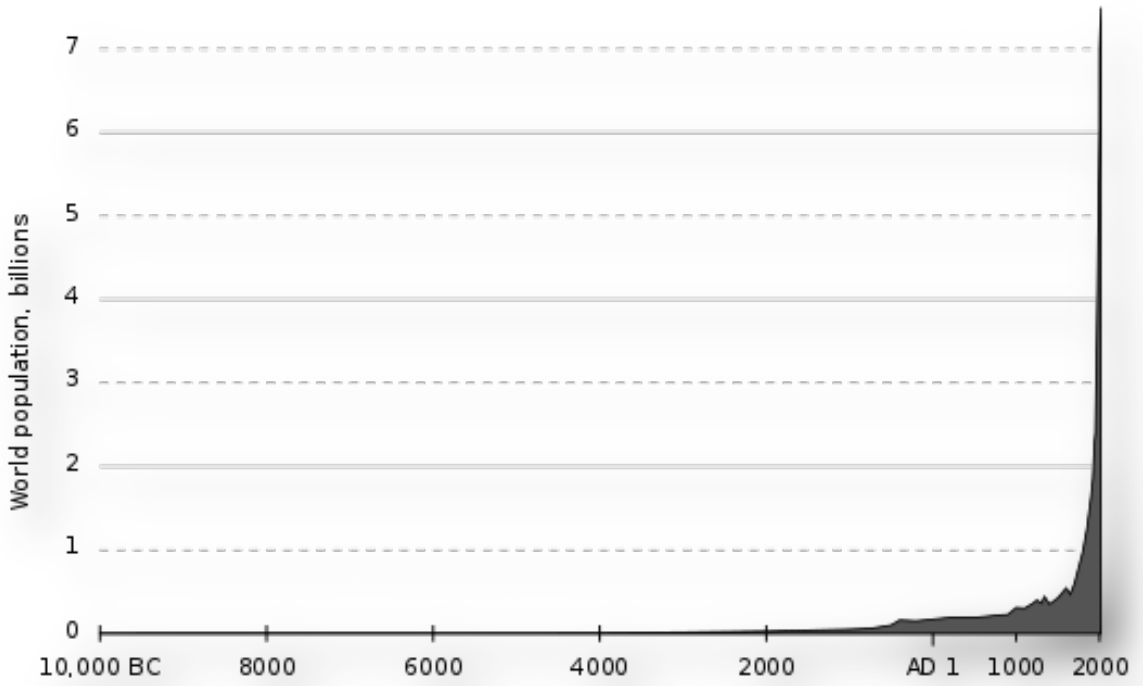
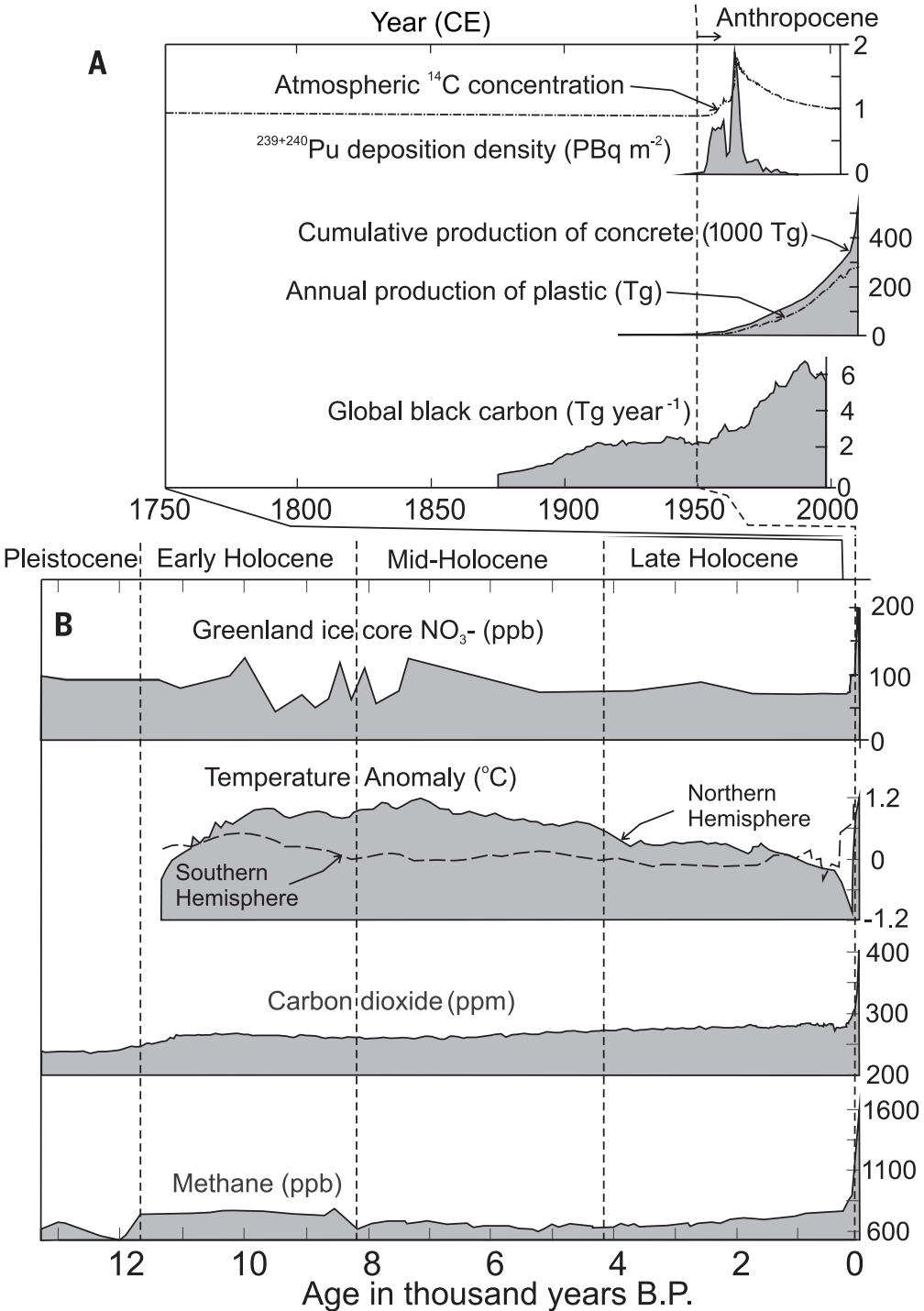
Economic Development & Demographic Choices

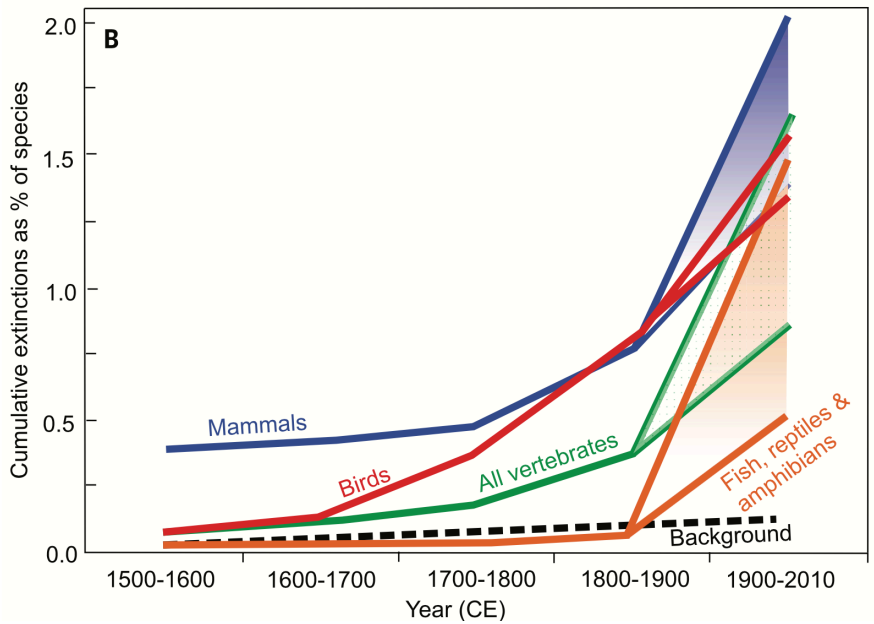
Paul Hooper
Partha Dasgupta



- Post-industrial population boom
  - 100 million tons of dry biomass
- 15-fold increase in global economic output in a 65-year period

Impacts on biosphere





(Waters et al. 2016)

Weighted population overshoot

- Weighted demand on biosphere
  = *N* × Weight of demand (impact) on the environment
- Human demand on the biosphere exceeds that which can occur on a sustainable basis

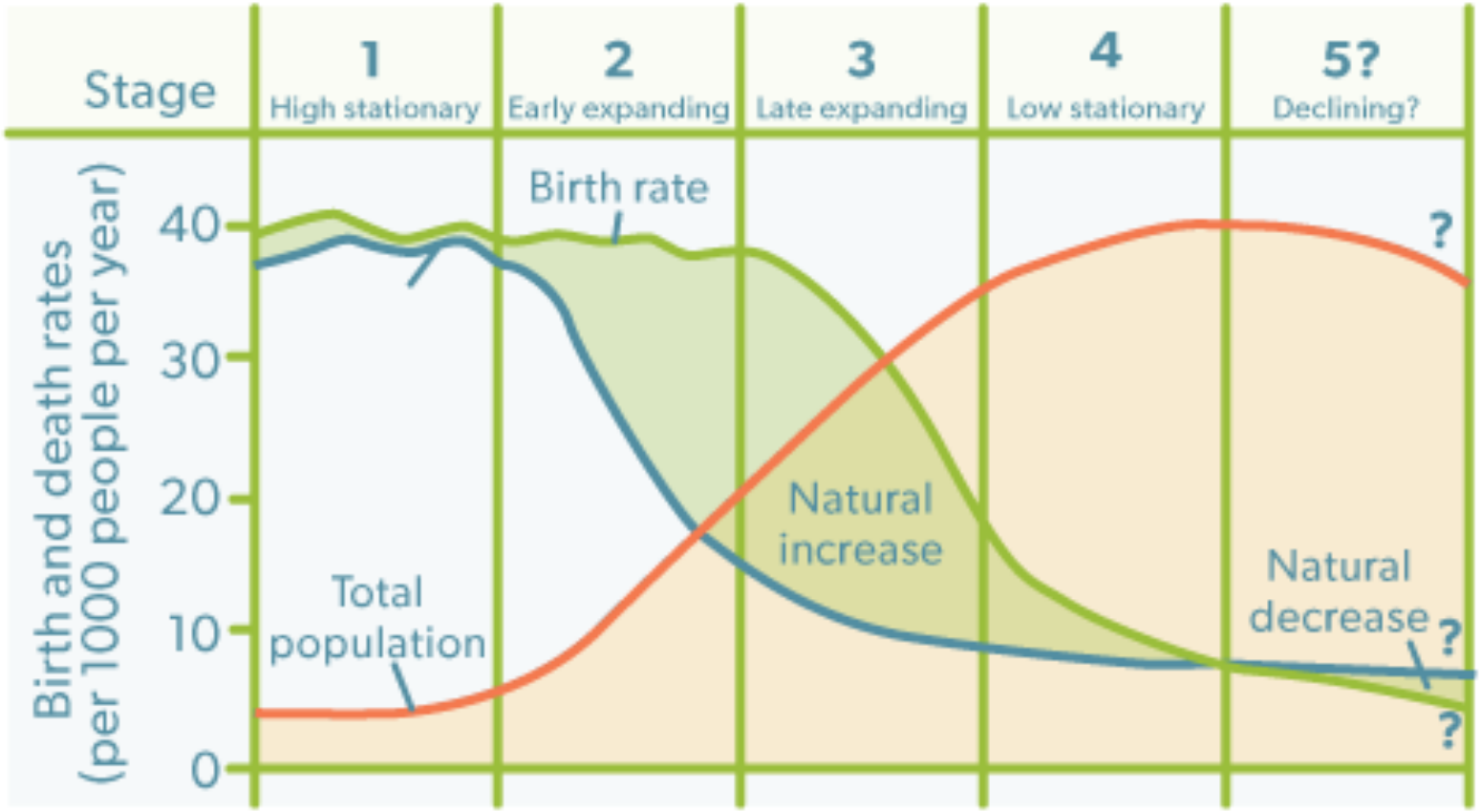
Why?

- Time discounting
- Externalities
  - Shared costs that are unaccounted for in individuals' decision making
  - Environmental costs
    - Remarkably diffuse and remote ("property rights" are not tight)
    - Tragedy of the commons, common pool resource dilemma…
    - With globalization, scope of externalities is huge
  - Conformism

Where does this put us?

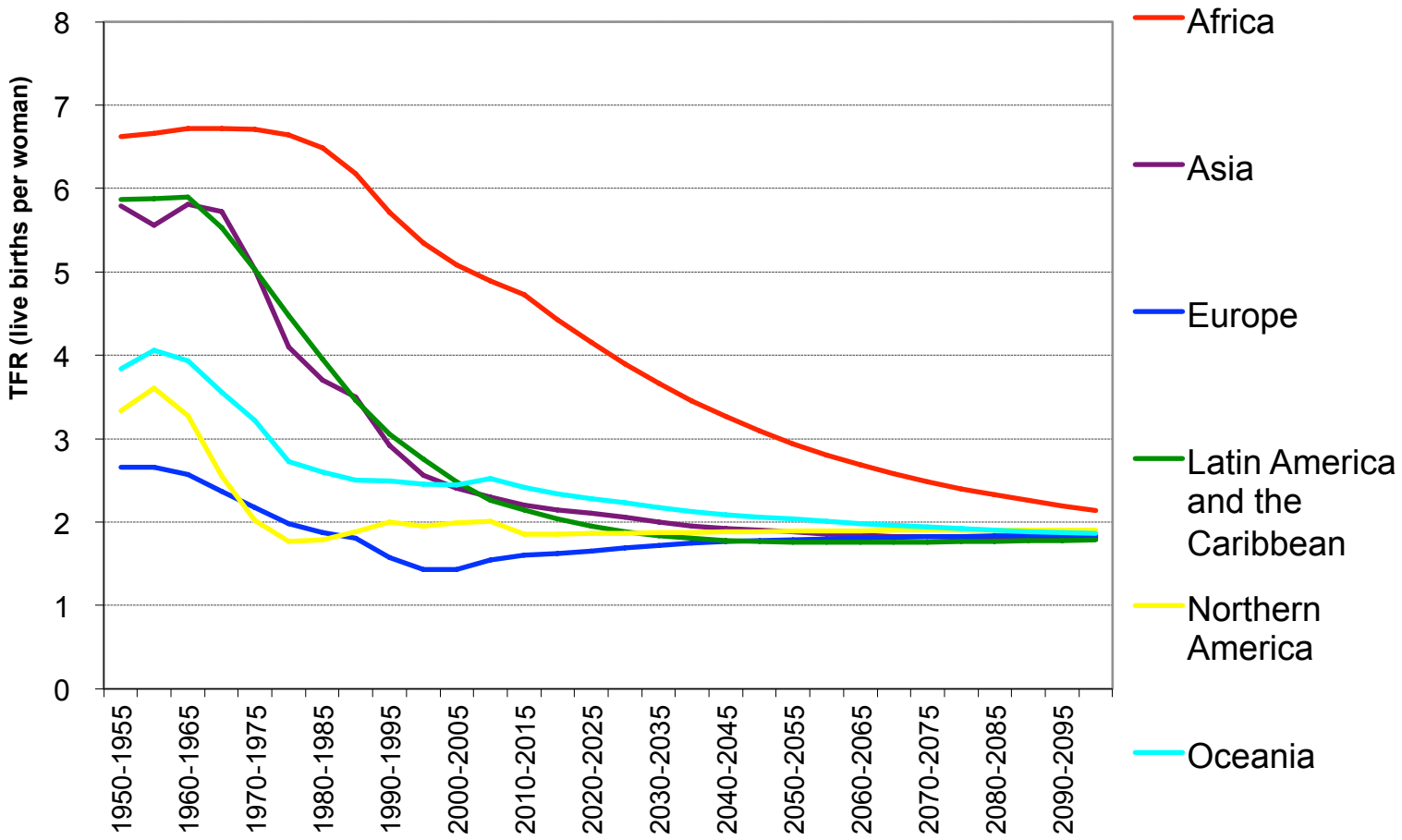
- **Reduced mortality in the industrial age has led to high total *N***

- **Good news?**
  - **Fertility is also dropping**



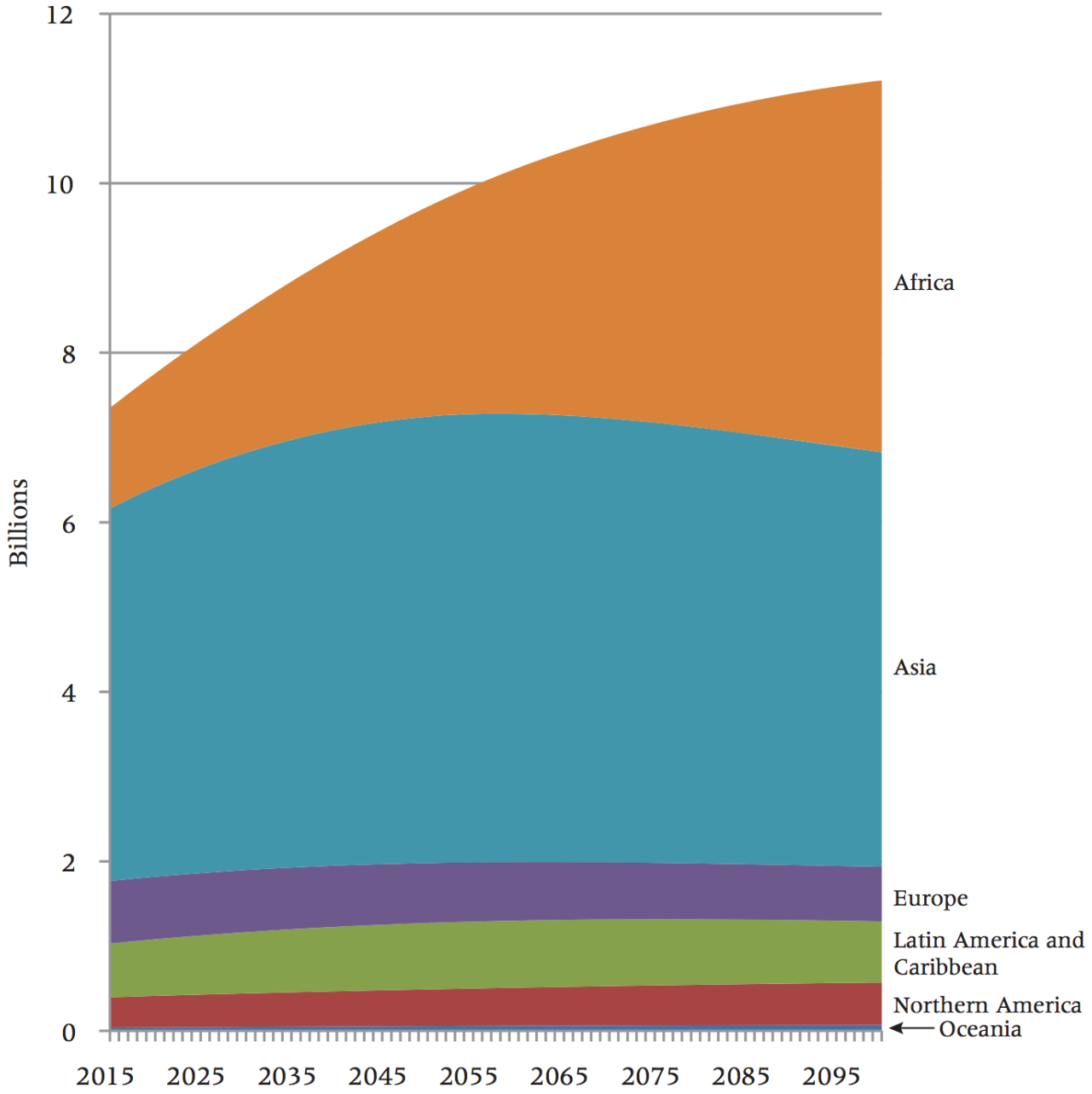
(Creative Commons)

Total fertility by region



United Nations Population Division (2017). *World Population Prospects: The 2017 Revision.* New York: United Nations

FIGURE 2 Total population by region, 2015–2100

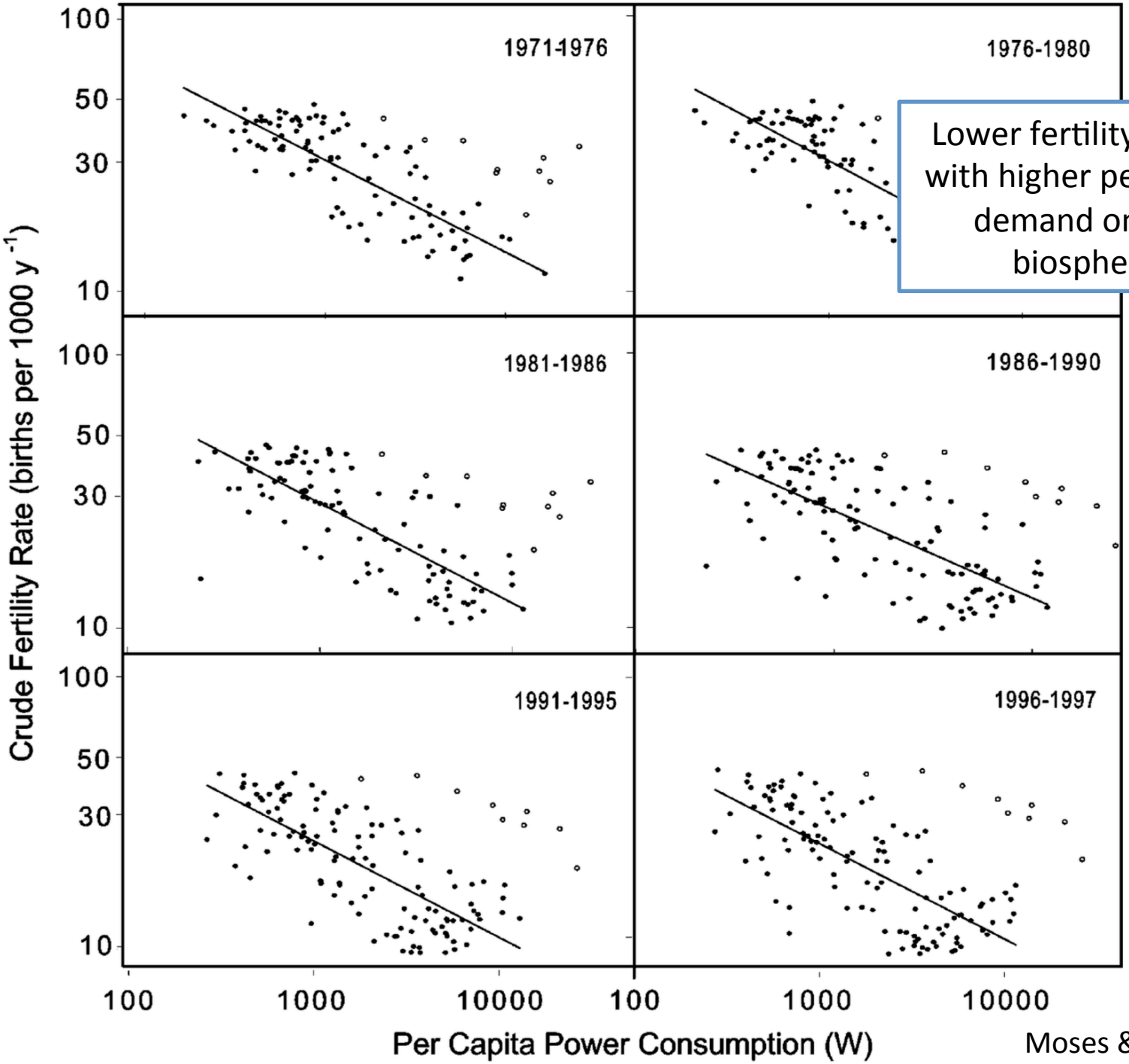


SOURCE: UNPD 2017.

Where does this put us?

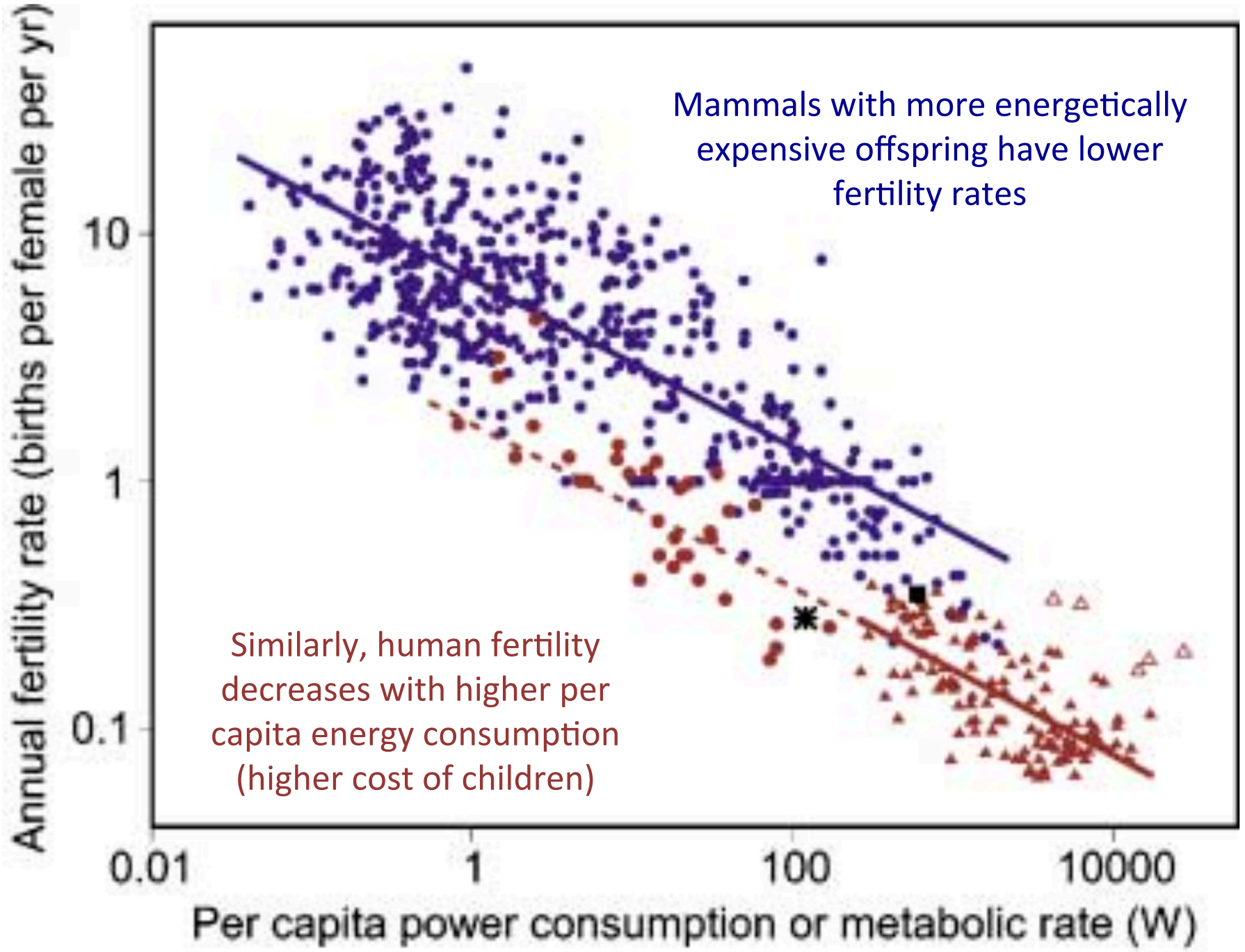
- **Reduced mortality in the industrial age has led to high total *N***

- **Good news?**
  - **Fertility is also dropping**
- **Bad news?**
  - **Lower fertility occurs with higher per capita demand on the biosphere**

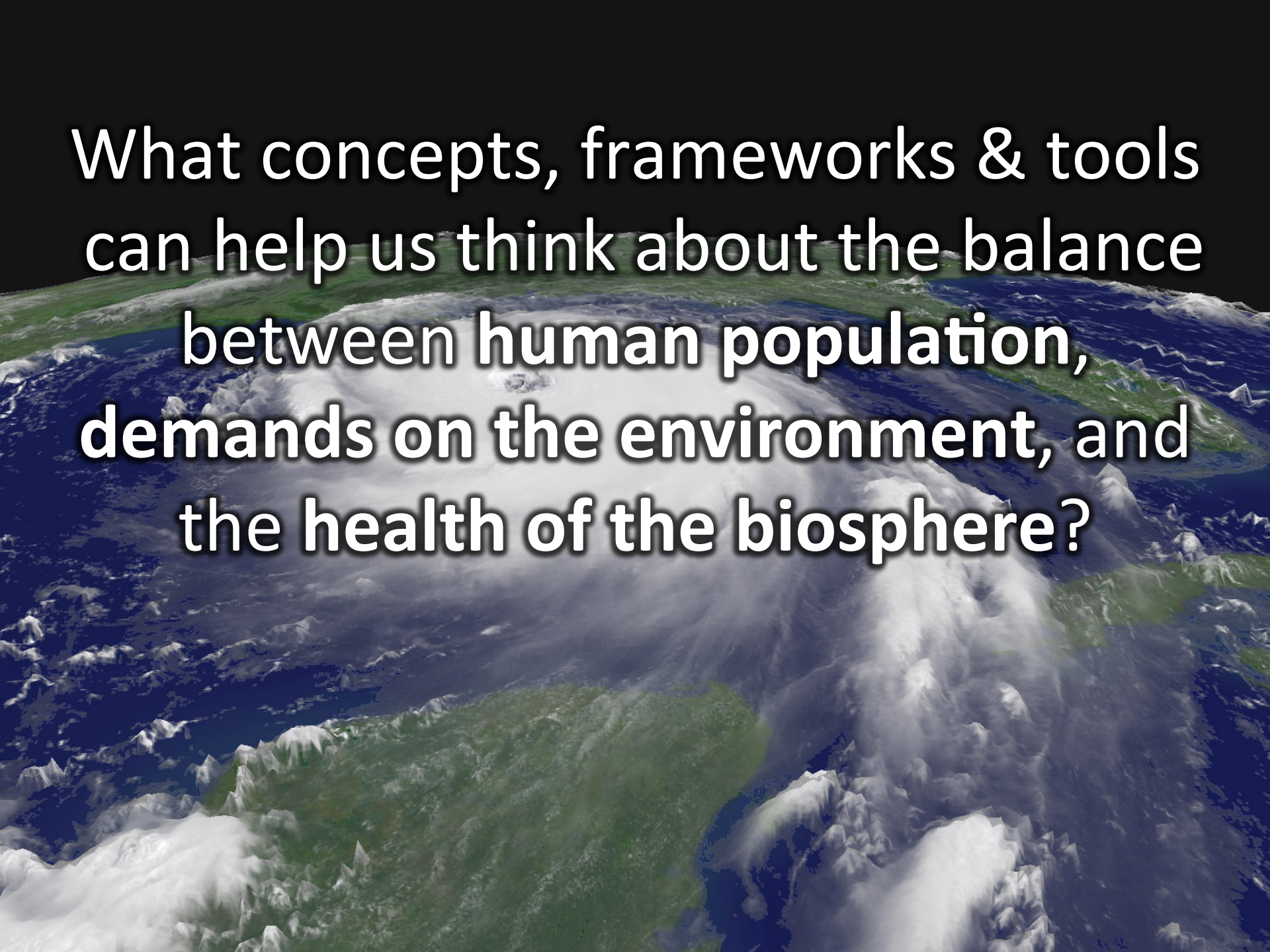


Lower fertility occurs with higher per capita demand on the biosphere

Moses & Brown 2003



Moses & Brown 2003


What concepts, frameworks & tools can help us think about the balance between **human population**, **demands on the environment**, and the **health of the biosphere**?