

## THEME 19: POPULATION, ENVIRONMENT AND CLIMATE CHANGE

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### **Population, Environment, and Development in the Era of Climate Change: Decoupling Growth and Managing Natural Resources for the Health and Well-being of People and the Planet**

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#### **Introduction**

*This paper examines the intricate connections between population dynamics, environmental sustainability, and economic development for the health and well-being of the people and the planet, emphasizing the critical role of climate action, raising collective engagement and reducing inequalities in building a sustainable future. Drawing on established theories such as the Malthusian theory, Demographic Transition Theory, the Kuznets Curve and the Environmental Kuznets Curve, the paper reviews the current literature on the interplay between population growth, environmental degradation, and economic development. Using aggregate data from sources including the UN Population Division, the World Bank, Climate Watch, Global Carbon Atlas, IPCC reports, NASA, national emission inventories, and Global Burden of Disease, we investigate the global and regional trends in economic growth and their environmental and health impacts.*

*The paper analyses patterns in countries' economic, environmental and health data through a comparative assessment of developed and developing countries. The paper focuses on case studies of countries that have successfully driven the development and health and well-being of people while minimizing their environmental footprint, examining how shifts in energy use from fossil fuels to renewable sources contribute to the decoupling of economic growth from environmental degradation, which is the ability of an economy to grow and increase its wealth, health and wellbeing of the population without causing a corresponding increase in environmental harm, such as pollution, resource depletion, or ecosystem destruction. The paper also critically explores the concept of community management of common property resources to promote a sustainable and healthy future for all. The findings from this paper underscore the urgency of addressing the interconnections between population, development, and environmental sustainability in achieving health and well-being for all.*

**Keywords:** population dynamics, climate change, environmental degradation, economic growth

## Background

In November 2022, the world crossed the 8 billion population mark<sup>1</sup>, and much of the debate on the relationship between population growth, environmental degradation, and economic development resurfaced. Four notable theories — The Malthusian Theory<sup>2</sup>, the Demographic Transition Theory<sup>3</sup>, the Kuznets Curve & the Environmental Kuznets Curve<sup>5</sup> offer some valuable insights to understand these relationships.

The Malthusian Theory was developed in the 1800s by Thomas Malthus, who argued that population growth would grow exponentially and outpace resources, leading to resource shortages, environmental degradation, and biodiversity loss. While this theory doesn't highlight the role of technological advancements in increasing resource availability, it remains relevant today, especially in regions where population growth continues to exceed the availability of natural resources. A century later, in 1929, Warren Thomson and, in the mid-20th century, Frank Notestein developed the Demographic Transition Theory, observing that the reduction in birth and death rates in industrialized countries triggered economic growth. They observed that while in the early stage of the demographic transition, high population growth rates can pressure resources. When a country transitions to a lower birth rate, the population growth stabilizes with the possibility that technological advantage could reduce environmental pressures. In 1950, Simon Kuznets developed the Kuznets' Inverted U Hypothesis or Kuznets Curve<sup>6</sup> illustrating that in the early stage of economic development, there is a tendency to raise the level of inequalities and this will reduce with a higher level of income, demonstrating U inverted shape b/w inequality and income. More recently, Thomas Piketty<sup>7</sup> challenged Simon Kuznets's hypothesis that if not controlled, the increase in income inequality in capitalist economies can jeopardise sustainable economic development, arguing that the latter can only be achieved through reducing societal inequality. In the early 90s, Gene Grossman and Alan Krueger building on these ideas, introduced the idea of the Environmental Kuznets Curve (EKC)<sup>8</sup>, inspired by the Kuznet's curve, suggests that there is a U-shaped relationship between economic development and environmental degradation, indicating that in the early stages of economic development, we are most likely experience a rise in environmental degradation and as economies develop, and

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<sup>1</sup> United Nations, Department of Economic and Social Affairs, Population Division. (2022). *World Population Prospects 2022: Summary of Results*. Retrieved from <https://www.un.org/development/desa/pd/>

<sup>2</sup> Malthus, T. R. (1798). *An Essay on the Principle of Population*. London: J. Johnson.

<sup>3</sup> Thompson, W. S. (1929). *Population*. *American Journal of Sociology*, 34(6), 959-975.

<sup>4</sup> Notestein, F. W. (1945). *Population—the long view*. In T. W. Schultz (Ed.), *Food for the World* (pp. 36-57). University of Chicago Press.

<sup>5</sup> Grossman, G. M., & Krueger, A. B. (1991). *Environmental impacts of a North American Free Trade Agreement*. National Bureau of Economic Research Working Paper No. 3914.

<sup>6</sup> Kuznets, S. (1955). *Economic growth and income inequality*. *American Economic Review*, 45(1), 1-28.

<sup>7</sup> Piketty, T. (2014). *Capital in the Twenty-First Century*. Harvard University Press.

<sup>8</sup> Grossman, G. M., & Krueger, A. B. (1991). *Environmental impacts of a North American Free Trade Agreement*. National Bureau of Economic Research Working Paper No. 3914.

when countries reach a certain threshold pressure on resources declines with greater environmental awareness, stronger environmental regulations and monitoring.

Global temperatures have risen steadily in the last 30 years, with 2023 being the warmest year on record and the ten warmest years recorded in the last decade<sup>9</sup>. These changes in natural climate variability and climatic changes are already having irreversible effects on natural systems, causing rising sea levels, melting ice sheets, rising sea temperatures and ocean acidification<sup>10</sup>. Scientists argue that we have entered a new geological epoch, the Anthropocene, in which humans are the primary drivers of change in the Earth's natural system, with clear signs that the planet cannot offset the acceleration<sup>11</sup> of the global fossil fuel economy of the past 70 years. The latest estimates suggest that if the current global economic system is not drastically transformed, we will reach 3.2 degrees of warming by the end of the century, exposing an estimated 50-75% of the global population to periods of "life-threatening climatic conditions" of extreme heat and humidity<sup>12</sup> with a direct impact on population health and wellbeing with disproportionate impacts on the most vulnerable countries and more vulnerable people that have contributed the least to global emissions.

Population growth and economic growth are often identified as the main anthropogenic drivers of climate change, including global warming<sup>13</sup>. However, evidence suggests that "rising levels of income per capita have been more important than population growth in driving the increases in resource extraction and material consumption of recent decades<sup>14</sup>. Hence, claims that current patterns of population growth in the developing world are an important driver of climate change should be carefully interrogated, as they re-direct vital advocacy and resources from more critical climate actions related to demography, and cultivate a false narrative about who and what must change<sup>15</sup>.

While all individuals contribute to emissions, they do not contribute in the same way, nor are they affected proportionately, poorest 50% of humanity accounts for just 7% of cumulative emissions<sup>16</sup>.

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<sup>9</sup> WMO (2024). State of the World Climate 2023. Geneva, Switzerland

<sup>10</sup> IPCC, 2021: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, In press, doi:10.1017/9781009157896.

<sup>11</sup> Dixon-Decleve, S., Gaffney, O. Ghosh, J., Randers, J. Rockstrom, J. Stoknes, P. E. 2022. Earth for All: A Survival Guide for Humanity. New Society Publishers. ISBN- 0865719861

<sup>12</sup> IPCC, 2023: Summary for Policymakers. In: Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, H. Lee and J. Romero (eds.)]. IPCC, Geneva, Switzerland, pp. 1-34, doi: 10.59327/IPCC/AR6-9789291691647.001

<sup>13</sup> United Nations Department of Economic and Social Affairs, Population Division (2021). Chapter 16: Global Population Growth and Sustainable Development. UN DESA/POP/2021/TR/NO. 2).

<sup>14</sup> Chapter 16, United Nations Department of Economic and Social Affairs, Population Division (2021). Global Population Growth and Sustainable Development. UN DESA/POP/2021/TR/NO. 2).

<sup>15</sup> Natalia Kanem (2017). Population and climate change. Climate 2020: New Leaders and New Approaches. United Nations Association - UK.

<sup>16</sup> Gore, T., Alestig, M., and Ratclif, A., [Confronting Carbon Inequality: Putting Climate Justice at the Heart of the COVID-19 Recovery](#) (2020), Oxfam and the Stockholm Environment Institute.

The paper analyses patterns in countries' economic, environmental, economic inequality and health data through a comparative assessment of developed and developing countries. The paper focuses on case studies of countries that have successfully driven the development and well-being of people while minimizing their environmental footprint, examining how shifts in energy use from fossil fuels to renewable sources contribute to the decoupling of economic growth from environmental degradation, which is the ability of an economy to grow and increase its wealth, health and wellbeing of the population without causing a corresponding increase in environmental harm, such as pollution, resource depletion, or ecosystem destruction. The paper also explores the critical role of climate action in driving collective action and the concept of community management of common property resources to promote a sustainable and healthy future for all.

### Data Sources

- *Population Data*: United Nations Population Division, World Bank, national censuses.
- *Environmental Data*: World Bank, Climate Watch, Global Carbon Atlas, national environmental reports.
- *Development Data*: Human Development Index (HDI), Gross Domestic Product (GDP) per capita, and poverty rates from the World Bank and UNDP.
- *Environmental data and climate data*: Global Forest Watch, World Health Organization (WHO) Air Quality Database, Global Carbon Atlas, UNEP Global Environment Monitoring System (GEMS)/Water Program, International Union for Conservation of Nature (IUCN) Red List.
- *Health outcome data*: WHO, Global Burden of Diseases, etc.

### Methods

- *Temporal Analysis*: Comparing data over time to observe trends and changes.
- *Cross-Country Comparison*: Comparing data across countries, mainly focusing on developing vs developed countries and by varying composition of sectors (services vs agricultural etc).
- *Case Studies*: In-depth analysis of specific countries or regions.

### Points for paper discussion of results.

- ***Success stories of green growth*** - A study from the Breakthrough Institute found that countries can achieve economic growth and reduce emissions (both from production and consumption or only consumption). This is not due to 'exporting' production but rather to the shift in the use of fossil fuels or renewable energy sources. However, most of these countries are developed and rely on the service sector<sup>17</sup>.
- ***Collective ownership of planetary resources*** - The critical concept that natural capital is considered fixed, an indestructible factor of production, and doesn't devalue as

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<sup>17</sup> Breakthrough Institute. (2022). *Green Growth Won't Kill the Planet*. Available at: Breakthrough Institute ([The Breakthrough Institute](#))

production/consumption or economic growth increase<sup>18</sup>. Still, this assumption is problematic as nature is a degradable resource degraded by overuse and misuse, causing depletion and degradation. Dasgupta highlights that property rights to natural resources are not protected, which leads to the overuse of natural resources.

- **Community-led management in adapting to environmental changes and conserving common resources:** Some argue that common property resources are easier to manage at the community level<sup>19,20,21</sup> and illustrate initiatives where local communities pool resources and collective management of environmental resources incorporating traditional knowledge to enhance biodiversity and ensure sustainable livelihoods.

### **Conclusion and (possible) policy implications**

Sustainable development is not possible without climate action<sup>22</sup>. Global temperatures will continue to rise until there is a collective agreement on reducing greenhouse gas emissions in the atmosphere, which poses a risk to both sustainable development and the health of the people and the planet. Rights-based family planning, reproductive health services, and education empower women to have the opportunity to support suitable populations and economic growth. There is a need to raise public awareness of the importance of sustainable management of environmental resources, including land, water and air, to promote inclusive economic growth, poverty alleviation and population health. There is a need for a more decisive commitment to international cooperation to find a solution to collective emission reduction and the implementation of mitigation and adaptation strategies. Policymakers must navigate the complexities of these relationships to balance economic growth with community engagement in the management of common environmental property resources.

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<sup>18</sup> Dasgupta, P. (2001). *Human Well-Being and the Natural Environment*. Oxford University Press.

<sup>19</sup> Ostrom, E. (1990). *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge University Press.

<sup>20</sup> Agrawal, A. (2001). *Common Property Institutions and Sustainable Governance of Resources*. *World Development*, 29(10), 1649–1672.

<sup>21</sup> Berkes, F. & Folke, C. (Eds.). (1998). *Linking Social and Ecological Systems: Management Practices and Social Mechanisms for Building Resilience*. Cambridge University Press.

<sup>22</sup> Nature Editorial. (2023). Why sustainable development is inseparable from climate action. *Nature*, 620, 921–922.