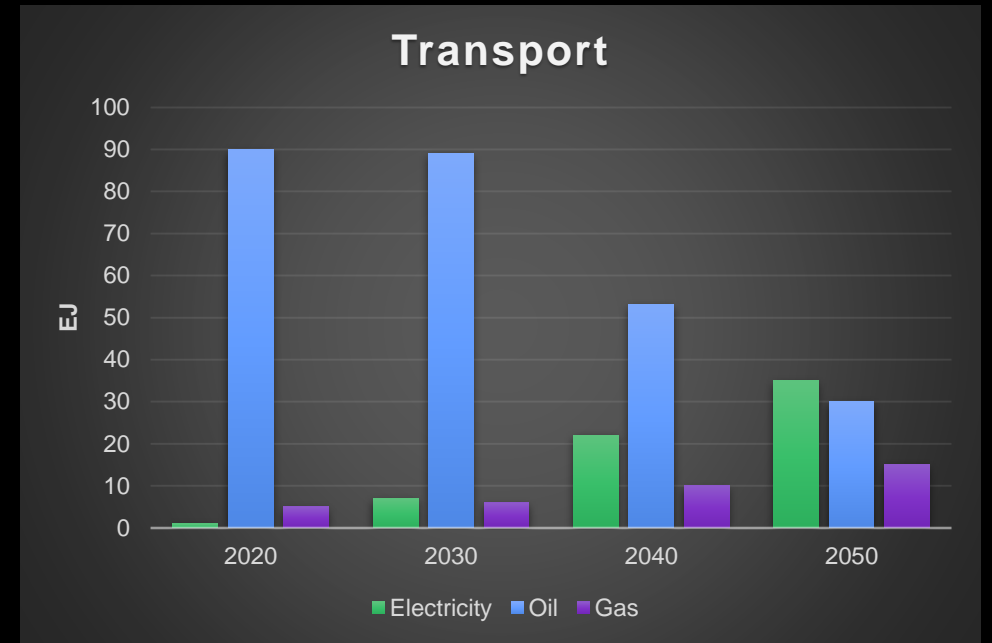
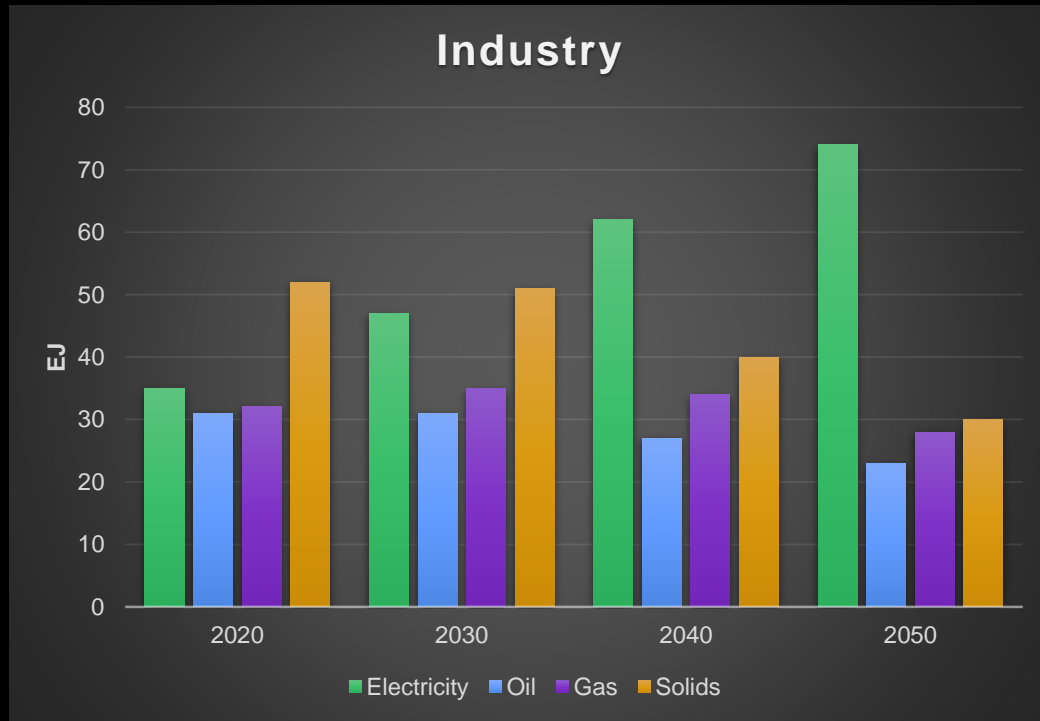


BP Statistical Review of World Energy 2021

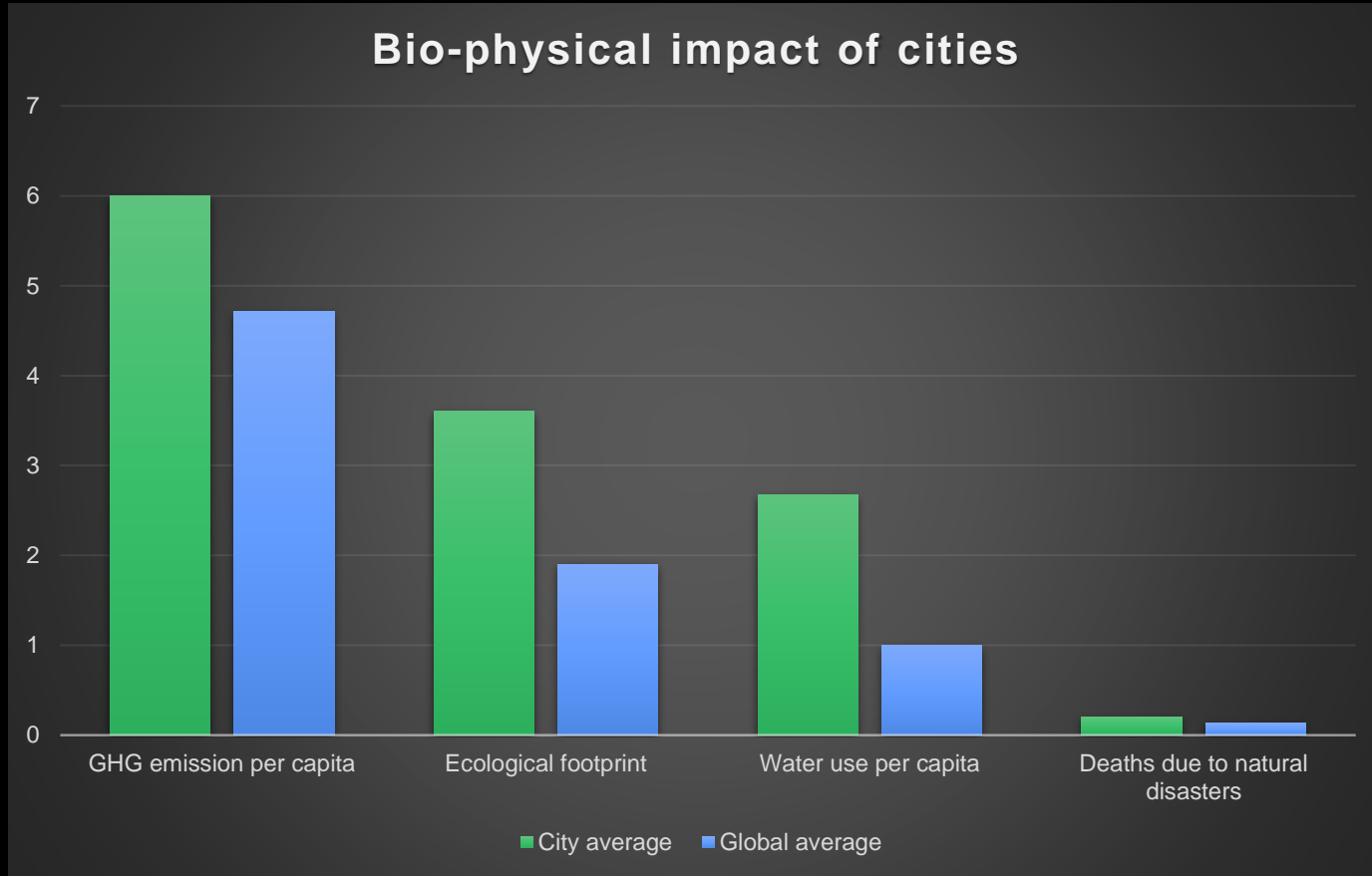


IEA 2021

Major transitions



Cities as a driver



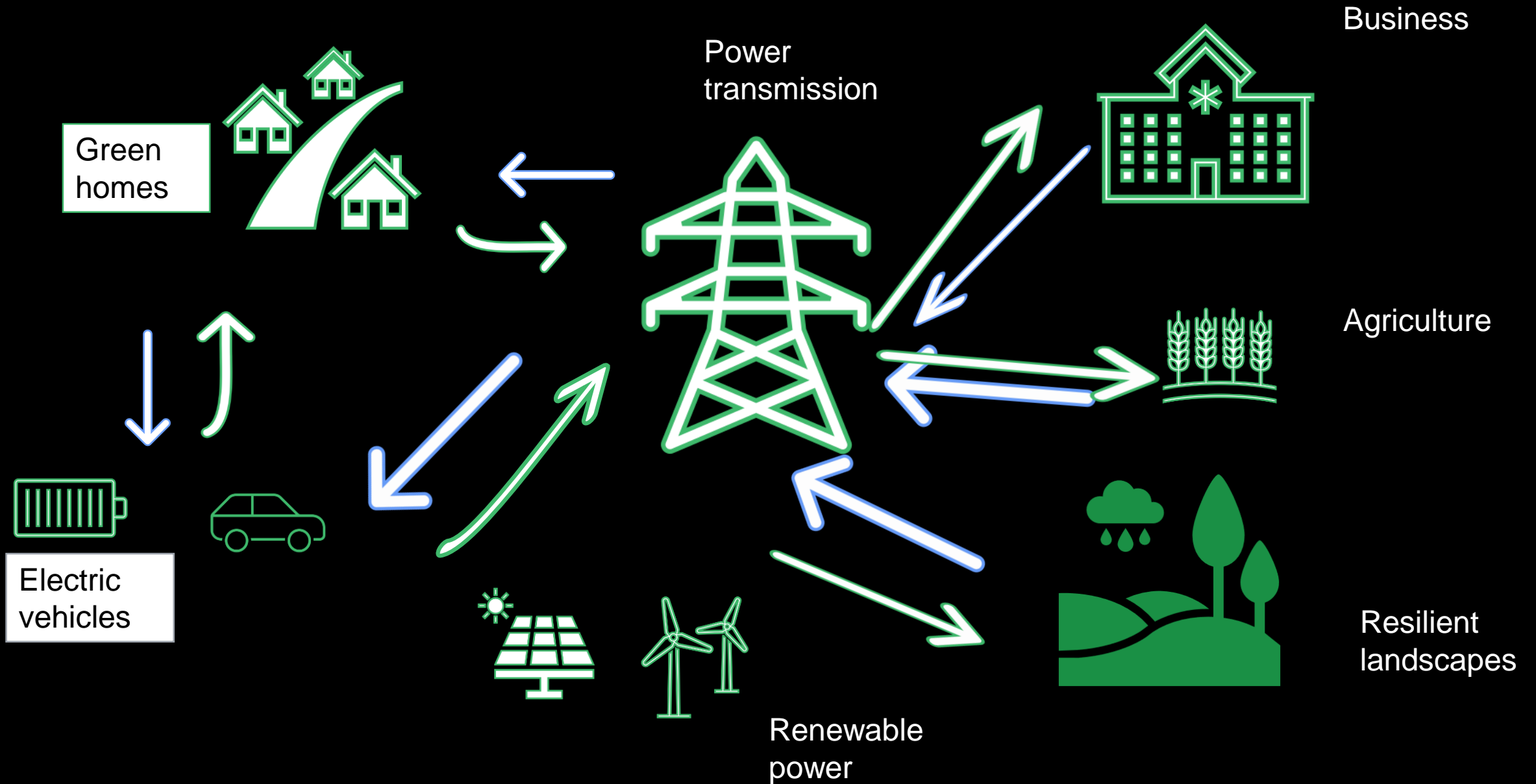
By 2050, 1.2 million km² new urban built up area expected

80% of global GDP generated in cities

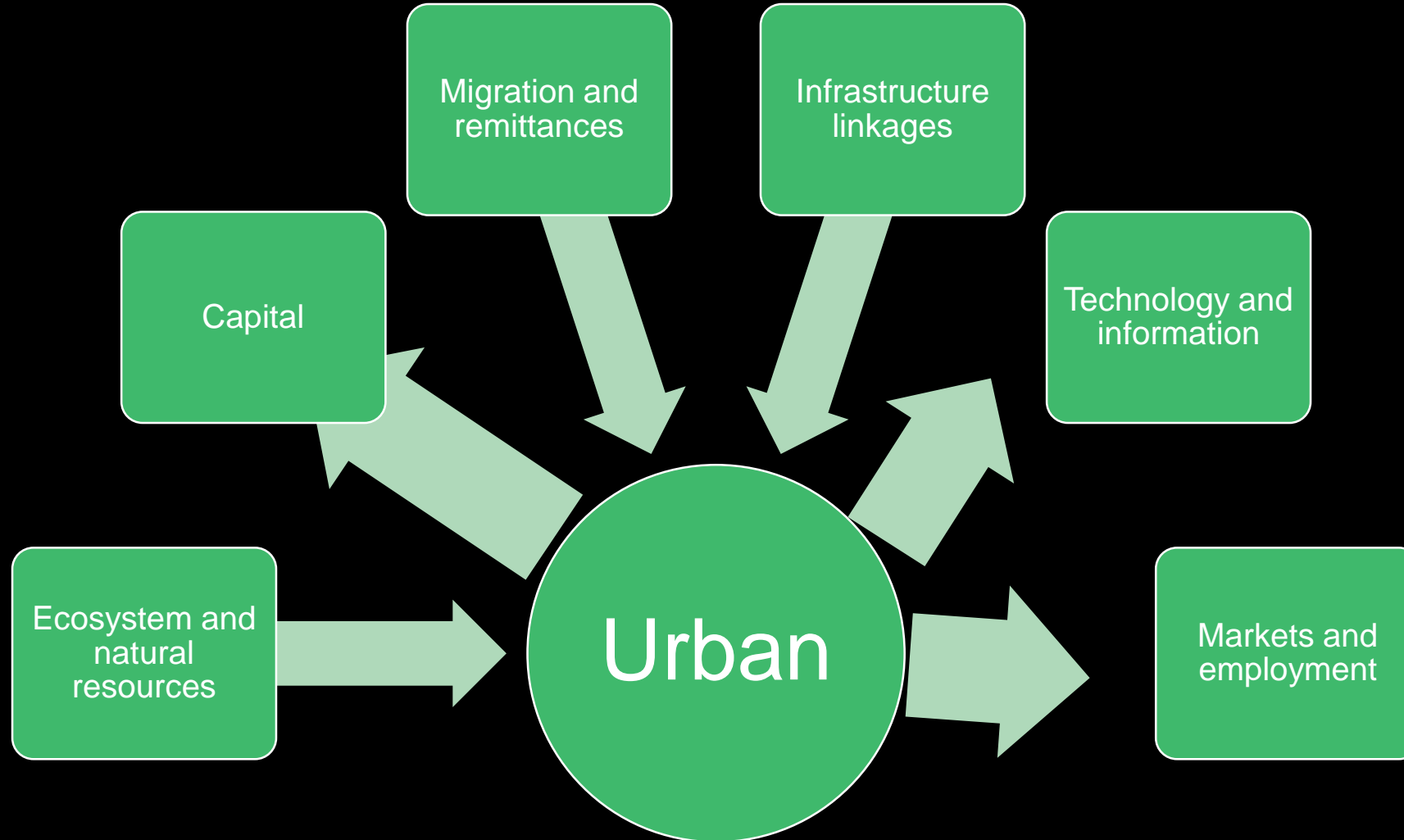
Cities consume 2/3rd of global energy

70% of global GHG emission come from cities

Local climate actions



Urban-rural interlinkages



Linkage with the SDGs

Climate actions

- Energy
- Transport
- Waste
- Green homes
- Green industries
- Nature-based services

6,
7, 13

- Water
- Energy
- Climate

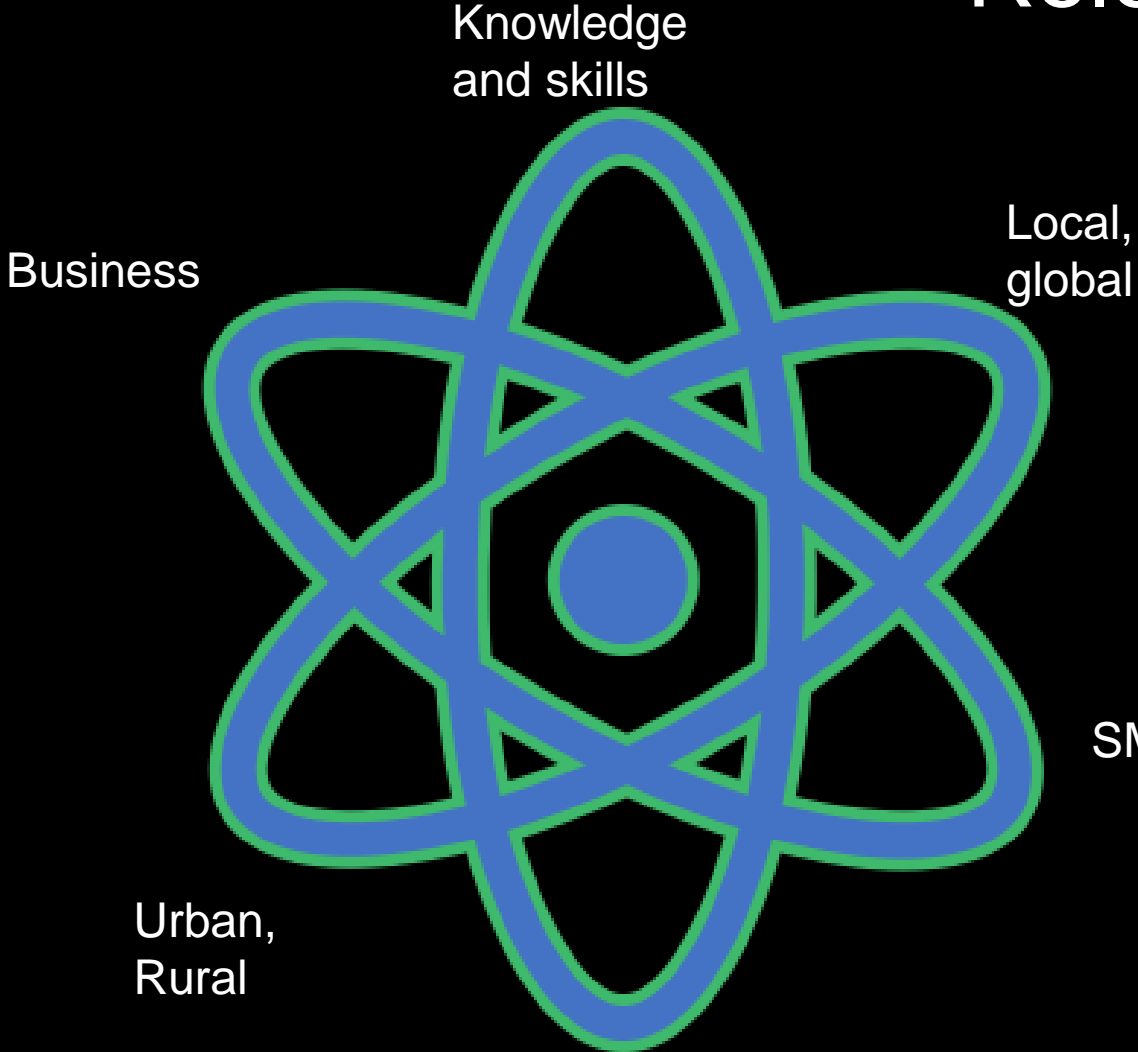
8, 9,
11, 12

- Jobs
- Infrastructure
- Cities
- Resource use

1, 2,
3, 4

- Poverty
- Hunger
- Health
- Education

Role of Universities



RESEARCH AND DEVELOPMENT



INDUSTRY – BUSINESS-UNIVERSITY PARTNERSHIPS



INCUBATION AND ENTREPRENEURSHIP



RESEARCH INFORMED EDUCATION



TRAINING AND COMMUNITY ENGAGEMENT