Received: October, 2025 Revised: January, 2026-03-29 Accepted: March, 2026

DOI : https://doi.org/10.3126/npj.v19i1.92896

A Survey of Population Growth Versus Resources and Sustainability Debate

Baburam Pradhan[1]

[1] PhD Scholar at Central Department of Population Studies, Tribhuvan University

Email: babupradhan15@gmail.com

ABSTRACT

The main objective of this work is to investigate how the population growth and resources debate evolved and to identify the key players of this debate. The data source of the review article is available literature in the field. To make the review process scientific and reproducible, literature is selected by author-defined criteria, and the taxonomy of Cooper (1988) and theoretical saturation are used to define the sample size for the study. The data is analyzed by the Framework Analysis method. The population and resource debate began with Thomas Malthus when they published their first book, An Essay on the Principle of Population, in 1798, where they outlined how overpopulation could lead to famine. Malthus was mostly criticised in their time, but in the 20th century, they earned some ardent supporters labeled as neo-Malthusians who advocated for active measures of population control to avoid potential famine and to protect the environment. Dennis Meadows and their team provided a scientific basis for the neo-Malthusian proposition. Cornucopian Ester Boserup and Julien Simon opposed Malthusian and neo-Malthusian assumptions and proposed a population as a resource proposition. UN-promoted sustainable development is the recent agenda in this debate. This work has concluded that the debate of population growth versus resources is not settled yet, as the pressure of population on the environment continues. So, the balance between population growth and resource consumption is an area to investigate further.

Keywords: Population growth, famine, Neo-Malthusian, resource, and sustainable development

INTRODUCTION

Although the debate between population growth and resources peaked in the second half of the 20th century, its root is connected to more than two centuries ago when Thomas Robert Malthus, a British demographer, economist, and cleric, presented his proposition about population growth and its impact on resources. When the world saw historic population

growth in the 20th century, from two billion in the 1930s to six billion towards the end of the century, neo-Malthusians of the century were outraged and predicted massive starvation and environmental destruction as a result of such population outburst. Oppositely, the defenders of population growth, mostly labeled as Cornucopian, came forward and countered neo-Malthusians. To date, this debate is inconclusive. But the population is still growing, and it may reach over 10 billion by the end of this century (UN, 2022). In this context, the study is highly significant in shaping the debate in this century from the learning of the past century.

OBJECTIVES

Firstly, the study has aimed to synthesize the literature to study how the population growth versus resources and sustainability debate evolved. Secondly, it has aimed to identify the key players of this debate and present their key ideas. Lastly, it has sought the answer to the question of where this debate is heading.

METHODS

The paper is based on qualitative research design. The philosophic position of the study aligns with the qualitative design; the ontological position is constructivist, while the epistemological position is interpretivist. The secondary sources of data for the study include peer-reviewed journal articles, books by renowned scholars, and gray literature like reports, UN-initiated agreements, etc. The seminal works of Malthus, neo-Malthusians, and Cornacopians that pioneered or brought new perspectives into the debate are prioritized for review. The gray literature that has either shaped the debate or has left a lasting effect is included in the study. More literature is reviewed that provides depth in the debate due to empirical data or the authors' distinct understanding of the issue. Other than this author-defined criterion, the method of Cooper (1988) of categorizing advanced review works has shaped this study as a whole. Cooper's taxonomy has six criteria for defining synthesis works: focus, goal, perspective, coverage, organization, and audience. The author's precise definition has helped to decide whether to exclude or include certain literature and focus on the purpose of the study. To limit the number of literature, the theoretical saturation proposed by Glaser and Strauss (1967) and Braun and Clarke (2019) is used.

The selected literature was taken in the process of framework analysis, a variant of the widely popular content analysis, developed by Ritchie and Spencer (1994). It follows the five stages: familiarization, identifying thematic frameworks, indexing, charting, and interpretation and mapping. Due to precise definitions of different stages of data analysis, the method is very efficient in handling large amounts of qualitative data, and it makes the study reproducible and, hence, scientific.

RESULTS AND DISCUSSION

Malthusian Theory of Population Growth

Population and its components have been the subject of discourse from the ancient era to date. Engels (1984) and Frey (2011) have discussed the evidence of the study of population growth in the ancient, medieval, and Renaissance eras. But the main purpose of the demography was

then used to be to keep a record of counts, and growth was never opposed strongly. The most debated theory of population was developed by Malthus (1998/1798) in his book *An Essay on the Principle of Population,* which was published towards the end of the 18th century. In their theory, defined by Dunn (1998) as an anti-current, an enlightenment thinker Malthus (1826) has outlined that a rapidly growing population might face food scarcity since the population could grow in geometrical ratio while food production could grow in arithmetic ratio resulting in Malthusian Trap, the term formulated later on; and in Pebley's interpretation, Malthus's assumption was beyond food—natural resources (1998).

Immediately after the publication of their work, a fierce debate emerged among scholars; most criticized Malthus's theory. To address the criticism, the author republished their book in up to six volumes, incorporating empirical data from different countries and regions. Coale has observed that Malthus was far ahead of his time and has labeled his approach as "surprisingly sophisticated techniques" (1979, p.329). However, critics like De Quency have dismissed Malthus's two types of progression, interpreting it as groundless (1890, as cited in Hofmann, 2013); Hollander has supported De Quency (1992, as cited in Hoffman, 2013). Despite having ample criticism since then to now, Malthus developed one of the most debated theories for two centuries.

After seeing significant population growth in their home country and abroad, Malthus proposed solutions to population control: employ preventive checks to avoid positive checks. Preventive check is intended birth control by delayed marriage and sexual abstinence, and, conversely, positive check is unintended birth control by famine, war, or disease. In Malthus's argument, the two checks work inversely (1826). This theory was popularized by neo-Malthusians in the 20th century, and despite the plethora of criticisms, this tradition continues to date. Lately, Hoffman (2012) has straightly dismissed any possibility of a Malthusian trap. Bolstering Hoffman's idea, Egger et al. (2020) have criticized Malthus for not considering migration, which could have changed the socio-economic dimension of population growth.

Despite having fierce critiques, Malthus's (1998/1798) idea left a deep impact on society, intellectuals, and even in scientific community. As an immediate policy impact, Burger (2020) has counted the first British census in 1801 and the *Poor Law Amendment Act 1834* as an effect of Malthus's writing. The Malthusian idea influenced Darwin to develop the evolutionary theory of biology (Shermer, 2016, as cited in Burger, 2020; Dunn, 1998). Gleditch (2020) has credited Malthus's idea for reviving the neo-Malthusian and environmental movement in the 20th century that shaped the vision to combat one of the biggest issues of this century—climate change. This way, despite having a plethora of criticisms, Malthusian theory stood unrivaled in the past, stands in the present, and potentially in the future.

Revival of Malthusian Theory by Neo-Malthusian Movement

Neo-Malthusians are the scholars of the 20th century who believed in the fundamental theory of Malthus, but unlike Malthus, they preferred contraceptives as a population control measure and broadened the impact of overpopulation in the field of environment. Towards the mid-20th

century, Fairfield Osborn and William Vogt wrote two books, namely *Our Plundered Planet* and *Road to Survival,* respectively, reviving the Malthusian debate in a new form. Written immediately after the Second World War, both books explored the impact of rapid population growth on the natural world. Osborn (1948) has considered four areas that make human life possible on the Earth: land, water, plant life, and animal life, and they have concluded that none of them are left undisturbed by human hands. Vogt (1948) has presented a plethora of data to support their thesis that overpopulation was ultimately leading humanity towards destruction and argued that population control was necessary to prevent environmental destruction.

Vogt (1948) and Osborn's (1948) work provided a ground to redefine the Malthusian proposition in the new context and laid a strong foundation for the neo-Malthusian movement of the 20th century that advocated control of population growth for the sustainability of resources. Desrochers and Haffbauer (2009) have observed that the books were very successful and inspired Paul Ehrlich to write *The Population Bomb*. Chase has stated that they were motivating factors of movements like Zero Population Growth and the Sierra Club (1977, as cited in Desrochers & Haffbauer, 2009). Although the historic population growth was put under scrutiny by neo-Malthusians in a new agenda of environmental destruction, Malthus's famine issue also made equal space in the overpopulation versus resource debate. Paddock and Paddock (1967) and Ehrlich (1968) vocally advocated controlling population to avoid massive starvation. Formers proposed a system, namely the triage system. They have concluded that food crises might be so catastrophic that might cause economic upheavals and revolutions in some of the Asian, African, and Latin American countries.

In 1968, Paul Ehrlich, an American biologist, wrote a book named *The Population Bomb* that continued the traditions set by earlier neo-Malthusians. The book has covered all aspects of the impact of a rapidly growing population on food, air, water, and the overall environment and offered some practical solutions for immediate action. Supported by plenty of numbers, Ehrlich (1968) has argued that the battle of feeding all people was lost by countries because of explosive population growth, and as a consequence, millions of people might die in the decade of the 1970s and 1980s, mostly poor and children. The author has demanded strong population control actions, and to this end, they have proposed methods based on the public's role to pressurize governments. In 2009, Ehrlich and Ehrlich reviewed author's theory, developed four decades ago, and responded to the criticisms. They have considered Ehrlich's achievement to create a world debate to sustain human civilization and define an angle to solve today's major sustainability agendas like environment, food, and energy. As in the case of Malthus, neo-Malthusian Ehrlich also attracted supporters with opponents. One of them is Lam (2011) who has strongly criticized Ehrlich and argued that the world saw the opposite scenario than they predicted.

Rooted in Malthus's assumption, the discourse generated by neo-Malthusians reached every corner of the world (Frey, 2011). Follet (2020) has observed that the antenatal policy promoted by the most populous countries of the world, India and China, was influenced by neo-Malthusian discourse. Neo-Malthusians of the 20th century may have failed to predict the

problem of starvation accurately, but their warning on overpopulation's impact on the environment has proven valid in the face of the climate crisis of this century.

Scientific Debate of the Planetary Limits

While neo-Malthusians were redefining Malthus's theory in the context of historic population growth, the Club of Rome sought to investigate the possible future scenario of resources available for human consumption with computer modeling. The club commissioned a group of scientists to examine the challenges of the world under the leadership of Professor Dennis Meadows. Based on Jay Forrester's model, Meadows's team examined five components related to physical growth on finite planet Earth: population, natural resources, agricultural production, industrial production, and pollution and concluded that in business-as-usual situation, planetary limits would reach somewhere around a century since then resulting in a sudden decline in population and industrial growth (Meadows et al., 1972). To stop such decline, in their book *The Limits to Growth,* Meadows et al. have demanded stable ecological and economic growth. Then, they created a worldwide debate immediately for and against their conclusion and gained sudden popularity. Jackson and Webster (2016) have considered the book as one of the bestsellers of all time in the environment. For those who work and advocate for sustainable development, the proposition of Meadows et al. became a goal (Gardner, 2004). After 20 and 30 years of original publications, they republished their work with updated data, and Meadows et al. (2004) have claimed that their original hypothesis was supported by the data.

For and against debate began after Malthus (1998/1798) persisted in the case of Meadows et al. (1972) also and it continued intensely for the following three decades (Gardner, 2004). Jackson and Webster (2016) have stated that it influenced many environmental and social theorists. Conversely, Smil (2005) has strongly criticized the limits to growth proposition since it was impossible to define Meadows et al. hypothesized distant future of limit. Furthermore, Mikeselle (1995) has concluded that the proposition was meaningless since both world growth and the timeframe of the reserve of natural resources were undefined. Despite criticisms, Meadow et al. provided a scientific ground for the Malthusian and neo-Malthusian propositions and strengthened the population control argument for sustainable resource consumption.

Population as a Resource Debate

Malthus (1998/1798) faced many criticisms for presenting population as a problem undermining its ingenuity. Among the critics, one was a Danish economist, Ester Boserup, who opposed the Malthusian theory with available evidence and asserted the proposition of the human population as a resource that has been labeled by Darity (1980) as a counter-Malthusian theory. Through *The Conditions of Agricultural Growth*, the Boserup (1965) has reversed the causal direction of the Malthusian proposition and has claimed that population density or overpopulation leads to agricultural intensity (Turner & Fischer-Kowalski, 2010). They have emphasized growing population is beneficial for economic development rather than a stagnant or declining population. The author has strongly criticized neo-Malthusians for

undermining the dynamic theory of land use. Boserup (1976) has considered the role of technology in food production and meeting other basic needs of the growing population; however, Fernihough has refuted Boserup's idea (2012). Boserup has left many legacies in the field of development and scientific research, and Fischer-Kowalski et al. (2013) have recognized this. Turner and Fischer-Kowalski (2010) have stated that Boserupian theory influenced the World Bank's work. Contrastingly, Grigg (1979) has criticized Boserup for being confined to pre-industrial society and undermining development after the industrial era, while Ahlburg and Cassen (2008) have criticized them for focusing only on long-term solutions, ignoring immediate problems.

In the following decade of their work, Boserup (1965) was strongly supported by the renewed logic of human population as a resource by an American business administration professor Julien Simon. Simon (1981, 1996) has argued that population growth is a source of economic growth and development, unlike argued by Malthus and neo-Malthusians have argued as a problem. They have claimed that human beings are the ultimate resource, so education should be the top priority to enhance the talent of people for discoveries. Ahlburg (1998) has observed that Simon's proposition is based on the argument that population growth has a positive impact in the long term than in the short term. In conclusion, Boserup (1965) and Simon (1996) have strongly refuted the Malthusian proposition with their counterproposition. To date, none of the sides has been accepted or refuted by the scholarly community. Turner (2014) has labeled the debate that came between Paul Ehrlich and Julian Simon at a personal level as a Cassandra-Cornucopian debate. Although the debate of population growth versus resource consumption is inconclusive, the sustainability agenda has created reasonable space in this debate.

UN-Initiated Sustainability Debate

The concerns of overpopulation that were limited to the text of books and journals started to turn towards action when the UN organized a world conference in 1972 that concluded the rapid population growth was causing a serious threat to the environment (UN, 1972). Afterwards, the World Commission on Environment and Development (1987) defined sustainable development formally and demanded take necessary steps be taken to control the rapid population growth. To make sustainable development a global goal, the Rio Declaration has outlined practical ways of adopting sustainable development agendas (UN, 1992). It obligated countries to develop environmental and demographic policies. From Rio+20, the United Nations General Assembly (2013) defined the action to be taken by countries to save the Earth's ecosystem, which later on turned into 17 goals, namely Sustainable Development Goals (SDGs) and 169 targets. To be implemented from 2016 to 2030, the SDGs are the latest international initiative to make the planet Earth liveable. This way, the world community came to a consensus under the UN on the agenda of sustainability to save the natural resources and life-supporting system of the Earth.

Despite having noble purposes, SDGs have been the subject of criticism, and scholars have proposed different solutions to make them result-oriented. Kickbusch and Alakija (2023) have stated lack of political will and funding are the challenges to meeting the SDGs. Similarly,

Schmidt-Traub et al. (2017) have concluded that countries are left far behind in meeting the SDGs and they need deep transformation and effective monitoring mechanisms. Skipper (2023) has warned that Goal 11 of the SDGS, i.e., sustainable cities, could be missed out by the countries; to achieve this goal, Hunter et al. (2023) have proposed to create green and blue spaces in the cities. Bastin et al. (2019) have discussed that tree plantations benefit by capturing carbon from the atmosphere and increasing the aesthetic values of the cities. Despite having criticisms, SDGs are evolving to address the complex climate crisis issue and the simultaneous problem associated with an expanding population.

Stopping the emission of GHGs in the atmosphere and sequestering carbon from the atmosphere are the two solutions that avoid the climate crisis. To this end, Lee et al. (2022) have proposed the option of carbon utilization. Meanwhile, Kittner et al. (2017) have emphasized advances in clean energy battery technology and solar and wind power to minimize fossil fuel consumption. Considering the low-income countries, Scovronick et al. (2017) and Commonor (1993) have concluded that population growth is the ultimate source of GHG emissions, and the current population should seek solutions to save the future population.To sum up, control of the still growing population and its actions to minimize GHG emissions is the direction for the coming years and decades.

In recent years, another much-debated issue is a circular economy that is termed doughnut economics by Raworth (2017). The current linear economy is consumption-focused; Keyfitz (1991) and Dasgupta and Ehrlich (2013) have criticized this economy due to its environmental consequences. To counter the linear economy circular economy is emerging as a new paradigm, and it demands that nothing goes to waste. Control of food waste (Handayati and Widyanata, 2024) and sustainable plastic management (Huang et al., 2022) are some actions to make the circular economy work. Currently, green growth or degrowth is a hot topic among scholars that are related to resource consumption; the former is supported by Barbier (2012) while the latter is supported by Sandberg et al. (2019). Sustainable agriculture is another area that has been widely debated; Velten et al. (2015) have emphasized in multidisciplinary approach to understanding agriculture. Though slow, the sustainability agenda is going through scrutiny and making progress; eventually, it is the agenda that ensures living on the planet Earth is possible.

CONCLUSION

Population growth and its impact on resources have been debated for over two centuries. When Malthus proposed his theory that rapid population growth is a problem for feeding people, it created a fiery debate then. This tradition was continued by neo-Malthusians in the 20th century. Malthus, with the limited information available then, mostly focused on the possible food scarcity that overpopulation may cause, while neo-Malthusians discussed further about implications of overpopulation on the natural world. Meadows and their team added value to Malthusian and neo-Malthusian theory and provided scientific grounds to control the population. On the other hand, Boserup and Simon have argued that population growth should not be seen as a problem rather as a resource that could be used for the prosperity of human beings. Though both sides have presented their logic strongly, the world community is

gradually pursuing the path of sustainability, which is evidenced by the sustainable development approach initiated by the UN that is approved by most of the countries of the world. The sutainable development agenda is not free of criticism, but it is finding its way, and circular economics might be the new paradigm that paves the way for that. More empirical studies in national and local contexts will help to make the population growth versus resource and sustainability debate meaningful.

REFERENCES

Ahlburg, D. A. (1998). Julian Simon and the population growth debate. *Population and Development Review, 24*(2), 317–327. https://doi.org/10.2307/2807977

Ahlburg, D. & Cassen, R. (2008). Population and development. In A. K. Dutt & J. Ros (Eds.), *International handbook of development economics* (pp. 316–327). Edward Elgar.

Barbier, E. B. (2012). The green economy post Rio+20. *Science, 338*(6109), 887–888. https://doi.org/10.1126/science.1227360

Braun, V. & Clarke, V. (2019): To saturate or not to saturate? Questioning data saturation as a useful concept for thematic analysis and sample-size rationales. *Qualitative Research in Sport, Exercise and Health, 13*(2), 201– 216. https://doi.org/10.1080/2159676X.2019.1704846

Bastin, J., Finegold, Y., Garcia, C., Mollicone, D. O., Rezende, M., Routh, D., Zohner, C. M., & Crowther, T. W. (2019). The global tree restoration potential. *Science, 365*(6448), 76–79. https://doi.org 10.1126/science.aax0848

Boserup, E. (1965). *The conditions of agricultural growth: The economics of agrarian change under population pressure.* Goerge Allen & Unwind Ltd.

Boserup, E. (1976). Environment, population, and technology in primitive societies. *Population and Development Review, 2*(1), 21–36. https://doi.org/10.2307/1971529

Burger, J. R. (2020). Malthus on population. In T. K. Shackelford & V. Weekes-Shackelford (Eds.), *Encyclopedia of Evolutionary Psychological Science* (pp. 1–10). https://doi.org/10.1007/978-3-319-16999-6_1267-1

Coale, A. J. (1979). The use of modern analytical demography by T.R. Malthus. *Population Studies, 33*(2), 329–332. https://doi.org/10.2307/2173537

Commoner, B. (1993). Population, development and the environment: Trends and key issues in the developed countries. *International Journal of Health Services, 23*(3), 519–539. https://doi.org/10.2190/TQ24-K0V6-UNHY-QBA1

Cooper, H. (1988). Organizing knowledge syntheses: A taxonomy of literature review. *Knowledge in Society, 1*(104), 104-126. https://doi.org/10.1007/BF03177550

Darity, W. A. (1980). The Boserup theory of agricultural growth: A model for anthropological economics. *Journal of Development Economics, 7* (2), 137–157. https://doi.org/10.1016/0304-3878(80)90001-2

Dasgupta, P. S. & Ehrlich, P. R. (2013). Pervasive externalities at the population, consumption, and environment nexus. *Science, 340*(6130), 324–328. https://doi.org/10.1126/science.1224664

Dunn, P.M. (1998). Thomas Malthus (1766-1834): Population growth and birth control. *Archives of Disease in Childhood –Fetal and Neonatal Edition. 78* (1), 76–77. https://doi.org/10.1136/fn.78.1.f76

Desrochers, P. & Haffbauer, C. (2009). The post war intellectual roots of the Population Bomb. Fairfield Osborn's 'Our Plundered Planet' and Willian Vogt's 'Road to Survival' in retrospect. *The Economic Journal of Sustainable Development, 1*(3), 37–61. https://www.researchgate.net/publication/253375313_The_Post_War_Intellectual_Roots_of_the_Population_Bomb_Fairfield_Osborn's_'Our_Plundered_Planet'_and_William_Vogt's_'Road_to_Survival'_in_Retrospect

Egger, C., Haberl, H., Erb, K. & Gaube, V. (2020). Socio-ecological trajectories in a rural Austrian region from 1961 to 2011: Comparing the theories of Malthus and Boserup via systemic-dynamic modeling. *Journal of Land Use Science, 15*(5), 652–672, https://doi.org/10.1080/1747423X.2020.1820593

Ehrlich, P.R. (1968). *The population bomb*. Ballatine Books.

Ehrlich, P. R. & Ehrlich, A. H. (2009). The population bomb revisited. *The Electronic Journal of Sustainable Development, 1*(3).https://mahb.stanford.edu/wp-content/uploads/2012/08/2009_EhrlichPB-REVISIT-1.pdf

Engels, D. (1984). The use of historical demography in ancient history. *The Classical Quarterly 34* (2), 386–393. https://doi.org/10.2307/638296

Fernihough, A. (2012). Malthusin dynamics in a diverging Europe: Northern Italy, 1650–1881. *Demography, 50*(1), 311–332. https://doi.org/10.1007/s13524-012-0141-9

Fischer-Kowalski, M., Reenberg, A., Schaffartzik, A. & Mayer, A. (Eds.). (2013). Preface. *Ester Boserup's legacy on sustainability: Orientation for contemporary research* (Vol. 4, pp. v-vii). Springer.

Follet, C. (2020). *Neo-Malthusianism and coercive population control in China and India overpopulation: Concerns often result in coercion*. Cato Institute.

Frey, M. (2011). Neo-Malthusianism and development: Shifting interpretations of a contested paradigm. *Journal of Global History 6*(1),75–97. https://doi.org/10.1017/S1740022811000052

Gardner, T. (2004). Limits to growth? – A perspective on the perpetual debate. *Environmental Sciences, 1*(2), 121–138. https://doi.org/10.1080/15693430512331342592

Glaser, B. G. & Strauss, A. L. (1967). *The discovery of grounded theory: Strategies for qualitative research.* Aldine.

Gleditsch, N. P. (2021). This time is different! Or is it? NeoMalthusians and environmental optimists in the age of climate change. *Journal of Peace Research, 58*(1), 177–185. https://doi.org/10.1177/0022343320969785

Grigg, D. (1979). Ester Boserup's theory of agrarian change: A critical review. *Progress in Human Geography, 3*(1), 64–84. https://doi.org/10.1177/030913257900300103

Handayati, Y., & Widyanata, C. (2024). Efective food waste management model for the sustainable agricultural food supply chain. *Sceintific Reports, 14*(1), Article 10290. https://doi.org/10.1038/s41598-024-59482-w

Hoffman, K. (2012). Beyond the principle of population: Malthus's essay. *The European Journal of the History of Economic Thought, 20* (3), 399–425. https://doi.org/10.1080/09672567.2012.654805

Huang, S., Wang, H., Ahmad, W. Ahmad, A., Vatin, N. I., Mohamed, A. M., Deifalla, A. F., & Mehmood, I. (2022). Plastic waste management strategies and their environmental aspects: A scientometric analysis and comprehensive review*, International Journal of Environmental Research and Public Health,19*(8), Article 4556. https://doi.org/10.3390/ijerph19084556

Hunter, R. F., Nieuwenhuijsen, M., Fabian, C., Murphy, N., O´Hara, K., Rappe, E., Sallis, J. F., Lambert, E. V., Sarmiento, O. L., Sugiyama, T., & Kahlmeier, S. (2023). Advancing urban green and blue space contributions to public health. *The Lancent Public Health, 8*(9), 735–742. https://doi.org/10.1016/S2468-2667(23)00156-1

Jackson, T. & Webster, R. (2016). *Limits revisited: A review of the limits to growth debate.* All Party Parliamentary Group, UK. https://www.researchgate.net/publication/332655753_Limits_Revisited-A_review_of_the_limits_to_growth_debate_A_report_to_the_All-Party_Parliamentary_Group_on_LImits_to_Growth

Keyfitz, N. (1991). Population and development within the ecosphere: One view of the literature. *Population Index, 57*(1), 5–22. https://doi.org/10.2307/3643719

Kickbusch, I. & Alakija, A. (2023). The Sustainable Development Goals should be reset to prioritize poverty, health, and climate. *Nature Medicine, 29*, 2399–2401. https://doi.org/10.1038/s41591-023-02546-7

Kittner, N., Lill, F., & Kammen, D. M. (2017). Energy storage deployment and innovation for the clean energy transition. *Nature Energy,2*, Article *2*17125. https://doi.org/10.1038/nenergy.2017.125

Lam, D. (2011). *How the world survived the population bomb: Lessons from 50 years of extraordinary demographic history. Demography, 48*(4), 1231–1262. https://doi.org/10.1007/s13524-011-0070-z

Lee, J. S., Jung, J., Roh, K., Heo, S., Lee, U., & Lee, J. H. (2022). Risk-based uncertainty assessment to identify key sustainability hurdles for emerging CO2 utilization technologies. *Green Chemistry, 24*, 4588–4605. https://doi.org/10.1039/d2gc00514j

Malthus, T. (1998*). An essay on the principle of, as it affects the future improvement of society with remarks on the speculations of Mr. Godwin, M. Condorcet, and other writers* (1st ed). Electronic Scholarly Publishing Project. (Original work published 1798). http://www.esp.org/books/malthus/population/malthus.pdf

Malthus, T. (1826). *An essay on the principle of population; or a view of its past and present effects on human happiness; with an enquiry into our prospects respecting the future removal or mitigation of the evils which it occasions* (6th ed., Vol I). C. Roworth.

Meadows, D. H., Meadows, D. L., Randers, J., & Behrens, W. W. (1972). *The limits to Growth: A report for the Club of Rome's project on the predicament of mankind*. Universe Books.

Meadows, D., Randers, J., and Meadows, D. (2004). *Limits to growth: The 30-year update*. Earthscan.

Mikeselle, R. F. (1995). The limits to growth: A reappraisal. *Resource Policy, 21*(2), 127–131. https://doi.org/10.1016/0301-4207(95)00055-U

Osborn, F. (1948). *Our plundered planet*. Little, Brown and Company.

Paddock, W. & Paddock, P. (1967). *Famine 1975! America's decision: Who will survive?* Little, Brown and Company.

Pebley, A. R. (1998). Demography and the environment. *Demography, 35*(4), 377–389. https://doi.org/10.2307/3004008

Raworth, K. (2017). *Doughnut economics: Seven ways to think like a 21st-century economist*. Chelsea Green Publishing.

Ritchie, J. & Spencer, L. (1994). Qualitative data analysis for applied policy research, In A. Bryman & R. G. Burgess (Eds.), *Analyzing qualitative data*,(pp.173–194). Routledge.

Sandberg, M., Klockars, K., & Wilén, K.(2019). Green growth or degrowth? Assessing the normative justifications for environmental sustainability and economic growth through critical social theory. *Journal of Cleaner Production, 206*, 133–141. https://doi.org/10.1016/j.jclepro.2018.09.175

Schmidt-Traub, G., Kroll, C., Teksoz, K., Durand-Delacre, D., & Sachs, J. D. (2017). National baselines for the Sustainable Development Goals assessed in the SDG Index and Dashboards. *Nature Geoscience, 10*, 547–555. https://doi.org/10.1038/ngeo2985

Scovronick. N., Budolfson, M. B., Dennig, F., Fleurbaey, M., Siebert, A., Socolow, R. H., Spears, D. & Wagner, F. (2017). Impact of population growth and population ethics on climate change mitigation policy. *PNAS, 114*(46), 12338–12343. https://doi.org/10.1073/pnas.1618308114

Skipper, M. (2023). A sustainable future for the world's cities [Editorial]. *Nature, 620*, 697.

Simon, J. L. (1981). *The ultimate resource*. Princeton University Press.

Simon, J. L. (1996). *The ultimate resource 2*. Princeton University Press.

Smil, V. (2005). Limits to growth revisited: A review essay. *Population and Development Review, 31* (1), 157–164**.** https://doi.org/10.1111/j.1728-4457.2005.00057.x

Turner, B. L. (2014). The Bet: Paul Ehrlich, Julian Simon, and our gamble over the Earth's future. *The AAG Review of Books, 2*(1), 1–3. https://doi.org/10.1080/2325548X.2014.894410

Turner, B. L. & Fischer-Kowalski, M. (2010). Ester Boserup: An interdisciplinary visionary relevant for sustainability. *PNAS, 107*(51), 21963–21965. https://doi.org/10.1073/pnas.1013972108

United Nations (1972). *Declaration of the United Nations conference on the human environment.* https://www.ipcc.ch/apps/njlite/srex/njlite_download.php?id=6471

United Nations. (1992). *Agenda 21*. https://sustainabledevelopment.un.org/content/documents/Agenda21.pdf

United Nations. (2022). *World population prospects 2022*. https://www.un.org/development/desa/pd/sites/www.un.org.development.desa.pd/files/wpp2022_summary_of_results.pdf

United Nations General Assembly. (2013). *The future we want*. https://sustainabledevelopment.un.org/content/documents/733FutureWeWant.pdf

Velten, S., Leventon, J. Jager, N. & Newing, J. (2015). What is sustainable agriculture? A systematic review. *Sustainability, 7*(6), 7833-7865. https://doi.org/10.3390/su7067833

Vogt, W. (1948). *Road to survival*. William Sloane Associates Inc.

World Commission on Environment and Development. (1987). *Our common future*. http://www.un-documents.net/our-common-future.pdf