

**Athens Institute for Education and Research  
ATINER**



**ATINER's Conference Paper Series  
DEM2017-2437**

**The Impact of Research Evidence on Global  
Developmental Objectives Regarding the Future  
Demographic Goal Setting**

**Avramov Dragana  
Director  
Population and Social Policy Consultants Brussels  
Belgium**

**Cliquet Robert  
Emeritus Professor  
Ghent University  
Belgium**

An Introduction to  
ATINER's Conference Paper Series

ATINER started to publish this conference papers series in 2012. It includes only the papers submitted for publication after they were presented at one of the conferences organized by our Institute every year. This paper has been peer reviewed by at least two academic members of ATINER.

Dr. Gregory T. Papanikos  
President  
Athens Institute for Education and Research

This paper should be cited as follows:

**Dragana, A. and Robert, C. (2018). “The Impact of Research Evidence on Global Developmental Objectives Regarding the Future Demographic Goal Setting”, Athens: ATINER'S Conference Paper Series, No: DEM2017-2437.**

Athens Institute for Education and Research  
8 Valaoritou Street, Kolonaki, 10671 Athens, Greece  
Tel: + 30 210 3634210 Fax: + 30 210 3634209 Email: info@atiner.gr URL:  
www.atiner.gr  
URL Conference Papers Series: www.atiner.gr/papers.htm  
Printed in Athens, Greece by the Athens Institute for Education and Research. All rights reserved. Reproduction is allowed for non-commercial purposes if the source is fully acknowledged.  
ISSN: 2241-2891  
24/04/2018

**The Impact of Research Evidence on Global Developmental Objectives  
Regarding the Future Demographic Goal Setting<sup>1</sup>**

**Avramov Dragana**  
**Director**  
**Population and Social Policy Consultants Brussels**  
**Belgium**

**Cliquet Robert**  
**Emeritus Professor**  
**Ghent University**  
**Belgium**

**Abstract**

This contribution looks at the research-based impact of global developmental objectives on the future demographic goal setting and its ethical and political implications. It addresses the use of evidence from a broad range of sciences and ethics to formulate forward-looking policies. It argues that the developmental, production and consumption goals of the developed as well as the developing world are incompatible with the current and predicted world population growth, within the context of the need for reaching global ecological sustainability. It is concluded that the policy implication of research should result in objectives for reducing the levels that are suitable to the developmental aspirations of human kind and the ecological sustainability of the planet.

**Keywords:**

---

<sup>1</sup>This contribution builds on the methodology for impact review developed under the IMPACT\_EV project funded by the European Commission under FP7.

## Introduction

The aim of this contribution is to look at the impact of research on global developmental objectives on the future demographic goal setting for the human species and its ethical and political implications.

It is argued that the generalisation of the modernisation process at the global level will need the decrease of the world population size to a level that would be culturally, ecologically and globally sustainable in the long-term perspective.

Most traditional religious as well as modern secular ideologies are focussed on perpetual growth and expansion, – culturally, economically and demographically. The course the world population increase and the globalisation of modernity are taking will require substantial changes in the ethical and political objectives of the traditional religious as well as the modern secular ideologies.

## The World Population Explosion in the 20<sup>th</sup> Century and its Prospects in the 21<sup>st</sup> Century

Population growth is an extremely important characteristic of the twentieth century because of the historically unique, strong increase in the world population, which is expected to expand further during this century. While the annual population growth rate in the period before the industrial cultural phase was very low and very slowly increased from 0.001 per cent to 0.1 per cent, during the short span of modernising it very rapidly and strongly rose to just above two per cent in the period 1965-1970. Since then, this figure has decreased again; by the end of this century it is expected to be back at the very low values it had during most of human prehistory. The present and past ages thus represent a unique and non-recurrent moment in the demographic history of humankind.

The onset and the intensity of the difference between the decrease in mortality and fertility during the demographic transition caused an exponential growth of the human species, which evolved from about one billion people around 1800 to two billion around 1930, four billion around 1975 and six billion in 2000.<sup>2</sup> According to the medium variant of the UN Population Division population prospects the world population would, in the course of the twenty-first century, further increase to *circa* eleven billion by 2100 (Figure 1).<sup>3</sup>

The extremely strong increase of the world population since the second half of the 20<sup>th</sup> century is mainly due to the amplification of the modernisation process from the early-modernised European and North-American populations to the rest of the world. Between 1950 and 2000, 89 per cent of the world

---

<sup>2</sup>United Nations Population Division, World Population Prospects 2015: WPP2015\_POP\_F01\_1\_TOTAL\_POPULATION\_BOTH\_SEXES.XLS

<sup>3</sup>United Nations Population Division 2015: UN.PPP2015.Output.PopTot.xls

population increase was due to population growth in less developed regions;<sup>4</sup> in the 21<sup>st</sup> century the further world population increase is expected to occur for 98 per cent in less developed regions.<sup>5</sup>

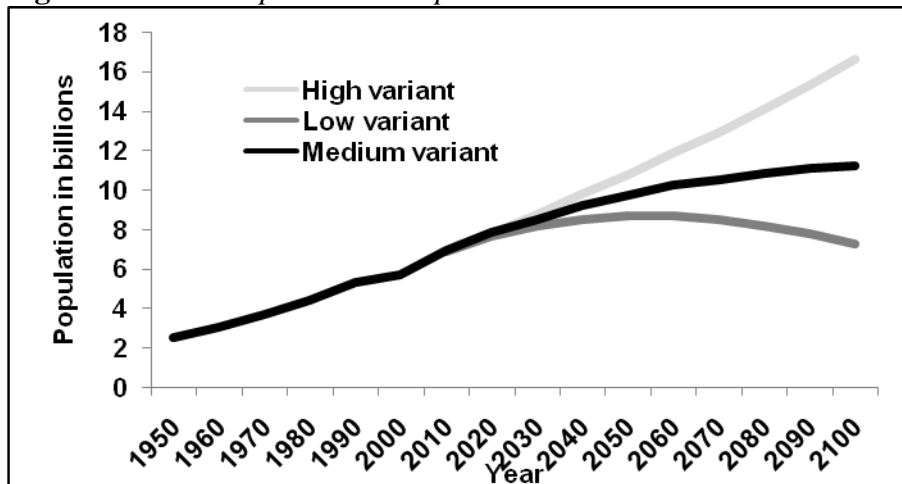
### Carrying Capacity of the Earth

The developmental or environmental effects of population size (and growth) cannot be estimated and evaluated as such, i.e. independently of the degree of quality of life and the kind and degree of consumption humans want to achieve or the amount of resources (energy and space) they (want to) use. Hence, we face an almost insurmountable difficulty in assessing the relationship between the numerical development of the human species and the carrying capacity of our planet. This difficulty appears so clearly from the persistent diversity in attitudes, beliefs and policies on this matter. For instance:

“Population growth should be halted and a slow decline begun to a population size that, in a couple of centuries, might be environmentally sustainable”<sup>6</sup>

“Overpopulation does not threaten the environment or humanity.”<sup>7</sup>

**Figure 1.** *World Population Prospects: The 2015 Revision*



Source: United Nations, 2015.

There is considerable variation in the estimates of the number of people that the Earth can carry because of the different hypotheses that have been

<sup>4</sup> United Nations Population Division, World Population Prospects 2015: WPP2015\_POP\_F01\_1\_TOTAL\_POPULATION\_BOTH\_SEXES.XLS

<sup>5</sup> United Nations World Population Prospects: UN.PPP2015.Output.PopTot.xls

<sup>6</sup> Ehrlich, 2000, 322; see also Hern, 1990; 1993; Hardin, 1993; Pimentel and Pimentel, 1997; 2005; Smail, 1997; Margulis, 1998; Grant, 2000; Short and Potts, 2009.

<sup>7</sup> Bailey, 2006; see also Simon, 1981; 1998; Connelly, 2008; Angus and Butler, 2011; Ellis, 2013.

proposed. Many authors have tried to define the carrying capacity of the Earth, starting with Antonie Van Leeuwenhoek (1679) who estimated that the maximum number of people the Earth could support is 13.4 billion. Many more estimates followed of how many people Earth could support, ranging from less than 1 billion to more than 1,000 billion. For 65 studies giving a range, the lower and upper bounds amount to 7.7 and 12 billion.<sup>8</sup>

A recent interesting approach has been the calculation of the Ecological Footprint by the Global Footprint Network.<sup>9</sup> Global Footprint Network's core research calculates both the Biocapacity (BC)<sup>10</sup> and the Ecological Footprint (EF)<sup>11</sup> for more than 200 countries, using over 5,000 data points for each country per year, derived from internationally recognised sources; these have been used to determine the area required to produce the biological resources a country uses and to absorb its wastes and to compare this with the area available.<sup>12</sup> The ratio EF/BC is the estimated ecological overshoot. For 2007, this overshoot is 50 per cent above unity; meaning, humanity used the equivalent of 1.5 Earths to support its consumption. However, there are substantial differences in the ecological overshoot between nations: the overshoot is most salient in the United States, Western- and Southern Europe, North-Africa and the Near East, India, China and Japan (Figure 2).<sup>13</sup>

In addition, it has to be observed that the current ecological overshoot of 1.5 Earths relates to a world population in which only about 20 per cent is estimated to enjoy a standard of living typical of the developed world.<sup>14</sup>

In the hypothesis that the whole world acquires by 2050 the level of prosperity of Europe with its current consumption patterns, it can be estimated that humanity would need almost four Earths (Figure 3).<sup>15</sup> If the European consumption further increased linearly between 2007 and 2050, as it did between 1991 and 2007, and this level of consumption is applied to the whole world population in 2050, humanity would need nine Earths. It is self-evident

---

<sup>8</sup> Cohen, 1995, 402-418.

<sup>9</sup> Wackernagel and Rees, 1996; Ewing et al., 2010; <http://www.footprintnetwork.org/>.

<sup>10</sup> Biocapacity (BC) = area x bioproductivity (Ewing et al., 2010). The biocapacity is measured by calculating the amount of biologically productive land and sea area available to provide for the resources a population consumes and to absorb its wastes, given current technology and management practices.

<sup>11</sup> Ecological footprint (EF) = population x consumption x resource and waste intensity (Ewing et al., 2010). When the BC>EF, there is an ecological reserve; when the BC<EF, there is an ecological deficit. The ratio EF/BC is the estimated ecological overshoot. In their Ecological Footprint Atlas 2010 edition, the Global Footprint Network estimated for 2007 the world's biocapacity at 11.9 billion global hectares (gha) and the ecological footprint at 18.0 billion global hectares (gha) for a world population of 6.7 billion people. This gives an average biocapacity per person of 1.8 global hectares (gha) and an average footprint per person of 2.7 global hectares (gha), giving an ecological overshoot (EF/BC) of 1.5.

<sup>12</sup> The 'ecological footprint' is perhaps not a completely satisfactory instrument to measure the total ecological impact of humanity – for instance, it does not include the impact of the use of chemicals or the effects on biodiversity (see Wijkman and Rockström, 2011, 150) – but it is an impressive and most elaborated proxy for measuring the human impact on the environment.

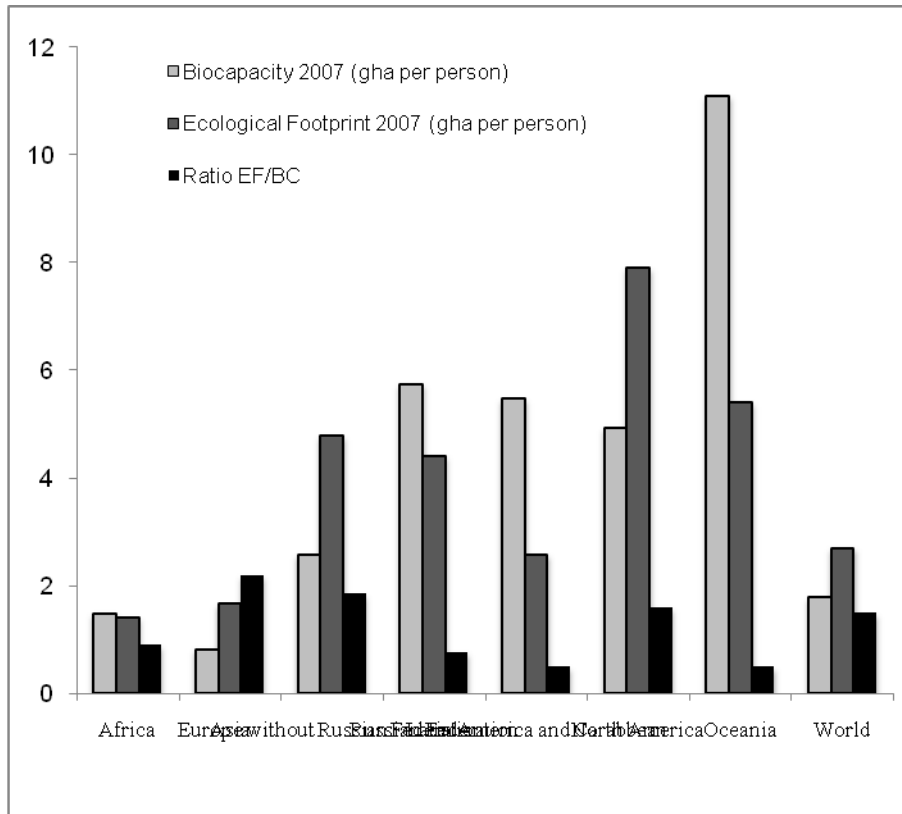
<sup>13</sup> [www.footprintnetwork.org/content/ecological\\_footprint\\_nations](http://www.footprintnetwork.org/content/ecological_footprint_nations)

<sup>14</sup> Smail, 2002, 27.

<sup>15</sup> Cliquet and Avramov, 2017, 351; see also Wackernagel and Rees, 1996; Smail, 2002, 28.

that this is impossible. Even with the hypothesis of the development of new technologies, it seems inevitable that a further increase in the quality of life on a planetary scale can only take place at the expense of a reduction in population size and change in consumption patterns.<sup>16</sup>

**Figure 2.** *Biocapacity, Ecological Footprint and EF/BC Ratio in 2007, per Continent and World*



Source: authors' calculations based on Ewing et al., 2010

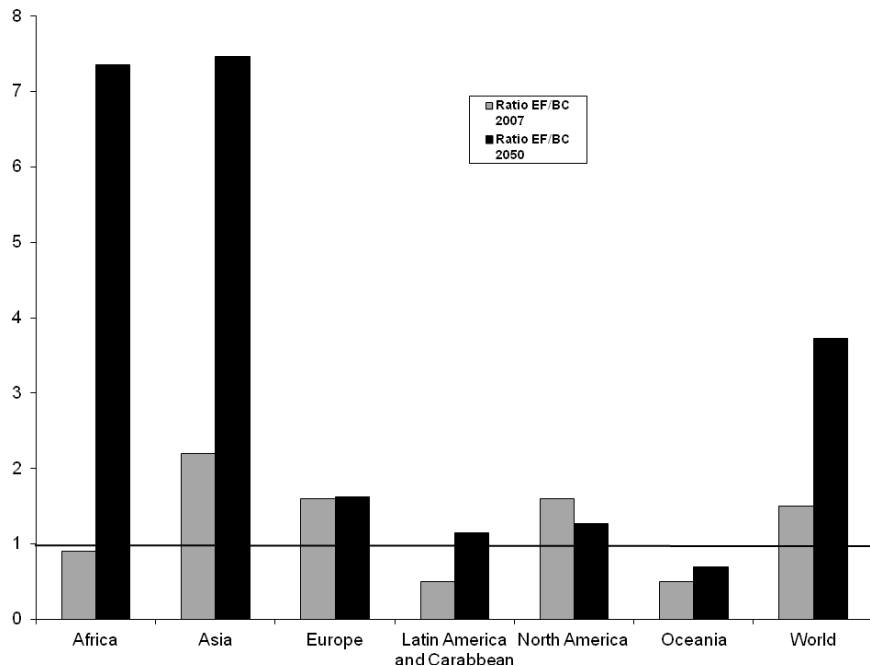
Identical reasoning can be made for many specific types of resources. Let us take the example of the needs, uses and distribution of fresh water, which is clearly an indispensable but finite resource. The increasing use of this natural resource is not only related to the world population growth but also, and in particular, to the advance of the modernisation process (Figure 4). For instance, Walter K. Dodds<sup>17</sup> estimated that the availability of freshwater on the Earth amounts to 9,000 km<sup>3</sup>, approximately half of which is currently being used by the human species, namely 678m<sup>3</sup> per person. In the United States 2,700 m<sup>3</sup> is used per person. If the US usage were extended to the total world population, more than twice the naturally available water resources would already be needed. Knowing that the world population will, in all probability, further increase by three to four billion people, it is without doubt that the American

<sup>16</sup> See also Catton, 1980; Pimentel and Pimentel, 1991; 1997; Diamond, 1992; 2005; Myers, 1997; Ferguson, 1999; Pimentel et al., 1999; Costanza, 2000; Smail, 2002; Rees, 2003.

<sup>17</sup> Dodds, 2008, 21; see also United Nations, 2011, 99ff.

water consumption levels cannot be generalised at the global level. Even if the current excessively high US use and abuse of fresh water was substantially reduced, the expected further world population increase up to eleven billion is incompatible with the goal of applying modern water consumption patterns.

**Figure 3.** *Ecological Deficit/Reserve in 2007 And 2050, based on the Hypothesis that the whole World Acquires the Level of Prosperity and Welfare of Europe with its Current Consumption Patterns*



Source: authors' calculations on the basis of data from Ewing et al., 2010

If the current US use of fresh water ( $2,700\text{m}^3$ /per person) was generalised at the global level, the Earth, with its  $9,000\text{km}^3$  availability of fresh water, could support 3.3 billion people. If the data provided in Meadows, Randers, and Meadows<sup>18</sup> are used, roughly identical results are arrived at, namely 3.7 billion people.

Looking at the relationship between the Human Development Index (HDI) (2012) and the Ecological Footprint (2007) for 153 out of 192 countries in the world, UNDP<sup>19</sup> illustrated so well the double effort that would have to be made to reach a future sustainable human development – namely, moving the countries with a low or medium HDI, as well as the countries with a high or very high HDI, towards such sustainability (Figure 5).

<sup>18</sup> Meadows et al., 2004, 67: total availability of freshwater =  $5.620\text{km}^3$ , US use per person =  $1,500\text{m}^3$ .

<sup>19</sup>UNPD, 2013, 35;

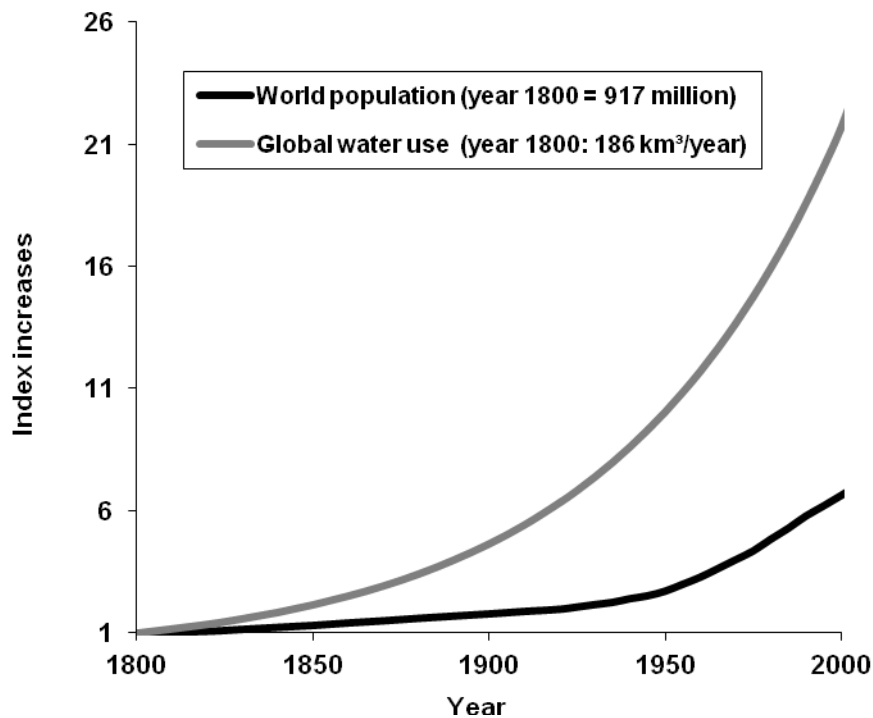
[http://www.footprintnetwork.org/en/index.php/GFN/blog/human\\_development\\_and\\_the\\_ecological\\_footprint](http://www.footprintnetwork.org/en/index.php/GFN/blog/human_development_and_the_ecological_footprint)



### Consumption or Demographic Restraints?

Human reproduction needs to be seen in the context of ethical goals for a further evolution of the human species: (1) the preservation of ecological sustainability; and (2) the cultural furthering of the modernisation process that entails increase of opportunities for people worldwide.<sup>20</sup>

**Figure 4.** *World Population Growth and Global Water use between 1800 and 2000*



Source: Dodds, 2008, 215-216

Given the knowledge we have about the past and present damage that the human species has caused to the planet's natural environment, together with the threat that current trends in ecological mismanagement may continue, unrecoverable damage to the available natural resources will occur with detrimental consequences for the human species itself. Hence, for pragmatic and moral reasons, we should protect the existing biodiversity, the natural ecological systems and the available natural resources that our planet possesses.<sup>21</sup>

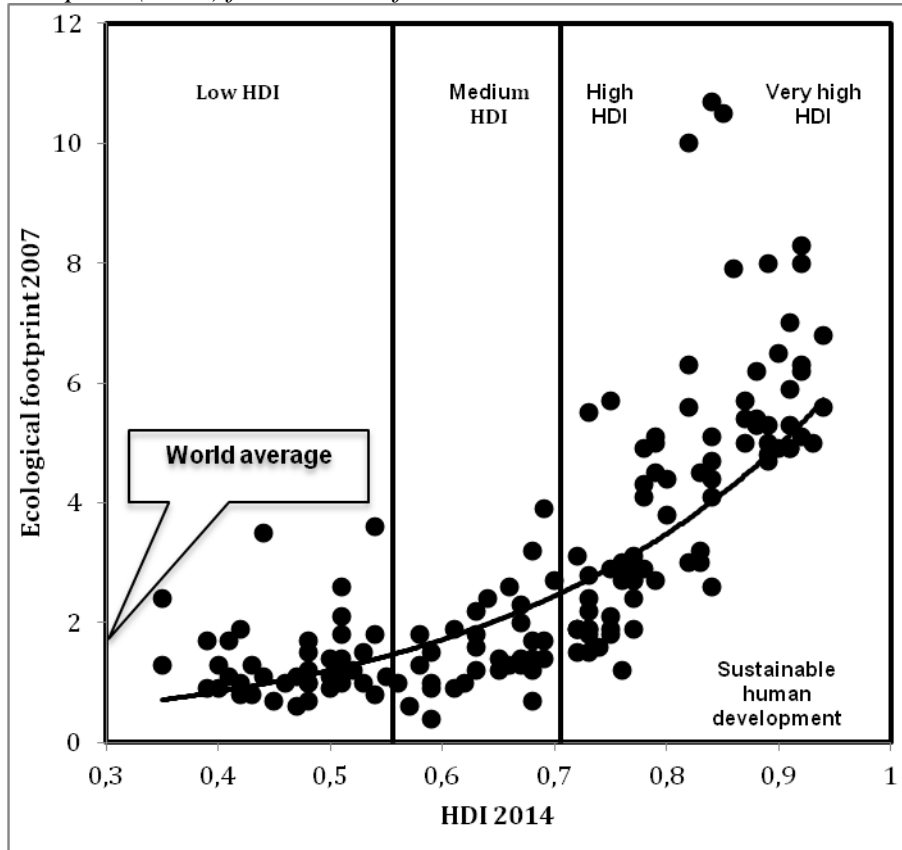
Regarding the future of the modernisation process, it can be observed that this process is generally considered as a positive achievement of humankind, despite some of its temporarily unfavourable but corrigible side effects, and that its further progress should be pursued. The justification for the choice of a progressing modernisation is based on the fact that modernity is not only the current apogee of the cultural trajectory the hominines have achieved over time but also that it succeeded, better than any of the previous cultural stages, in

<sup>20</sup> Cliquet and Avramov, 2017, 196-200.

<sup>21</sup> Ehrlich et al., 1977; Wilson, 1992; Hardin, 1993; Chew, 2001.

mastering extrasomatic threats, satisfying human needs and achieving unprecedented high levels of welfare and well-being.

**Figure 5.** Relationship between Human Development Index (2014) and Ecological Footprint (2007) for 155 out of 188 Countries in the World



Source: after UNDP, 2013, 35

There is plenty of evidence concerning the desire of people in advanced countries to further progress on the path of modernisation, as well as the desire of people in second and third world countries to develop, in order to acquire levels of quality of life and well-being similar to those of the ‘first’ world countries. These strivings appear at all global intergovernmental meetings but, with respect to population issues, they were particularly prominent at the UN World Population Conferences of Bucharest 1974, Mexico City 1984, and Cairo 1994.<sup>22</sup>

There are two major types of approach to pursue simultaneously future ecological sustainability *and* further progressing modernisation at a global scale: (1) changes in the nature and volume of production and consumption of material goods and (2) decrease of the world population size.

<sup>22</sup> United Nations, 1975; 1984; 1994.

*Changes in the Nature and Volume of the Production and Consumption of Material Goods*

A well-known and often heard solution to the current ecological challenges is the reduction or change in the excessive production and consumption patterns in the developed world.<sup>23</sup> Obviously, consumption volumes and production patterns of the developed countries should take into account their unfavourable effects on the planetary environment, and they need to stop abusing resources from other regions or indebting future generations. One must acknowledge that the present 'World Order' is all about preserving access to abundance to in-groups and silently or overtly blocking access to valuable resources to out-groups. Ideologies that sustain and encourage high fertility are playing an important role in keeping out-groups poor and powerless. Indeed, UNFPA had launched a campaign to promote reproductive health with the salient summary of the position of women "Poor, Powerless, and Pregnant".

However, the necessity to change the production and consumption volumes and patterns should not divert our attention from the equally important – and ultimately most important – issue of demographic numbers as, for instance, Ian Angus and Simon Butler<sup>24</sup> do from the ideological perspective of ecosocialism. Those authors rightly stress the disastrous ecological effects of the current consumption and particularly the production patterns, especially in the developed world, and rightly identify their root causes in the present form of capitalist societal organisation with its rampant profit-growth ideology, its considerable energy and resource wastage, and its huge within- and between-country social inequalities. However, they not only grossly underestimate the effects of population numbers but also misinterpret, because of their lopsided ideological framework, population concerns as expressions of socially conservative and reactionary attitudes aimed at maintaining a socially inequitable status quo. Even the consensus that was reached at the UN International Conference on Population and Development in Cairo 1994<sup>25</sup> is alleged to have given "new credibility to an agenda that has long been used to block social change".

Undoubtedly a lot has to be profoundly changed in matters of production and consumption, but it is illusory to think that populations in advanced countries or emerging economies will be prepared to substantially reduce their standard of living and quality of life – their achieved sense of well-being. It is also unimaginable that the populations in developing regions would stop aspiring to achieve the quality of life levels of the more advanced nations. Moreover, the further progression of the modernisation process will increasingly require energy and other resources. Hence, although considerable ecology friendly improvements in consumption and production patterns can and should be made, the most important ultimate trade-off will be between enhancing quality of life and decreasing population size worldwide.

---

<sup>23</sup> For instance, United Nations, 1992; de Geus, 2003; Angus and Butler, 2011.

<sup>24</sup> Angus and Butler, 2011.

<sup>25</sup> United Nations, 1994.

*Decreasing the World Population Size*

Considering the facts that the human species already transcends the carrying capacity of the planet, reduces the natural biodiversity, unbalances many natural ecosystems, depletes natural resources through deforestation and overfishing, depletes non-renewable energy sources, pollutes the environment (air, soil, rivers, lakes, seas and oceans), and is, in all probability, responsible for accelerating climatic changes through high carbon dioxide, methane and other chemical emissions,<sup>26</sup> and considering further that the quality of life of populations in developing regions should not only become identical to that of developed countries, but that the quality of life of all should be further enhanced albeit by replacing quantity by quality consumption, it is necessary to decrease the world population growth to reach size which would be ecologically and globally sustainable in the long-term perspective.<sup>27</sup> Enhancing quality of life, i.e. achieving and furthering the Western welfare and well-being at the global level, necessitates a substantial temporary decrease of the world population size until social and ecological sustainability has been achieved again. As Julian Huxley<sup>28</sup> stated several decades ago:

“The world has to achieve the difficult task of reversing the direction of its thought about population. It has to begin thinking that our aim should be not increase but decrease – immediate decrease in the rate of population-growth, and in the long run, decrease in the absolute number of people in the world, including our own countries”.

Therefore, a temporary, slightly below-replacement fertility, as it manifests itself in many developed countries and newly emerging economies, should be considered highly welcome and should extend as soon as possible to developing countries, especially those experiencing high population growth or density.

Regarding the situation in Europe, Dirk Van de Kaa<sup>29</sup> noted rightly:

“Thus, developments go at least in the right direction and Europe may well benefit from them. Conceivably it might increase material wealth, help protect the environment, and increase the educational and other investments in the children who are born. Europe should again set an example for other continents to consider.”

A generalised (obviously temporary) below-replacement fertility would lead to a decrease of the world population in the coming centuries as anticipated,

---

<sup>26</sup> For instance, Wijkman and Rockström, 2011; Meadows et al., 2004; Dodds, 2008; Cafaro and Crist, 2012; IPCC, 2013.

<sup>27</sup> For instance, Van de Kaa, 1978; Cohen, 1996; Hardin, 1993; Pimentel and Giampietro, 1994; Ehrlich, 2000; Grant, 2000; Smail, 2002.

<sup>28</sup> Huxley, 1964, 86.

<sup>29</sup> Van de Kaa, 2010.

for instance, by the low variant population prospects of the UN Population Division.<sup>30</sup>

Taking the Earth's finite physical and ecological limitations into account,<sup>31</sup> what population size would the Earth be able to support with the hypothesis that the whole world population would reach the developmental and consumption levels of Europe? In the hypothesis that Europe's consumption pattern would further increase between 2007 and 2050, as it did between 1991 and 2006, a sustainable world population would amount to 1.03 billion people.<sup>32</sup> In the hypothesis that the whole world would reach the developmental and consumption levels Europe had in 2007, the planet could support 2.5 billion people.<sup>33</sup> These figures (1.3 to 2.5 billion) correspond quite well with other estimations, based on more sophisticated calculations available in the literature, which all range between one and three billion.<sup>34</sup> Assertions that the Earth might be able to support a population of 10, 15 or even 20 billion with a standard of living at the level of the most advanced nations of today are, as J. Kenneth Smail<sup>35</sup> writes, "not only cruelly misleading but almost certainly false".

Estimations of a sustainable population size with respect to the renewable fresh water requirements per person for irrigated agriculture and other requirements (industrial, hygienic, leisure) that are common in present-day advanced countries<sup>36</sup> also lie in the range of the low population figures quoted above. However, in the domain of water requirements much stronger regional differentiations in carrying capacity can already be observed and may be expected to increase considerably – although in many cases this problem could, admittedly, be resolved through the construction of water pipeline networks, just as we now have oil pipeline networks. However, the Earth's capacity for providing fresh water is limited, as explained above, unless a very cheap energy source became available that would allow massive desalination of seawater.

A generalised below-replacement fertility in the coming centuries would lead to a decrease in the world population such as appears from long-term, low-variant population scenarios.<sup>37</sup> Indeed, such long-term scenarios show that very small differences in average fertility can make a huge difference to the final size of the total world population. For example, with a sustained Total Fertility

<sup>30</sup> UN Population Division, 2004.

<sup>31</sup> Wijkman and Rockström, 2012, 4.

<sup>32</sup> This figure is obtained as follows: 9.306 (world population prospects in 2050, in billions) / 3.8 (number of planets to support the world population at the developmental level of Europe in 2007) / 2.38 (the extrapolation of Europe's consumption pattern between 2007 and 2050, as it did between 1991 and 2006) = 1.03 billion inhabitants.

<sup>33</sup> This figure is obtained as follows: 9.306 (world population prospects in 2050, in billions) / 3.8 (number of planets to support the world population at the developmental level of Europe in 2007) = 2.5 billion inhabitants.

<sup>34</sup> Ehrlich and Ehrlich, 1990; Grant, 1992; 1996, 75; 2000; Hardin, 1993; Pimentel and Pimentel, 1991; 1997; Giampetro and Pimentel, 1993; Wackernagel and Rees, 1996; Pimentel et al., 1999, 33-34; Costanza, 2000; Wackernagel and Yount, 2000; Smail, 2002; Pimentel and Pimentel, 2005.

<sup>35</sup> Smail, 2002, 27.

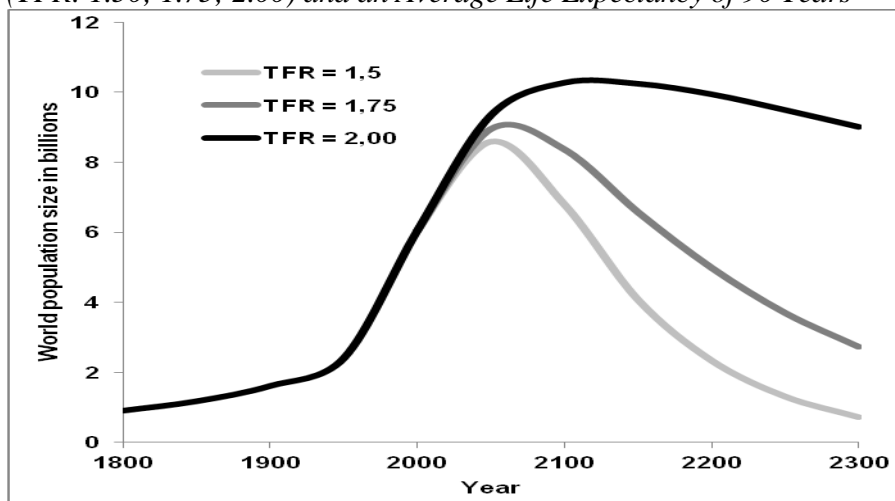
<sup>36</sup> For instance, Cohen, 1995, 297-328; Dodds, 2008, 21-26.

<sup>37</sup> UN Population Division, 2004; Basten et al., 2013.

Rate (TFR) of 1.75 instead of 2.00 children per woman, the population on Earth by 2300 would only be three instead of eleven billion, i.e. eight billion less. If worldwide fertility decreased to the current average for Europe, the world population in 2300 would amount to approximately one billion (Figure 6).

Given the quasi-certainty that the world population will further increase, in all probability up to eleven billion, temporary solutions will have to be found for those eleven billion people.<sup>38</sup> However, it is difficult to see how it would be possible to increase substantially, in the few coming decades that separate us from 2050 or 2100, the living standards of the present underdeveloped regions in the world up to the existing levels of the most advanced countries; it is also hard to envisage a substantial decrease in the production and consumption patterns and material living standards of the developed countries.

**Figure 6.** *World Population increase of Homo Sapiens Sapiens since the beginning of the Nineteenth Century, and Hypothesising that the Future Growth would evolve according to Low and Medium Variants of the Total Fertility Rate (TFR: 1.50; 1.75; 2.00) and an Average Life Expectancy of 90 Years*



Source: based on Basten et al., 2013

The efforts to decrease population size should not necessarily be envisioned by country or be proportional to the present population size of each country. It would probably be wiser to consider larger geographical unities, such as continents or subcontinents, or regions with specific geographic capabilities or constraints, such as regions susceptible to natural catastrophes, mountain regions, (semi-) desert regions.

For example, looking at the current and expected ecological overshoot per continent, it is quite clear that all continents, with the exception of Oceania, will have to reduce their population in order to maintain or increase their quality of life. Africa and Asia may have to make the biggest efforts. In this respect, the Chinese one-child policy has succeeded in avoiding an additional

<sup>38</sup> Wijkman and Rockström 2012, 179.

increase of 400 million people<sup>39</sup>. One might have reservations about the method of implementing that policy. However, the outcome at the population level is significant.

### **Ethical and Political Implications of Present-day Knowledge**

It is quite clear that the goal of decreasing the future world population, to one fourth or one fifth of what it is currently projected, would require a profound reassessment and change of moral, demographic, and economic goals and policies of nation states, intergovernmental institutions and gatekeepers of knowledge and beliefs. It would necessitate a major change in the traditional way of thinking by the religious institutions and secular political movements in the world: their support will be needed to reverse the current attitudes, behaviours and policies regarding demographic growth.<sup>40</sup>

In the first place, it will be necessary for religious institutions to abandon their in-group focussed traditional expansionist ideology by means of demographic incentives. The well-known biblical directive “be fruitful and multiply, and fill the earth and subdue it ...”<sup>41</sup> is absolutely out-dated, forgetting or denying that the Earth is already overcrowd and plagued by excessive inequalities.

However, fierce opposition to a (temporary) population decrease may be expected to come not only from religions, but also from ideological groups in general who are focussed on expansion, as was so bluntly expressed by the late Algerian president Houari Boumédiène at the United Nations in 1974:

*“Nous vous vaincrons par le ventre de nos femmes”*<sup>42</sup>

and the present Turkish president, Recep Tayyip Erdoğan who, in 2016, urges Turkish women to have at least three children,<sup>43</sup> and called recently on Turkey’s citizens in Europe to step up their rates of procreation and have five children each in order to increase their power and influence in Europe.<sup>44</sup>

It will, indeed, be also necessary to overcome our inborn drives and culturally reinforced desires oriented toward unlimited resource acquisition strongly underpinned on a daily basis in national, continental or world politics and marketing. These biological drives and cultural norms will need to be adapted to pursuing long-term sustainability, taking into consideration well-established scientific facts rather than expansion embedded in secular and faith based ideologies. Neither the traditional religions nor most modern secular ideologies, except the ecological movement and perhaps also the humanist

---

<sup>39</sup> Greenhalgh, 2003.

<sup>40</sup> See also Smail, 2002, 41.

<sup>41</sup> Genesis 1:28; Deuteronomy, 7:13-14.

<sup>42</sup> “The wombs of our women will give us victory.”

<sup>43</sup> Many reports in current or recent European mass media, for instance, <http://www.dailymail.co.uk/news/article-3627087/>

<sup>44</sup> Many reports in current or recent European mass media, for instance, <http://www.telegraph.co.uk/news/2017/03/17/>

movement, are intrinsically focussed on ecological sustainability.<sup>45</sup> On the contrary, traditional authoritarian regimes, as well as modern democratic regimes, are (for different reasons) all oriented towards economic (and often also demographic) growth.

It will not be easy to set the achievement of a stationary population goal, let alone a (temporary) decreasing population goal, as an ethical objective because there are still many, often silent, growth advocates, even in the scientific community. The views of the silent advocates of further population growth are more often expressed as views against birth control or prohibiting abortion rather than explicitly favouring the present levels of world population growth. There are also the advocates of explicit population growth such as the late Julian Simons, Ben Wattenberg, Nicolas Eberstadt, Ronald Bailey and Matthew Connelly.<sup>46</sup>

Many politicians and economists still cherish (explicitly or implicitly) the old-time population growth ideology: they are not able to adapt to the novelty of modernity, or to see political, economic and ecological phenomena interacting at a planetary level. They often think that population increase (via more numerous younger age groups) will contribute to the increase in economic production or enhance political power, within or between populations. In the short-term, and as an isolated phenomenon, at first sight this idea seems to be correct. However, although this was true in earlier cultural stages of human evolution and history, the premise cannot pass the critical test of a sound scientific analysis in a modern context.<sup>47</sup> In particular, in a long-term perspective and from a more global approach, also taking into account broad ecological and resource concerns, avoidance of further population growth in an already overcrowded planet should be a concern.

Most individuals or couples, wherever in the world, are not motivated by world population growth issues in deciding how many children they wish to have and what family size they actually realise. However, enlightened ethical, economic and political decision makers, in discussions about the big world problems of today – being of an ecological, financial, economic or physical nature – seldom address the population dimension in an appropriate way.

It is a striking fact that the preponderant role of the population factor is so often concealed or at least unaddressed in all kinds of societal strife situations – starvation, water shortage, unemployment, in-group/out-group conflicts – or natural disasters – climatic changes, earthquakes, floods, tornados, droughts.<sup>48</sup> For instance, in the United Nations' *Millennium Development Goals Report 2011* the world population crisis is not addressed and the need to reduce fertility in demographically expanding regions does not figure among the eight

---

<sup>45</sup> Dodds, 2008, 153-163.

<sup>46</sup> Simon, 1981; 1998; Simon and Kahn, 1984; Wattenberg, 1987; Eberstadt, 1997; Bailey, 2006; Connelly, 2008; Angus et al., 2011.

<sup>47</sup> See, for instance, Coleman and Rowthorn, 2011.

<sup>48</sup> Smail, 1997.



– otherwise very laudable – goals proposed.<sup>49</sup> Even in the new set of 17 measurable *Sustainable Development Goals (SDGs)*, formally accepted by the UN General Assembly in 2015, the issue of the world population growth was totally out of sight.<sup>50</sup> Also, at the recent United Nations Conference on Climate Change in Paris,<sup>51</sup> population size or growth was not considered. It seems that human development and climate are dissociated from populations and people.

In addition to those who do not want, for ideological, nationalistic or economic reasons, to consider the negative effects of a further population growth, there are also the proponents of more individualistically based ethical principles, such as individual freedom, individual reproductive rights, or the sanctity of life, who chose to ignore the demographic, societal, genetic, or ecological dimensions of unrestrained population growth.<sup>52</sup> Individual rights activists and patriarchally oriented religious institutions often form surreal coalitions in these matters, as population and ecological experts were able to observe during the Prepcom negotiations for the 1994 United Nations International Conference on Population and Development.<sup>53</sup>

Hence, population scientists will have to consider or reconsider their views on population trends not only in a broader societal, ecological and global framework, but additionally in a longer time perspective and make considerable efforts to disseminate their ideas and convey to ethicists, religious institutions and especially policy makers the utility of the population goal to be pursued: decreasing the world population size up to culturally and ecologically sustainable numbers in a long-term perspective. The take up of evidence about the unsustainability of further population growth is still strikingly low.

Population scientists, ethical and religious thinkers and institutions, and last but not least policy decision makers, may all need to shift their ethical and policy goal settings from quantitative population objectives to qualitative population objectives. Quality of life, genetically as well as culturally including access to knowledge, should become the main concern, clearly within the framework of an ecologically sustainable world and equitable international economic and political order. International competition that builds on demographic growth goals needs surely to focus on excellence in quality of life of individuals and sustainability of human life (Cliquet and Avramov, 2017, 400-402).

---

<sup>49</sup> United Nations, 2011. The eight ‘Millennium Development Goals’ are: eradicate extreme poverty and hunger; achieve universal primary education; promote gender equality and empower women; reduce child mortality; improve maternal health; combat HIV/AIDS, malaria and other diseases; ensure environmental sustainability; global partnership for development.

<sup>50</sup> Among the 17 identified Sustainable Development Goals, only Goal 3.7 includes an indirect hint regarding fertility control: “By 2030, ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes.” (<https://sustainabledevelopment.un.org/sdgs>).

<sup>51</sup> United Nations, 2015.

<sup>52</sup> For instance, Connelly, 2008, xii, 382.

<sup>53</sup> See, for instance, Cliquet and Thienpont, 1995.

## Conclusions

The need to achieve ecological sustainability at the global level and simultaneously enhance the quality of life of populations in developing countries aligning it to the conditions of the developed world requires a slowdown in the current pace of population growth. In the longer perspective a further progress for all on the path of modernisation requires not only ecologically sustainable changes in the nature and volume of the production and consumption of material goods, but also a substantial reduction of the world population size. Population concerns, in other words, need to shift from quantitative to qualitative objectives.

These goals will require a considerable shift in the policies of both the traditional religious institutions and most of the modern secular ideologies that are still, overly or covertly, supporting population growth or are, in addition, little interested in long-term sustainable ecology and cultural progress.

## References

- Angus, I., Butler, S. 2011. *Too many people? Population, immigration, and the environmental crisis*. Haymarket Books, Chicago, IL.
- Bailey, R. 2006. Overpopulation does not threaten the environment or humanity. In: Gerdes LI (ed) *Humanity's future*. Greenhaven Press, Detroit, MI, 148-156.
- Basten, S., Lutz, W., Scherbov, S. 2013. Very long range global population scenarios to 2300 and the implications of sustained low fertility. *Demographic Research* 28, 39, 1145-1166.
- Cafaro, P., Crist, E. 2012. *Life on the brink: Environmentalists confront overpopulation*. University of Georgia Press, Athens, GA.
- Catton, W. 1980. *Overshoot: The ecological basis of revolutionary change*. University of Illinois Press, Urbana, IL.
- Chew, S.C. 2001. *World ecological degradation: Accumulation, urbanization, and deforestation, 3000BC-AD2000*. Altamira press, New York, NY.
- Cliquet, R., Avramov, D. 2017. *Evolution science and ethics in the third millennium. Challenges and choices for the future of humankind*. Springer.
- Cliquet, R., Avramov, D. 2017. *Evolutiewetenschap en ethiek in het derde millennium. Uitdagingen en keuzes voor de mensheid*. www.robertcliquet.com.
- Cliquet, R., Thienpont, K. 1995. *Population and sustainability. The message from the Cairo Conference*. European Studies of Population, Volume 3. Kluwer Academic Publishers, Dordrecht.
- Cohen, J.E. 1995. The Earth's carrying capacity. *Science Journal of the AAAS* 269, 5222, 341-346.
- Cohen, J.E. 1996. *How many people can the earth support?* Norton, New York, NY.
- Coleman, D., Rowthorn, R. 2011. Who's afraid of population decline? A critical examination of its consequences. *Population and Development Review*, 37, S1, 217-248.
- Connelly, M. 2008. *Fatal misconception: The struggle to control world population*. Belknap Press of Harvard University Press, Cambridge, MA.
- Costanza, R. (ed) 2000. Forum: The ecological footprint. *Ecological Economics*, 32, 3, 341-394.

- De Geus, M. 2003. *The end of over-consumption: Towards a lifestyle of moderation and self-restraint*. International Books, Utrecht.
- Diamond, J. 1992. *The third chimpanzee: Evolution and the future of the human animal*. HarperCollins, New York, NY.
- Diamond, J. 2005. *Collapse: How societies choose to fail or succeed*. Viking Penguin, New York, NY.
- Dodds, W.K. 2008. *Humanity's footprint: Momentum, impact, and our global environment*. Columbia University Press, New York, NY.
- Eberstadt, N. 1997. World population implosion? *The Public Interest*, 129, 3-22.
- Ehrlich, P. 2000. *Human natures. Genes, cultures, and the human prospect*. Penguin Books, New York, NY.
- Ehrlich, P., Ehrlich, A. 1990.) *The Population Explosion*. Hutchinson, London.
- Ehrlich, P., Ehrlich, A., Holdren, J.P. 1977. *Ecoscience. Population, resources, environment*. Freeman and Co, San Francisco, CA.
- Ewing, B., Moore, D., Goldfinger, S., et al. 2010. *Ecological footprint atlas 2010*. Global Footprint Network, Oakland, CA.
- Ferguson, A.R.B. 1999. The logical foundations of ecological footprints. *Environment, Development and Sustainability*, 1, 2, 149-156.
- Giampetro, M., Pimentel, D. 1993. *The tightening conflict: Population, energy use, and the ecology of agriculture*. NPG Forum, Negative Population Growth, Teaneck, NJ.
- Grant, L. 1992. *Elephants in the Volkswagen: facing the tough questions about our overcrowded country*. WH Freeman, New York, NY.
- Grant, L. 1996. *Juggernaut: growth on a finite planet*. Seven Locks Press, Santa Ana, CA.
- Grant, L. 2000. *Too many people: The case for reversing growth*. Seven Locks Press, Santa Ana, CA.
- Greenhalgh, S. 2003. Science, modernity, and the making of China's one-child policy. *Population and Development Review*, 29, 2, 163-196.
- Hardin, G. 1993. *Living within limits*. Oxford University Press, New York, NY.
- Hern, W.M. 1990. Why are there so many of us? Description and diagnosis of a planetary ecopathological process. *Population and Environment*, 12, 1, 9-39.
- Hern, W.M. 1993. Has the human species become a cancer on the planet? A theoretical view of population growth as a sign of pathology. *Current World Leaders*, 36, 6, 1089-1124.
- Huxley, J.S. 1964. *Essays of a humanist*. Chatto and Windus, London.
- IPCC. 2013. *Climate change 2013: The physical science basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. (Stocker TF, Qin D, Plattner G-K, et al. (eds)). Cambridge University Press, Cambridge.
- Margulis, L. 1998. *Human population growth in the gaian politic: The cancer analogy*. American Anthropological Association, Washington, DC.
- Meadows, D.H., Randers, J., Meadows, D.L. 2004. *Limits to growth: The 30-year update*. Earthscan, London.
- Myers, N. 1997. The population/environment predicament: Even more urgent than supposed. *Politics and the Life Sciences*, 16, 2, 211-213.
- Pimentel, D., Giampetro, M. 1994. *Food, land, population and the US economy*. Carrying Capacity Network, Washington, DC.
- Pimentel, D., Bailey, O., Kim, P., et al. 1999. Will limits of the earth's resources control human numbers? *Environment, Development and Sustainability*, 1, 19-39.

- Pimentel, D., Pimentel, M. 1991. *Land, energy, and water: The constraints governing ideal human population size*. NPG Forum, Teaneck, NJ.
- Pimentel, D., Pimentel, M. 1997. Too many people for food resources and the environment. *Politics and the Life Sciences*, 16, 2, 217-218.
- Pimentel, D., Pimentel, M. 2005. Global environmental resources versus world population growth. *Ecological economics*, 59,2, 195-198.
- Rees, M. 2003. *Our final hour: A scientist's warning: How terror, error, and environmental disaster threaten humankind's future in this century - on earth and beyond*. Basic Books, New York, NY.
- Short, R.V., Potts, M. 2009. The impact of population growth on tomorrow's world. *Philosophical Transactions of the Royal Society B*, 364, 1532.
- Simon, J. 1981; 1998. *The ultimate resource*. Princeton University Press, Princeton, NJ.
- Simon, J., Kahn, H. (eds). 1984. *The resourceful earth: A response to "Global 2000"*. Basil Blackwell, Oxford.
- Smail, J.K. 1997. Averting the 21st century's demographic crisis: Can human numbers be reduced by 75%? *Population and Environment*, 18, 6, 565-580.
- Smail, J.K. 1997. Beyond population stabilization: The case for dramatically reducing global human numbers. *Politics and the Life Sciences*, 16, 2, 183-192.
- Smail, J.K. 1997. Population growth seems to affect everything but is seldom held responsible for anything. *Politics and the Life Sciences*, 16, 2, 231-236.
- Smail, J.K. 2002. Confronting a surfeit of people: Reducing global human numbers to sustainable levels. An essay on population two centuries after Malthus. *Environment, Development and Sustainability*, 4, 1, 21-50.
- United Nations, 1975. *Report on the United Nations World Population Conference, 1974, Bucharest 19-30 August 1974*. United Nations, New York, NY.
- United Nations. 1984. *Report on the United Nations International Conference on Population, 1984, Mexico City, 6-14 August 1984*. United Nations, New York, NY.
- United Nations. 1992. *Agenda 21. United Nations Environment Programme*. United Nations, New York, NY.
- United Nations. 1994. *Report on the International Conference on Population and Development, Cairo: 5-13 September, 1994*. United Nations, New York, NY.
- United Nations. 2011. *The Millennium Development Goals Report 2011*. United Nations, New York, NY.
- United Nations Population Division. 2004. *World population 2300*. United Nations, New York, NY.
- United Nations Population Division. 2015. *World population prospects. The 2015 revision*. United Nations, New York, NY.
- Van de Kaa, D.J. 1978. Towards a population policy for Western Europe. In: Council of Europe (ed) *Population decline in Europe: Implications of a declining or stationary population*. Edward Arnold, London, 215-233.
- Van De Kaa, D.J. 2010. Universal history and population change. *Demográfia*, 53, 5, 5-20.
- Wackernagel, M., Rees, W. 1996. *Our ecological footprint: Reducing human impact on the earth*. New Society Publishers, Gabriola Island, BC.
- Wackernagel, M., Yount, J.D. 2000. Footprints for sustainability: The next step. *Environment, Development and Sustainability*, 2, 1, 23-44.
- Wattenberg, B.J. 1987. *The birth dearth*. Pharos Books, New York, NY.
- Wijkman, A., Rockström, J. 2012. *Bankrupting nature. Denying our planetary boundaries. A report to the Club of Rome*. Routledge, London.
- Wilson, E.O. 1992. *The diversity of life*. Harvard University Press, Cambridge, MA.