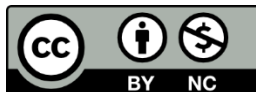


Re-inhabiting the earth in the
Anthropocene recognizing that humans
are not separate from nature but are
part of a living system, i.e. Gaia



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- DEFINITIONS

- Ecological (of or relating to ecology)

- Ecology is the scientific analysis and study of interactions among organisms and their environment. It is an interdisciplinary field that includes biology, geography, and Earth science. Ecology includes the study of interactions that organisms have with each other, other organisms, and with abiotic components of their environment.

- “Ecology” *Wikipedia*. Wikipedia.org. n.p. Web. 13 August 2017



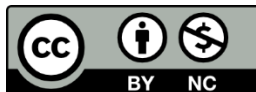
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- DEFINITIONS (contd.)

- Habitat

- A habitat is an ecological or environmental area that is inhabited by a particular species of animal, plant, or other type of organism. The term typically refers to the zone in which the organism lives and where it can find food, shelter, protection and mates for reproduction. It is the natural environment in which an organism lives, or the physical environment that surrounds a species population.

- “Habitat” *Wikipedia*. Wikipedia.org. n.p. Web. 13 August 2017

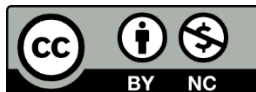


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- DEFINITIONS (contd.)

- Design

- To conceive or fashion in the mind; invent.
 - To formulate a plan for; devise.
 - To plan out in systematic, usually graphic form;
 - A reasoned purpose; an intent.
 - To create or contrive for a particular purpose or effect
 - “Design” *Wordnik*. Wordnik.org. n.p. Web. 17 August 2017



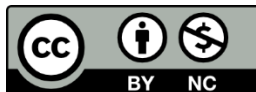
- DEFINITIONS (contd.)
 - Anthropocene
 - The Anthropocene is a proposed epoch dating from the commencement of significant human impact on the Earth's geology and ecosystems, including, but not limited to, anthropogenic climate change.
 - “Anthropocene” *Wikipedia*. Wikipedia.org. n.p. Web. 13 August 2017



- DEFINITIONS (contd.)
 - Gaia hypothesis
 - The Gaia hypothesis, also known as the Gaia theory or the Gaia principle, proposes that organisms interact with their inorganic surroundings on Earth to form a synergistic self-regulating, complex system that helps to maintain and perpetuate the conditions for life on the planet.
 - “Gaia hypothesis” *Wikipedia*. Wikipedia.org. n.p. Web. 13 August 2017



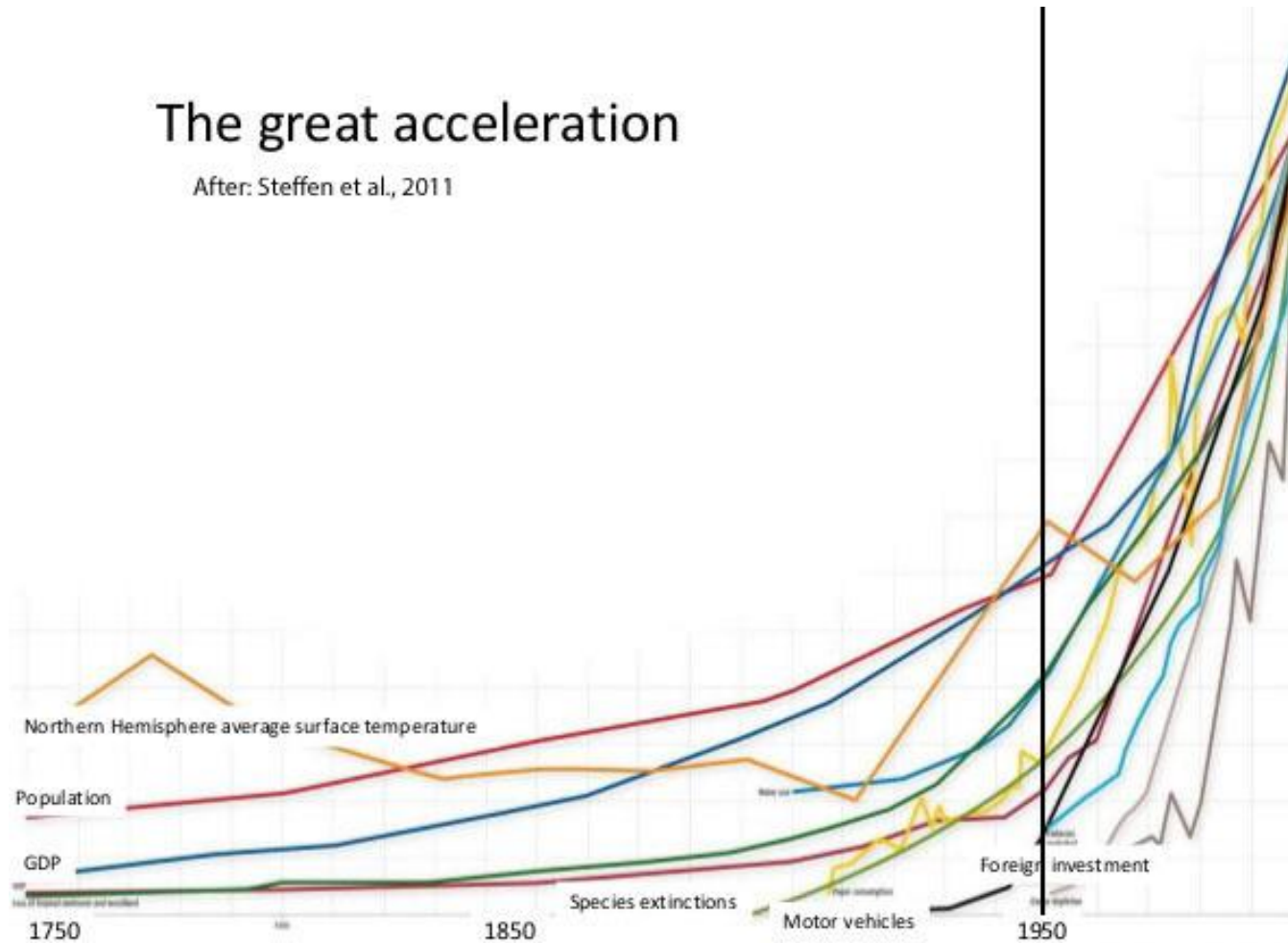
Industrialization & Population Growth



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The great acceleration

After: Steffen et al., 2011



[Timeline Industrial Revolution and the 20th century](#)



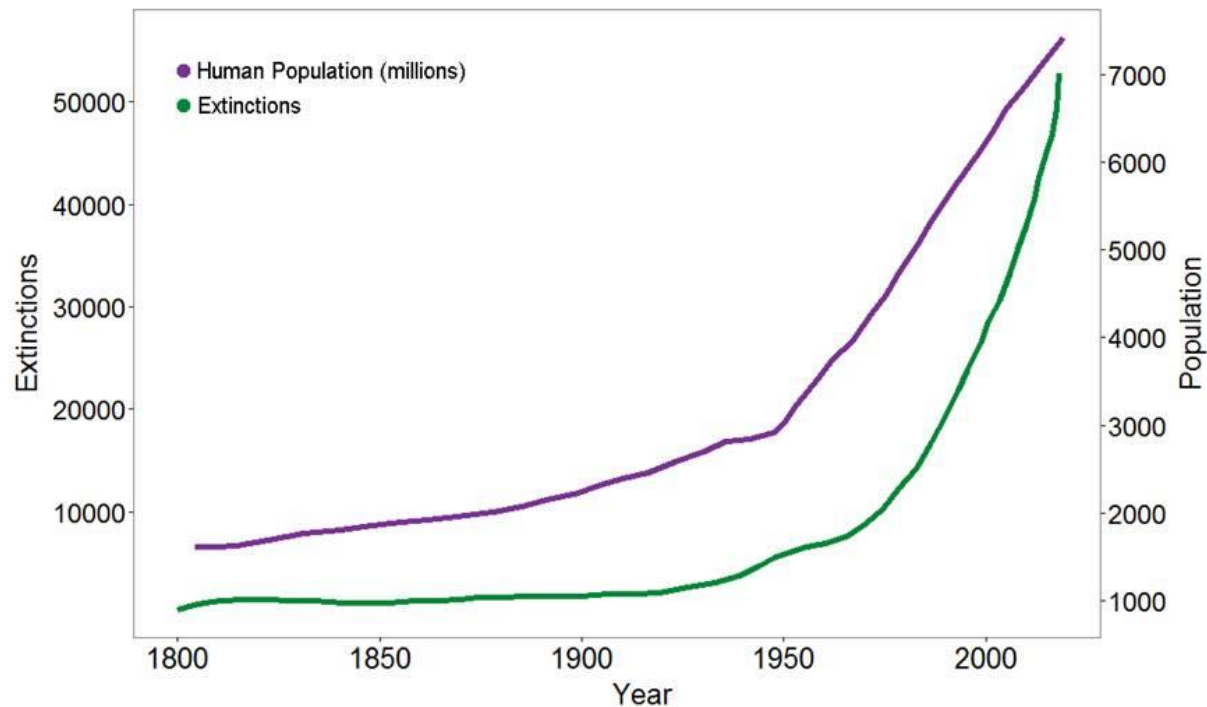
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Population Growth & Species Extinction



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Humans & The Extinction Crisis



Data source: Scott, J.M. 2008. *Threats to Biological Diversity: Global, Continental, Local*. U.S. Geological Survey, Idaho Cooperative Fish and Wildlife, Research Unit, University Of Idaho.

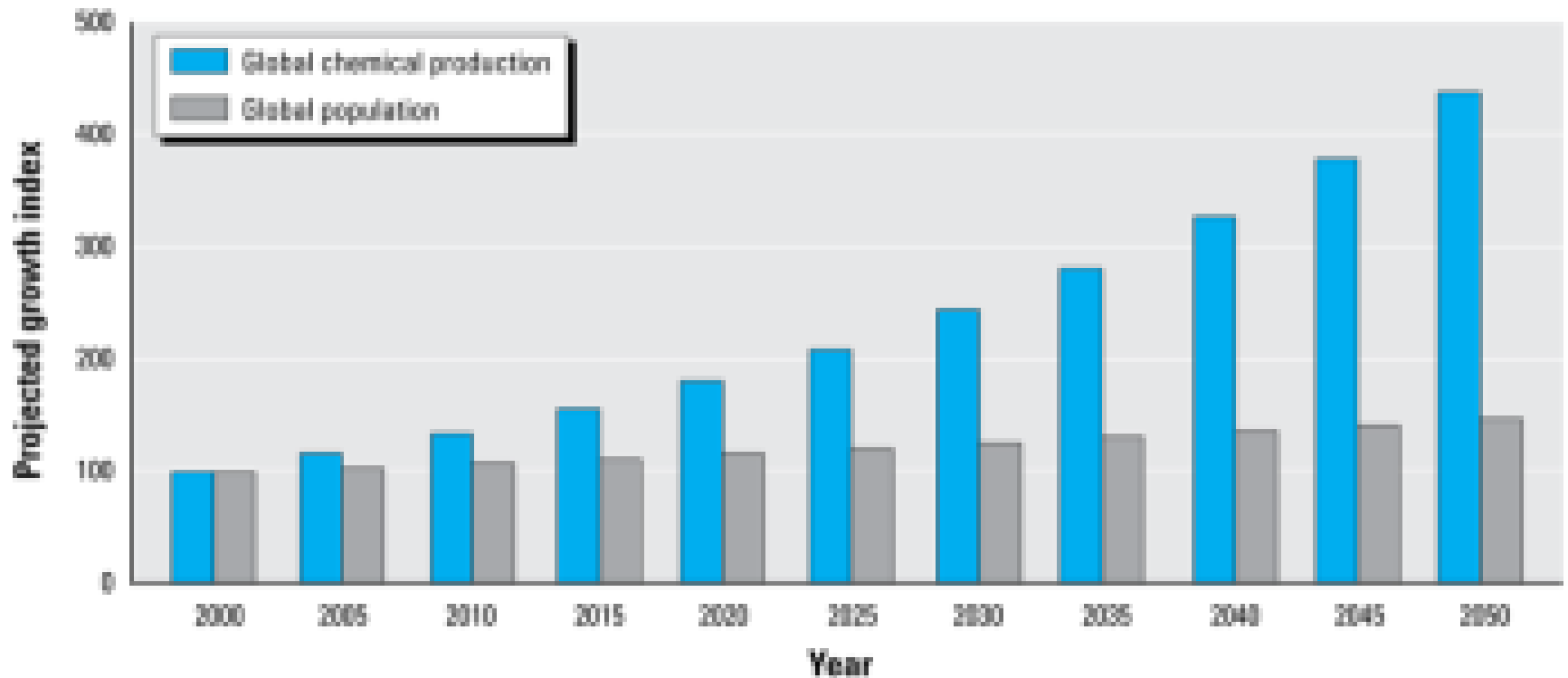


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Chemical Production vs. Population Growth

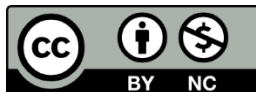


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Global chemical production is projected to continue growing—about 3% per year, with a doubling rate of 24 years, rapidly outpacing the rate of global population growth⁹

Urbanization



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Urbanization and Urban Growth

Why urban areas are attracting more and more people?

- About one half of the world's people live in cities/densely populated urban areas, drawn there for **better jobs** and a **better life**.
- Cities provide jobs, food, housing, a better life, entertainment, and **freedom from the religious, racial, and political conflicts of village life**.
- 3. People are pushed to cities by poverty, no land, declining work, famine, and war. Developing into **centers of poverty**.



Urban trends that affect urban growth

1. Most huge urban areas are in developing countries.
3. The number of large cities (a million or more people) is increasing rapidly.
- e. Megacities or megalopolises contain 10 million+ people.
- g. A megalopolis is a merger of a city (or cities) and adjacent urban areas;
Two such areas are Bowash (Boston–Washington) and Chipitts (Chicago–Pittsburgh).

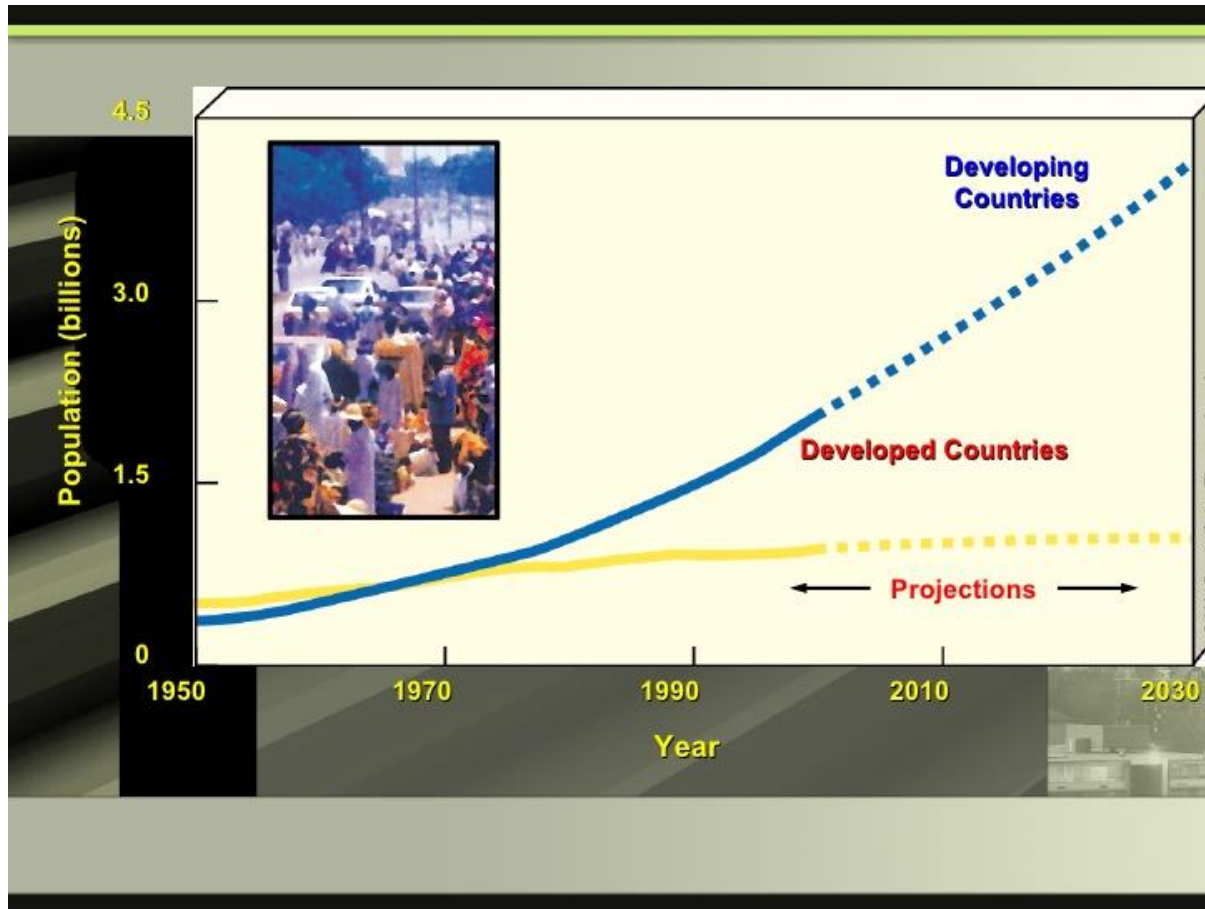


Half of the World's People Live in Urban Areas

- Four major trends

- Proportion of global population living in urban areas is increasing
- Number and size of urban areas is mushrooming
 - Megacities – more than 10 million - 18
 - Hypercities – more than 20 million - 1 :Tokyo
- Urban growth slower in developed countries
- Poverty is becoming increasingly urbanized; mostly in developing countries

Growth of Cities in the World



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Urbanization Has Advantages

- Centers of:
 - Economic development
 - Innovation
 - Education
 - Technological advances
 - Jobs
- Environmental advantages
 - Recycling
 - Reduce stress on wildlife habitats
 - Save energy – mass transportation

Urbanization has Disadvantages

- Huge ecological footprints
 - Urban populations occupy 2% of the world's area but consume 75% of the resources and resulting high waste output
- Lack vegetation
 - Vegetation destroyed –buildings, parking lots , roads
 - no absorption of pollutants, shade, aesthetic
- Water problems
 - flooding, destroy wetlands,
 - severe water shortage

Urbanization Has Disadvantages

- Concentrate pollution and health problems
- Excessive noise
- Different climate and experience light pollution
 - cities warmer, foggier, cloudier than suburbs and nearby rural areas
 - heat generated by industry ,heat -absorbing surfaces create URBAN HEAT ISLAND

NATURAL CAPITAL DEGRADATION

Urban Sprawl



Land and Biodiversity

- Loss of cropland
- Loss of forests and grasslands
- Loss of wetlands
- Loss and fragmentation of wildlife habitats



Water

- Increased use of surface water and groundwater
- Increased runoff and flooding
- Increased surface water and groundwater pollution
- Decreased natural sewage treatment



Energy, Air, and Climate

- Increased energy use and waste
- Increased air pollution
- Increased greenhouse gas emissions
- Enhanced global warming



Economic Effects

- Decline of downtown business districts
- Increased unemployment in central city
- Loss of tax base in central city

14

© Brooks/Cole, Cengage Learning

Fig. 22-6, p. 593



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Disasters & Disaster Vulnerability



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- Disasters

- Over the last 20 years, some 90 percent of major recorded disaster events have been weather-related¹
- 6,457 weather-related disasters between 1995 and 2015²
- doubling of such events yearly over the last decade³

¹[Emergency Events Database](#)

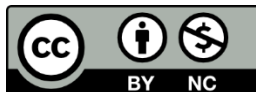


- Hazard Vulnerability (contd.)
 - Between 1975 and 2000 the number of megacities in low- and middle-income nations increased from two to 13.⁶
 - Of the 23 megacities worldwide in 2011 (UN-DESA 2012) 16 were coastal.

⁶[Coastal megacities: risks and opportunities](#)



Climate Change: The Worldwide Disaster



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- Climate Change



- 2016 beat 2015 as the warmest year on record²
- 90 percent likelihood that global temperatures will rise anywhere from 2 degrees to 4.9 degrees Celsius by 2100³

² [State of the Climate](#), NOAA

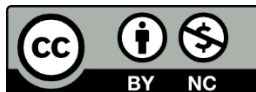
³ *Nature Climate*



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- Climate Change (contd.)
 - 90 percent likelihood that global temperatures will rise anywhere from 2 degrees to 4.9 degrees Celsius by 2100³

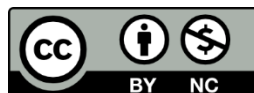
- Climate Change Related Hazards
 - Sea level rise
 - coastal flooding
 - Hurricanes/Typhoons
 - Storm surge
 - Droughts
 - Fires
 - Floods
 - Tornadoes



75%

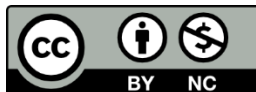
global CO₂ emissions
attributable to cities

 WORLD RESOURCES INSTITUTE



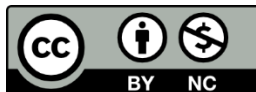
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The problem is that the industrial growth society is incongruent with Gaia. We need new (old) ways of living.



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What to Do Now?



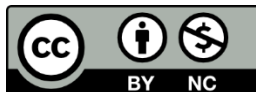
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- Desirable & Hopeful Trends
 - Urban Agriculture/Permaculture
 - Localization (food, energy, economy, water)
 - Water & Energy Conservation
 - Renewable Energy Production
 - Energy Efficient Buildings (LEED)
 - Telecommuting
 - Eco-cities/eco-villages
 - Transition Towns/Intentional Communities



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- Desirable & Hopeful Trends (contd.)
 - Green Chemistry
 - Agrarian Lifestyle/Small Scale Farming as a Profession
 - Consumer & Producer Cooperatives



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