

# TOWARDS A SUSTAINABLE ECONOMY

Miriam Spalatro <sup>1</sup>  
Giulio Mario Cappelletti <sup>2</sup>

DOI: <https://doi.org/10.31410/ERAZ.2019.229>

---

**Abstract:** *This paper discusses the main criticisms and alternative proposals advanced by several scholars regarding the market economy-based development model. The literature review highlights a significant and growing awareness of environmental issues and strong criticism of the current economic development model, which does not account for limited natural resources and Earth's capacity for additional pollutants.*

**Keywords:** *Sustainability, Bio economy, Circular economy.*

---

## 1. INTRODUCTION

The current economic development model is based on a market economy in which decisions about production, distribution, consumption and investment are made by various players acting on the markets in accordance with the law of supply and demand. In some modern economies, governments also intervene on a limited basis for reasons of social justice. Such cases are considered mixed economies.

However, the current system has revealed its limitations regarding human beings and the environment.

In recent decades, awareness of limited resource availability, environmental degradation and social inequalities has led many economists, environmentalists and government officials to re-think their economic and social policies.

Many scholars understand that the development model adopted during the Industrial Revolution is no longer globally sustainable. This model, which is based on the uncontrolled consumption of natural resources and the pursuit of profit at any cost, and which fails to account for the quality of life of Earth's inhabitants, has become increasingly globalised.

The linear economic model adopted so far is characterised by mass production and limited benefits from accumulation of wealth available only to some. Such outcomes are accomplished through the continuous exploitation of resources without concern for their exhaustion.

This model has led to the large-scale pollution of the biosphere in a relatively short period of time. This is believed to be the basis of the climate change phenomena observed in recent years.

Scholars, politicians and environmentalists have raised a number of doubts and questions about environmental issues [1].

---

<sup>1</sup> University of Foggia, Department of Economics, via Caggese, 1 – 71122 Foggia, Italy

<sup>2</sup> University of Foggia, Department of Economics, via Caggese, 1 – 71122 Foggia, Italy

As a result, alternative approaches to the market economy have emerged that go beyond the sole problem of economic growth and can better respond to global problems, such as the climate crisis, pollution, resource scarcity, world hunger and immigration.

## 2. THE SCHOOLS OF THOUGHT

The modern economy emerged at the end of the 18th century with the classical economics of Adam Smith, whose main themes were production and growth [2]. However, in 1798 Thomas Malthus, in his paper “An essay of the principle of the population as it affects the future improvement of society”, discussed economic stagnation due to excessive demographic increases (geometric population growth) that lead to the cultivation of ever less fertile lands, resulting in insufficient food supplies (which instead grow arithmetically) [3]. In the 1800s David Ricardo, who co-founded the science of political economy with Smith, resumed Malthus’ discussion with the “law of diminishing returns”, a problem related to the limited availability of resources. Ricardo highlights that the availability of natural resources is limited and there is a limit to be respected that cannot be exceeded [4]. In the mid-1800s, even John Stuart Mill [5] and William Stanley Jevons [6] highlighted the scarcity and consequent exhaustion of natural resources.

In the late 1930s, even more substantial doubts were introduced by John Maynard Keynes, who, inspired by Malthus, proposed a new approach to the economy by focusing on social aspects (welfare). His thinking differed from previous economic approaches because it was based on liberalism “at all costs” and laid the foundations for a new macroeconomy [7].

In the 1960s, the economist Kenneth Boulding combined ecology and economics, two previously unrelated concepts, to create the new science of environmental economics. To better explain the problem of physical limits, he compared Earth to a spaceship located in the space of the universe, from which it acquires limited resources and where it disposes of its waste [8]. Later, in the face of environmental damage caused by economic activities, while not questioning the fundamental principles of the liberal neoclassical economy, some charging economic compensations for environmental damage was proposed. The Polluter Pays principle, sanctioned by the OECD in 1972 [9], constitutes an appropriate corrective measure for the current system because it incorporates environmental costs into production costs. According to some, however, such compensation cannot heal the damage caused to the biosphere by human activities. For example, no economic compensation can reverse the extinction of a living species [1].

In the 1970s, Nicholas Georgescu-Roegen, a Romanian economist, founded bioeconomics, or ecological economics, and proposed the principle of degrowth as a counterpoised response to the neoliberal or neoclassical economy. Georgescu-Roegen and other bioeconomists claim it is no longer possible to maintain current consumption levels and that it is necessary to change our development model natural resources management. Until then, human beings had unshakable confidence in progress as the only solution to problems, including environmental ones, so people never bothered to seek current solutions because they trusted that future technologies would solve all problems. Furthermore, Georgescu-Roegen introduced the idea that economics must account for the laws of physics. He proposed decreasing production and consumption in rich countries, not in terms of renunciation, but to facilitate improvement. Referring in particular to the second law of thermodynamics, he affirmed that resources, once used, inevitably degrade into waste and are no longer usable in production processes, so it is necessary to reduce them or recover them for use as secondary materials in other production processes [10].

At the same time, a Club of Rome report (The Limits to Growth, also called the Meadows Report) described economic growth as a result of the scarcity of raw materials, pollution and loss of biodiversity. “Zero growth” was proposed as a solution [11] – [12] – [13] – [14].

A similar approach was proposed by René Passer, in his book „l’Economie et le vivant” of 1979 which states that the economy must respect the laws of nature [15] – [16].

In Italy, the main supporters of environmental awareness were Giorgio Nebbia and Laura Conti.

In line with these concepts, in 1977, a study on sustainable social development, commissioned by President Jimmy Carter (Global 2000), envisioned a population increase and, consequently, increased vulnerability and serious conflicts between populations over resources and the environment [17].

Following a different approach, Paul Crutzen et al. [18] highlighted the profound changes caused by humans to the planet’s physical and biological systems from a geological point of view and introduced the concept of the Anthropocene era, or the “Era of Man”, a concept which other scientists also investigated. Crutzen highlighted the problem of ongoing changes that represent a true human-induced planetary emergency: a crisis generated by intense, rapid introduction of pollutants into the biosphere. Crutzen paid particular attention to the increasing concentration of greenhouse gases in the atmosphere, especially carbon dioxide. The main cause of the climate crisis is the use of fossil fuels such as coal, oil and natural gas as energy sources. This practice has grown considerably since the Industrial Revolution. Earth is becoming much warmer than at the beginning of human civilisation, and this process grows exponentially, generating ever more unpredictable effects, such as climate disruption, on human activities. Human beings are losing the ability to foresee and prevent environmental disruptions, and this represents a risk for the entire planet.

These critical points are also highlighted by Dilip Konderpudi and Ilya Prigogine [19].

Rachel Carson argued that human beings are losing the ability to foresee and prevent and this represents a risk for the entire planet. [20].

In support of these global issues, authoritative researchers listed and measured the nine fundamental planetary boundaries to keep Earth’s system in balance and enable human beings to survive: climate change, oceanic acidification that threatens marine species, stratospheric ozone depletion and the consequent lower protection from harmful ultraviolet radiation, atmospheric aerosol that damages the lungs, biogeochemical flows’ interference with nitrogen and phosphorus cycles that causes eutrophication, excessive exploitation of global freshwater resources, change in land use and deforestation, rate of biodiversity loss and chemical pollution caused mainly by industrial activities. Three of these limits (climate change, rate of biodiversity loss and biogeochemical flows’ interference with nitrogen and phosphorus cycles) have already been exceeded. Therefore, a profound transformation of the economic and productive system is urgently needed [21].

Some economists, taking up the proposals of Goergescu-Roegen, go beyond opposing the market economy and suggest decreasing production. This is sometimes called sustainable degrowth or happy degrowth. This concept criticises economic indicators such as the gross domestic product (GDP) as measures of economic well-being. Instead, this model, formalised by the

philosopher Serge Latouche, foresees development based on an economic strategy focused on environmental problems and local production [22]. Proponents of degrowth criticise modern societies because their massive consumption of non-renewable resources does not account for the environmental damage caused by their growth. In addition, they neglect social welfare (social, family relationships, democracy, welfare, etc.) and environmental (air quality, biodiversity, etc.) factors and distribute the world's resources unequally. Supporters of degrowth propose a model based on social equity, sustainability and ecological footprint [1].

In the 1970s, environmental issues came to the attention of governments in a detailed and specific manner at world conferences. In June 1972, the United Nations conference on the “human environment” was held in Stockholm [23] and was followed by conferences on population (Bucharest 1974) [24], habitat (Vancouver 1976, Cairo 1984, Cairo 1994 and Istanbul 1996) [25]-[26]-[27]-[28], water (Mar del Plata 1977) [29], desertification (Nairobi 1977 and Paris 1994) [30]-[31] and “environment and development”(Rio de Janeiro 1992) [32]. These conferences were followed by various attempts to reach agreements to stop or slow climate change and the loss of biodiversity. The World Summit on Social Development was held in Copenhagen in 1995 [33], and in 2002 [34], the United Nations organised the Johannesburg conference on sustainable development [35], which was followed by a 2012 conference on the same theme in Rio de Janeiro [36]. Since 1995, the United Nations has organised a climate change conference every year [37]. The most important of these was the 1997 Kyoto conference, at which an important protocol was signed [38].

Today's globalised world must change. In 2015, the United Nations approved the 2030 agenda for sustainable development, whose 17 goals form a universal scope, divided into 169 specific targets, –or Sustainable Development Goals (SDGs) that all 193 member states must undertake to end poverty and inequality and achieve social and economic development. The *Sustainable Development Report* is the first worldwide study to assess where each country stands with regard to achieving the Sustainable Development Goals. The SDGs represent the continuation of the 2015 Millennium Development Goals (MDGs) completed in 2015 [39].

Religions have also addressed the problem of ecology. Pope Francis, in his encyclical “Laudato sii”, published May 24, 2015, highlights all of our planet's environmental problems with a Christian vision. He proposes strengthening the dialogue with all actors (economic, political, social and religious) and suggests a new reflection on our beliefs and lifestyles toward greater respect for the environment. He also talks about poverty, economic and social inequalities and the poorer classes and populations, which often suffer from the environmental degradation caused by richer countries [40].

Even the Dalai Lama has often addressed the problem of environmental degradation. He has said that the environment is a gift and that we must respect the natural cycles, and he has highlighted the environmental problems caused by humans, particularly climate change [41].

Numerous references to respecting the environment are found in Islam (Corano Sunna, Hadit) and among scholars of Islamic environmentalism, as well as in the precepts of Eastern animist religions [42].

Since 1986 until today there are some meetings in Assisi, Italy, representatives of Christianity, Judaism, Islam, Buddhism, Hinduism, Baha'i, Jainism and Sikhism, together with representatives of the World Wide Fund for Nature (WWF), presented a statement on the principles of their religions in relation to the environment and ecology [43].

### 3. CONCLUSION

Economic rules can no longer be dictated solely by the market because the planet's variable physical limits play a decisive role which must be taken into account. It is necessary to change the current development model because nature cannot maintain the biosphere's balance independently. Nature's historical capacity to regenerate itself is now influenced by human beings, who must take this into account for their own survival. The current development model cannot guarantee uncontrolled growth due to the scarcity of resources and worsening environmental degradation. Even traditionally "non-economic" natural resources now have a price. For example, even air is not free; it has a market, as well as global rules that must be established and respected (for example, emissions trading).

This paper illustrated the doubts that have arisen among many factions since the emergence of the modern economy. These doubts have grown as the use of resources has become more difficult and led to real market failures, such as the 1929 crisis, the 1973 oil crisis and the 2008 derivatives bubble. Today, human beings influence important natural cycles worldwide. Many choices are beyond the reach of national governments and require a common international effort to which we must respond with new and global power centres that support a more critical economy based on respect for human beings and the environment.

### ACKNOWLEDGEMENT

We dedicate this paper to Giorgio Nebbia, a distinguished scholar of ecology, died recently.

### REFERENCES

- [1] Nebbia, G. (2014) *Storia dell'ambiente e dell'ambientalismo 1970-2013*, I Quaderni di Altrionovecento, 4, Fondazione Luigi Micheletti, Brescia (Italy).  
<https://www.peacelink.it/ecodidattica/docs/5053.pdf>
- [2] Smith A. (2007) *An Inquiry into the Nature and Causes of the Wealth of Nations*. Edited by Soares S.M. Meta Libri Digital Library, 29 May 2007.  
[https://www.ibiblio.org/ml/libri/s/SmithA\\_WealthNations\\_p.pdf](https://www.ibiblio.org/ml/libri/s/SmithA_WealthNations_p.pdf)
- [3] Malthus, T.S. (1826) *Essay on the principle of population*. Vol. 1, John Murray, London. (Great Britain).  
[http://lf-oll.s3.amazonaws.com/titles/312/0093.01\\_Bk.pdf](http://lf-oll.s3.amazonaws.com/titles/312/0093.01_Bk.pdf)
- [4] Ricardo, D., (1817) *On the Principles of Political Economy and Taxation*, John Murray, London (Great Britain).  
<https://socialsciences.mcmaster.ca/econ/ugcm/3113/ricardo/Principles.pdf>
- [5] Mill, J.S. (1965) *Principles of Political Economy*. Vol. 1, University of Toronto Press, Routledge & Kegan Paul; Toronto (Canada).  
<http://files.libertyfund.org/files/102/0223.02.pdf>  
[https://ebooks.adelaide.edu.au/m/mill/john\\_stuart/m645p/preface.html](https://ebooks.adelaide.edu.au/m/mill/john_stuart/m645p/preface.html)
- [6] Jevons, W.S. (1905) *The Principles of Economics*, MacMillan, London (Great Britain).  
[https://mises.org/sites/default/files/The%20Theory%20of%20Political%20Economy\\_2.pdf](https://mises.org/sites/default/files/The%20Theory%20of%20Political%20Economy_2.pdf)
- [7] Keynes J.M. (1936) *The General Theory of Employment, Interest and Money*, Macmillan Cambridge University Press, for Royal Economic Society, New York (U.S.A.).  
<https://www.marxists.org/reference/subject/economics/keynes/general-theory/>

- [8] Boulding, K. (1966) *The Economics of the Coming Spaces Hip Earth*. In Environmental Quality in a Growing Economy. Johns Hopkins Press, Baltimore (U.S.A.).  
[http://arachnid.biosci.utexas.edu/courses/THOC/Readings/Boulding\\_SpaceShipEarth.pdf](http://arachnid.biosci.utexas.edu/courses/THOC/Readings/Boulding_SpaceShipEarth.pdf)
- [9] Organisation for Economic Co-operation and Development (OECD) (1992), *The Polluter-Pays Principle*, OECD Analyses and Recommendations, OCDE/GD (92)81.  
[http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=OCDE/GD\(92\)81&docLanguage=En](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=OCDE/GD(92)81&docLanguage=En)
- [10] Georgescu-Roegen N. (1971) *The entropy law and the economic process*, Harvard University Press, Cambridge (U.S.A.).  
[http://college.holycross.edu/ej/Volume12/V12N1P3\\_25.pdf](http://college.holycross.edu/ej/Volume12/V12N1P3_25.pdf)
- [11] Meadows, D.H., Meadows, D.L.; Randers, J.; Behrens W.W. (1972) *The Limits to Growth*, Universe Book, New York (U.S.A.).  
<http://www.donellameadows.org/wp-content/userfiles/Limits-to-Growth-digital-scan-version.pdf>
- [12] Meadows, D.H., Meadows, D.L., Randers, J. (1992) *Beyond the limits: Confronting Global Collapse, Envisioning a Sustainable Future*, Chelsea Green Publishing, Vermont (U.S.A.).
- [13] Meadows, D.H., (1999) *Leverage Points Places to Intervene in a System*. The Sustainability Institute, Hartland (U.S.A.).  
[http://donellameadows.org/wp-content/userfiles/Leverage\\_Points.pdf](http://donellameadows.org/wp-content/userfiles/Leverage_Points.pdf)
- [14] Meadows, D.H., Meadows, D.L.; Randers, J. (2004) *Limits to Growth: The 30-Year Update*, Earthscan, London (Great Britain)  
<https://books.google.it/books?id=gU7h7UccUJ8C&printsec=frontcover#v=onepage&q&f=false>
- [15] Passet, R. (1979) *L'économique et le vivant* Petites éditions Payot, Paris (France).
- [16] Passet, R. (2000) *L'illusion néo-libérale*, Flammarion, Paris (France).
- [17] Barney, G.O. Study Director, (1980) *The Global 2000 Report to the President*, US Government Printing Office, Washington, DC. (U.S.A.).  
<https://pdfs.semanticscholar.org/a311/98d9e446bca1b1286109ad37db96cc8c34b5.pdf>
- [18] Crutzen, P.J., Stoermer, E.F. (2000) *The "Anthropocene"* IGBP Newsletter, No. 41.  
<http://www.igbp.net/download/18.316f18321323470177580001401/1376383088452/NL41.pdf>
- [19] Kondepudi D., Prigogine I. (1998) *Modern Thermodynamics*, John Wiley & Sons, Hoboken (U.S.A.).  
[http://www.fulviofrisone.com/attachments/article/412/kondepudi-prigogine\\_modern\\_thermodynamics.pdf](http://www.fulviofrisone.com/attachments/article/412/kondepudi-prigogine_modern_thermodynamics.pdf)
- [20] Carson, R., (1962) *Silent Spring*, Houghton Mifflin Company, Boston (U.S.A.).  
[http://library.uniteddiversity.coop/More\\_Books\\_and\\_Reports/Silent\\_Spring-Rachel\\_Carson-1962.pdf](http://library.uniteddiversity.coop/More_Books_and_Reports/Silent_Spring-Rachel_Carson-1962.pdf)
- [21] Rockström, J., Steffen, W., Noone, K., Persoon, A., Stuart Chapin F., Lambin, E.F., Lenton T.M. et al., (2009) *A Safe Operating Space for Humanity*, Nature 461(24), pp. 472-475  
[https://www.fs.fed.us/pnw/pubs/journals/pnw\\_2009\\_rockstrom002.pdf](https://www.fs.fed.us/pnw/pubs/journals/pnw_2009_rockstrom002.pdf)
- [22] Latouche, S. (2001) *La déraison de la raison économique*, Bibliotheque Albin Michel Economie, Paris (France).
- [23] United Nations (1972) *Report of the United Nations Conference on the Human Environment*, A/CONF.48/14/Rev.1, 5-16 June 1972, Stockholm (Sweden).  
<http://www.un-documents.net/aconf48-14r1.pdf>
- [24] United Nations (1972) *World Conference on Population*, Bucharest (Romania).  
<https://www.unfpa.org/events/world-conference-population>

- [25] United Nations (1976) *The Vancouver Declaration of Human Settlements*, Vancouver (Canada).  
[http://mirror.unhabitat.org/downloads/docs/The\\_Vancouver\\_Declaration.pdf](http://mirror.unhabitat.org/downloads/docs/The_Vancouver_Declaration.pdf)Vancouver 1976
- [26] United Nations (1984) *International Conference on Population and Development (ICPD) II Cairo* (Egypt).  
<https://www.unfpa.org/icpd>
- [27] United Nations (1994) *International Conference on Population and Development (ICPD) II Cairo* (Egypt).  
<https://www.un.org/popin/icpd2.htm>
- [28] United Nations (1996) *Report of the United Nations Conference on Human Settlements (Habitat II)*, A/CONF.165/14. 3-14 June 1996. Istanbul (Turkey).  
<http://www.un-documents.net/aconf165-14.pdf>
- [29] United Nations (1977) *United Nations Conference on Water*, Mar del Plata (Argentina).  
[https://www.who.int/water\\_sanitation\\_health/unconfwater.pdf](https://www.who.int/water_sanitation_health/unconfwater.pdf)
- [30] United Nations (1977) *Convention to Combat Desertification*, Nairobi (Kenya).  
<http://www.ciesin.org/docs/002-478/002-478.html>
- [31] United Nations (1994) *Convention to Combat Desertification in Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa*. A/AC.241/27, Paris (France).  
<http://www.un-documents.net/a-ac241-27.pdf>  
<https://www.unccd.int/convention/about-convention>
- [32] United Nations (1992) *Rio Declaration on Environment and Development*, Rio de Janeiro Conference A/CONF.151/26, Resolution 1, Annex II, Rio de Janeiro (Brazil).  
<http://www.un-documents.net/rio-dec.htm>
- [33] United Nations (1995) *Copenhagen Declaration on Social Development*, A/CONF.166/9, 14 March 1995, Copenhagen (Denmark).  
[https://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A\\_CONF.166\\_9\\_Declaration.pdf](https://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_CONF.166_9_Declaration.pdf)
- [34] United Nations (2002) *Report of the World Summit on Sustainable Development*, World Summit on Social Development. A/CONF.199/20, 26 August - 4 September 2002, Copenhagen (Denmark).  
<http://www.un-documents.net/aconf199-20.pdf>
- [35] United Nations (2002), *The World Summit on Sustainable Development*, Conference on Sustainable Development, Johannesburg (South Africa), 28 August – 2 September, 2002.  
<https://unfccc.int/>  
[https://www.unepfi.org/fileadmin/events/2002/wssd/wssd\\_activities\\_unepfi\\_2002.pdf](https://www.unepfi.org/fileadmin/events/2002/wssd/wssd_activities_unepfi_2002.pdf)  
[https://www.unepfi.org/fileadmin/events/2002/wssd/wssd\\_recommendations\\_2002.pdf](https://www.unepfi.org/fileadmin/events/2002/wssd/wssd_recommendations_2002.pdf)
- [36] United Nations (2012) *United Nations Conference on Sustainable Development*, Rio de Janeiro (Brazil), June 2012.  
<https://web.archive.org/web/20111028195543/>  
<http://www.uncsd2012.org/rio20/index.php?menu=20>
- [37] United Nations (2019)  
<https://sustainabledevelopment.un.org/>
- [38] United Nations (1998) *Kyoto Protocol to the United Nations Framework Convention on Climate Change*, Kyoto Conference, Kyoto (Japan).  
<https://unfccc.int/resource/docs/convkp/kpeng.pdf>

- [39] Sachs, J., Schmidt-Traub, G., Kroll, C., Lafortune, G., Fuller, G. (2019): *Sustainable Development Report 2019*. New York (U.S.A.) Bertelsmann Stiftung and Sustainable Development Solutions Network (SDSN).  
[https://s3.amazonaws.com/sustainabledevelopment.report/2019/2019\\_sustainable\\_development\\_report.pdf](https://s3.amazonaws.com/sustainabledevelopment.report/2019/2019_sustainable_development_report.pdf)
- [40] Pope Francis (2015), Encyclical Letter “Laudato Si” of the Holy Father Francis on Care for our Common Home, Vatican Press, Vatican City.  
[https://w2.vatican.va/content/dam/francesco/pdf/encyclicals/documents/papa-francesco\\_20150524\\_enciclica-laudato-si\\_en.pdf](https://w2.vatican.va/content/dam/francesco/pdf/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si_en.pdf)
- [41] <https://www.dalailama.com/messages/environment>
- [42] <http://www.arcworld.org/>
- [43] Wikipedia (2019) Day of Prayer  
[https://en.wikipedia.org/wiki/Day\\_of\\_Prayer](https://en.wikipedia.org/wiki/Day_of_Prayer)