

PLANETARY HEALTH – PERSONS AND THE PLANET OUR ETHICAL RESPONSIBILITY!

*Leocir Pessini*¹

‘Planetary health is a great idea for this century’, **Judith Rodin**, President of the Rockefeller Foundation (USA)

‘Climate change is the greatest threat to health in the twenty-first century’, **Margaret Chan**, Director General of the World Health Organisation

‘it remains a priority of the Church to keep herself dynamically in a state of ‘moving outwards’, to bear witness at a concrete level to divine mercy, making herself a ‘field hospital’ for marginalised people who live in every existential, socio-economic, health-care, environmental and geographical fringe of the world’, **Pope Francis**

Introduction

‘Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition’. This statement on health is to be found in the Constitution of the World Health Organisation (WHO) and has been adopted by the United Nations for seventy years (1948-2018)². Health is a fundamental human right! This means that every person should have access to health-care services when, and where, they need them, without suffering because of a lack of money. Nobody should fall sick or die because they are poor or because they do not have access to health-care services. Good health is clearly determined by other fundamental human rights. These include, amongst others: access to drinking water, to hygiene/health-care institutions, to food, to adequate housing, to instruction, and to healthy conditions at work. Humanity still has to work a great deal to achieve these fundamental goods so that everybody can enjoy a happy and healthy life!

The inspiration with which I wish to begin my talk comes from the image of a man in space who beheld our common planet – the earth. On Christmas Eve 1968 the American astronaut Bill Anders, who was inside the first space ship to orbit around the earth with a crew inside it, looked

¹ This Text was prepared and presented in the Third International Conference of Catholic Theological Ethics in the World Church (CTEWC). The theme of this conference was: “A critical time for bridge building: Catholic Theological Ethical Today”. Sarajevo (July 26-29, 2018).

²Constitution of the World Health Organisation: ‘THE STATES Parties to this Constitution declare, in conformity with the Charter of the United Nations, that the following principles are basic to the happiness, harmonious relations and security of all peoples: Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition’: cf. <https://www.admin.ch/opc/it/classified-compilation/19460131/200906250000/0.810.1.pdf>

out of the window and took the picture that made history – our planet rising above the rim of the moon. This was the first time that a human being had been so distant from our common home as a separate, complete and distinct entity. This was an extraordinary experience that Anders commented on subsequently in the following way: ‘We travelled so much to explore the moon...and the most important thing that we discovered was the earth’.³

The photograph of Anders and of the subsequent Apollo mission became important pictures for the environmental movement and to such an extent they were chosen for the first ‘Earth Day’ of 1970. This picture was transformed into a symbol of beauty, isolation, frailty and life! When Bill Anders took these photographs from space, humanity entered a new geological era called the anthropocene era. This was an epoch when human beings began to go back to being protagonists, making themselves increasingly responsible for the transformation of the biophysical conditions of the planet. This moment in the history of man has also been described as a period of ‘great acceleration’⁴, given the intensification in an exponential way of the impact of human activity on the natural systems of the earth.

Scientists who study the earth and its environment, indeed, engaged in an early diagnosis of contemporary circumstances and observed that human beings were creating a new and dangerous stage in the history of the earth described with the appellation ‘anthropocene’. We have entered a new geological epoch where human beings have been transformed into protagonists because of their creation of new biophysical conditions for our planet. This neologism was coined in the 1980s by the biologist Eugene Stoermer and in the year 2000 it was officially suggested by Stoermer and by the Nobel Prize winner for chemistry Paul Crutzen in the book *Welcome to the Anthropocene*. The term ‘anthropocene’ refers to the impact of human activity on all the aspects of the physical system of the earth and on life on the planet. We are warming up our planet in a dangerous way, leaving behind us that climate in which our civilisation was born and developed. Because of this sudden climate change, we run the risk of enormous losses at the level of harvests, the return of infectious diseases, an increase in the temperature of the earth, floods, and a rise in the levels of the sea. These catastrophic events have an influence on the social and environmental determinants of health such as clean air, drinking water, food, and our safe havens.⁵

The biophysical changes that have been taking place on the planet caused by the irresponsible and nefarious intervention of man have six chief forms:

- 1) Disharmony with the global climatic system.
- 2) A general pollution of the air, water and soil.
- 3) A rapid loss of biodiversity.
- 4) A reconfiguration of the bio- and geochemical cycles, including that of carbon, nitrogen and phosphorus.
- 5) A perverse use of the resources of the earth.
- 6) Scarce resources, amongst which are drinking water and arable land for agriculture.

³ President Barack Obama to those taking part in the 146th. annual meeting of the National Academy of Sciences: *Proc. Nat. Acad. Sci. U.S.A.* 2009; 106:9539-43.

⁴ Steffen W., Broadgate W, Deutsch L, Gaffney O., and Ludwig C., ‘The Trajectory of the Anthropocene: the Great Acceleration’, *Anthropocene Rev.* 2015; 2: 81-98.

⁵ The Rockefeller Foundation – the Lancet Commission on Planetary Health, ‘Safeguarding Human Health in the Anthropocene Epoch: Report of the Rockefeller Foundation – Lancet Commission on Planetary Health’: cf. [www. the lancet.com](http://www.the-lancet.com), vol. 386 November 14, 2015, 1973-2016.

What is at stake is specifically the future of life on planet earth.

Important planetary organisations have shown concern about the future of life and human health on the planet, for example:

- a) The World Health Organisation (*WHO*) and its programme for pollution and health.
- b) *The Rockefeller Foundation and Lancet* (a prestigious English scientific publication) which created a specialised *ad hoc* commission on health and pollution.
- c) The *programme for the environment of the United Nations*, with the recent document entitled ‘Towards a Planet without Pollution’.
- d) The *Catholic Church* which is concerned about the health of man (rare and neglected diseases and inequalities in global health) and of the planet (environmental and ecological questions, with the publication of the encyclical *Laudato si'* on care for our common home).

Starting with these initial guidelines, our itinerary of this analysis is arranged around ten moments. 1) We will begin by concentrating on how the Catholic Church entered the debate about the important international questions connected with health, ecology and climate change. 2) The problem of biological extinctions. 3) and 4) Rare and neglected diseases and possible ways of treating them. 5) Addressing global health inequalities. 6) Global public health. 7) The concept of individual health (‘one health’). 8) The concept of environmental health. 9) The development of concepts of health until the concept of ‘planetary health’. 10) The pathway towards the construction of a sustainable future. We will begin our analytical journey with certain concerns advanced by the Catholic Church.

1) *The Church and Global Macro-Questions Relating to Health, Ecology and Climate Change*

The Catholic Church, through the voice and prophetic actions of Pope Francis but principally through the publication of the encyclical *Laudato si': Care for our Common Home* (2015),⁶ has reawakened people’s attention, and has joined with the wider international scientific community, to discuss together as partners the ecological problem and the future of the life on the planet.

Let us now look at some examples of this ecological dialogue, a dialogue made up of a number of voices. ‘Health of People, Health of Planet: Our Responsibility. Climate Change, Air Pollution and Health’ – this was the subject of the workshop organised by the Pontifical Academy of Social Sciences (on 2-4 November 2017),⁷ which witnessed the participation of scientists from all over the world belonging to the most diverse areas of human knowledge. Over the last three years, the Pontifical Academy of Science and the Pontifical Academy of Social Sciences have held a series of international conferences connected with the subject of the deterioration of the environment, climate change, biological extinction and sustainable development. The

⁶ Pope Francis, encyclical letter *Laudato si': on Care for our Common Home*, 2015.

⁷ The Pontifical Academy of Sciences, *Declaration – Our Planet, Our Health, Our Responsibility*. This declaration is based upon the data and concepts presented during the workshop entitled ‘Health of People, Health of Planet and Our Responsibility. Climate Change, Air Pollution and Health’. This workshop was organised by the Pontifical Academy of Sciences at the Casina Pio IV, Vatican City, on 2-4 November 2017.

participants in these meetings have been scientists, politicians, theologians, outstanding personalities, activists for the cause of ecology, believers and non-believers, and some world political leaders. We can say that we have before us a happy situation because when one is dealing with caring for, protecting and promoting life, and above all human health, we are faced with one of those universal ethical values that concern the whole of humanity independently of colour, party, culture, ideology, religion or nationality!

In order to draw our attention to our responsibility to human health and to the planet, this event, which took place at the end of 2017, sought to implement some fundamental aspects of the encyclical of Pope Francis, *Laudato Si*. The text produced by that event sought to address and perhaps to overcome the ecological-environmental crisis that we are going through today – a crisis that holds up a cloudy future for all the living beings of the planet.

We read as follows: ‘The economic activities that contribute to global warming are also wreaking other profound damages, including air and water pollution, deforestation, and massive land degradation, causing a rate of species extinction unprecedented for the past 65 million years, and a dire threat to human health through increases in heart disease, stroke, pulmonary disease, mental health, infections and cancer. Climate change threatens to exacerbate the current unprecedented flow of displacement of people and add to human misery by stoking violence and conflict. The poorest of the planet, who are still relying on 19th century technologies to meet basic needs such as cooking and heating, are bearing a heavy brunt of the damages caused by the economic activities of the rich. The rich too are bearing heavy costs of increased flooding, mega-storms, heat extremes, droughts and major forest fires. Climate change and air pollution strike down the rich and poor alike. Burning of fossil fuels and solid biomass release hazardous chemicals to the air. Climate change caused by fossil fuels and other human activities poses an existential threat to *Homo sapiens* and contributes to mass extinction of species. In addition, air pollution caused by the same activities is a major cause of premature death globally’.

The ‘solutions proposed’, which must be adopted with responsibility by everyone at a personal and governmental level, are the following:

1. Health must be central to policies that stabilize climate change below dangerous levels, drive zero-carbon as well as zero-air pollution and prevent ecosystem disruptions.
2. All nations should implement with urgency the global commitments made in Agenda 2030 (including the Sustainable Development Goals) and the Paris Climate Agreement.
3. Decarbonize the energy system as early as possible and no later than mid-century, shifting from coal, oil and gas to wind, solar, geothermal and other zero-carbon energy sources.
4. The rich not only expeditiously shift to safe energy and land use practices, but also provide financing to the poor for the costs of adapting to climate change.

5. Rapidly reduce hazardous air pollutants, including the short-lived climate pollutants methane, ozone, black carbon, and hydro fluorocarbons.

6. End deforestation and degradation and restore degraded lands to protect biodiversity, reduce carbon emissions and to absorb atmospheric carbon into natural sinks.

7. In order to accelerate decarbonisation there should be effective carbon pricing informed by estimates of the social cost of carbon, including the health effects of air pollution.

8. Promote research and development of technologies to remove carbon dioxide directly from the atmosphere for deployment if necessary.

9. Forge collaboration between health and climate sciences to create a powerful alliance for sustainability.

10. Promote behavioural changes beneficial for human health and protective of the environment such as increased consumption of plant-based diets.

11. Educate and empower the young to become the leaders of sustainable development.

12. Promote an alliance with society that brings together scientists, policy makers, healthcare providers, faith/spiritual leaders, communities and foundations to foster the societal transformation necessary to achieve our goals in the spirit of Pope Francis's encyclical *Laudato Si'*.

To implement these 12 solutions, we call on health professionals to: engage, educate and advocate for climate mitigation and undertake preventive public health actions vis-à-vis air pollution and climate change; inform the public of the high health risks of air pollution and climate change. The health sector should assume its obligation in shaping a healthy future. We call for a substantial improvement in energy efficiency; and electrification of the global vehicle fleet and all other downstream uses of fossil fuels. Ensure clean energy benefits also protect society's most vulnerable communities. There are numerous living laboratories including tens of cities, many universities...who have embarked on a pathway to cut both air pollution and climate change. These thriving models have already created 8 million jobs in a low carbon economy, enhanced the wellbeing of their citizens and shown that such measures can both sustain economic growth and deliver tangible health benefits for their citizens'.⁸

The factors behind the reduction of air pollution have led to important signs of improvement in human health. The participants in this meeting, in the final document of this event, observed that it was essential to make possible the integrated plan to reduce drastically climate change and air pollution. Pope Francis in his encyclical *Laudato Si'* says: 'Today, however, we have to realize that a true ecological approach *always* becomes a social approach; it must integrate questions of justice in debates on the environment, so as to hear *both the cry of the earth*

⁸ *Ibidem*.

and the cry of the poor'.⁹ Another challenge is the need to find a better project for the cities of the future, in which the overwhelming majority of the world's population will live and whose outskirts must have the same services and benefits of other urban centres. Lastly, we must look for new ways of working together to construct a stable society. If in the past humanity has experienced enormous dangers and threats at a local level, today the danger and the threats have been expanded to a global level. In order to address this common threat we must learn to respect ourselves and build bridges of communication and cooperation.

The Vatican, through two of its important pontifical academies, that for sciences and that for social sciences, on 28 April 2015 after a certain fashion foreshadowed and prepared the ground for the publication of the encyclical *Laudato Si* (which saw the light of day in the month of June, together with the programme of the United Nations (UN) on the environment) by holding a seminar entitled 'Protect the Earth, Dignify Humanity. The Moral Dimensions of Climate Change and Sustainable Humanity'. In the final document of this event entitled 'Climate Change and the Common Good. A Statement of the Problem and the Demand for Transformative Solutions', we encounter the following worrying diagnosis of contemporary humanity: 'This century is on course to witness unprecedented environmental changes. In particular, the projected climate changes or, more appropriately, climate disruptions, when coupled with ongoing massive species extinctions and the destruction of ecosystems, will doubtless leave their indelible marks on both humanity and nature. As early as 2100, there will be a non-negligible probability of irreversible and catastrophic climate impacts that may last over thousands of years, raising the existential question of whether civilization as we know it can be extended beyond this century. Only a radical change in our attitude towards Creation and towards our fellow humans, complemented by transformative technological innovations, could reverse the dangerous trends that have already been set into motion inadvertently'.¹⁰

The use of fossil fuels and solid biomass are the principal sources of air pollution and cause climate change. The scientific studies on their effects on public health and contamination of the air go back to the year 1950. Today there is enormous proof on how air pollution causes damage to health. Atmospheric pollution causes seven million premature deaths every year, principally because of ischemic cardiopathy, heart attacks, lung cancer, and chronic diseases of the respiratory systems in adults and acute respiratory diseases in children. Globally, 88% of the world's population breathes air that does not meet the minimum quality requirements of the World Health Organisation (WHO). Climate change increases the spread of vectors of diseases, food insecurity, malnutrition, mental health and migration. Lastly, in a not very distant future an increase in the impact on the health of the world's population caused by climate change is envisaged, together with a growth in that population.

⁹ Pope Francis, encyclical letter *Laudato si'* on *Care for our Common Home*, 2015, n. 49. http://w2.vatican.va/content/francesco/pt/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si.html. Consulted 23 December 2017.

¹⁰ Cf. 'Climate Change and the Common Good. A Statement of the Problem and the Demand for Transformative Solutions', 29 April 2015, the Pontifical Academy of Sciences and the Pontifical Academy of Social Sciences: <http://www.pas.va/content/accademia/en/events/2015/protectearth.html>

Climate change is taking place in concomitance with other environmental changes which are on a grand scale, such as the using up of fresh water, changes in soil use and soil deterioration. Our survival entirely depends on the biodiversity that forms the ecosystems in which we evolve and which make our lives possible. We obtain all of our food from plants but about 100 out of an estimated 460,000 species meet 90% of our needs, directly or indirectly. About a fifth of the species of organisms are endangered by extinction but if current trends continue a half of all species could become extinct over the next century. The acidification and de-oxygenation of the oceans caused by the use of fossil fuels has an important impact on the coral reefs and fish, which feed about four billion people in the world. The acidity of the oceans has increased by about 30% because of the increase in CO₂ in the atmosphere. This desolate scenario is inevitably leading us to fatal consequences such as the extinction of biological species.

2) *Concerning the Danger of Biological Extinction*

How can we save the natural world on which we depend for our lives? ‘The current rate of loss of species is approximately 1,000 times the historical rate, with perhaps a quarter of all species in danger of extinction now and as many as half of them may be gone by the end of the present century. Since we depend on living organisms for the functioning of our planet, our food, many of our medicines and other materials, waste absorption and the mediation of our climate, and for much of the beauty of the earth, these losses will inflict incalculable damage on our common prospects unless we control them. We have discovered and described less than one fifth of the species that are estimated to exist, and so we are throwing away unknown potential and threatening the basic functioning of our planet.

Besides threatening millions of species with extinction, this enormous increase in economic activity based on profit and on the use of fossil fuels is putting huge strains on the earth’s capacity to function sustainably. The most obvious associated signs include global climate change and the concomitant damages to the earth’s system that it brings in its wake, such as sea level rise as well as ocean acidification and anoxia, these feeding back on biological extinction directly.

The human population of earth is marked by vast economic inequality. Thus the richest 19% of the world’s people use well over half of the world’s resources as measured by their consumption. Per capita income of the richest 1.4 billion people averages \$41,000; in sharp contrast, the poorest 1 billion people, in Sub-Saharan Africa, have an average income of \$3,500. The wealthy are thus substantially responsible for the increase in global warming and, consequently, the decrease in biodiversity. The poorest people, who do not enjoy the benefits of fossil fuels, are indirectly responsible for deforestation and some destruction of biodiversity, because their actions take place within a world economic system dominated by demands made by the wealthy, who have much higher overall consumption levels without paying any externalities to conserve global biodiversity. *In brief, the wealthy*

destroy the global habitat for their profit and the poor destroy the local habitat for their survival’.

How can we invert this terrible picture in terms of consequences for the future of the planet? Those taking part in this event categorically stated that ‘we need positive human action for the sustainable preservation of biodiversity. An inescapable condition for attaining global sustainability is wealth redistribution, because high levels of consumption anywhere have worldwide impacts on degrading the functioning of earth systems and destroying biodiversity. Ending extreme poverty, which would cost about \$175 billion or less than 1% of the combined income of the richest countries in the world, is one major route to protecting our global environment and saving as much biodiversity as possible for the future. This can be accomplished in individual poor regions. In the sea, the establishment of large protected marine reserves is another important element in the preservation of overall biological productivity. To accomplish this, we must follow the conciliatory moral principles outlined so well in the Encyclical *Laudato si’* that formed the inspiration for our meeting’.¹¹

Moving rapidly from a zero energy CO₂ system, replacing coal, oil and gas with wind, solar and geothermic energy and other sources of energy with zero impact, and drastically reducing the emissions of all other climate polluters and adopting sustainable soil practices and uses, humanity can prevent catastrophic climate change, thereby reducing the enormous burden of illness caused by air pollution and climate change.

3) *Rare and Neglected Diseases*

The Pontifical Council for Health Care Workers, which on 1 January 2017 became a part of the new Dicastery for Promoting Integral Human Development, organised its thirty-first international conference in the Vatican on 10-11 November 2016. The title of this international conference was ‘Towards a Culture of Health that is Welcoming and Supportive at the Service of People with Rare and Neglected Diseases. Inform in order to know; know in order to inform; act in order to treat; treat respecting life and the dignity of the sick person and the environment. With an outlook of hope on the future’.¹²

But what do we mean by rare and neglected diseases? According to the World Health Organisation (2016), ‘a disease is considered rare when it affects one person in every two thousand’. Researchers calculate that about 7,000 rare diseases exist in the world and these afflict between 6% and 8% of the world’s population. 80% of these diseases have a genetic origin. They very often endanger the life of the patient and are the cause of a great deal of suffering for the people who are their victims as well as their families. So-termed rare diseases affect about thirteen

¹¹ Cf. Pontifical Academy of Sciences. A Workshop on Biological Extinction: How to Save the Natural World on Which We Depend, Casina Pio IV, 27 February–1 March 2017, ‘Final Message’.

¹² http://www.vatican.va/roman_curia/pontifical_councils/hlthwork/index_po.htm

million Brazilians and the great majority of these diseases have a genetic origin. They cannot be cured but they can be treated. The World Health Organisation calculates that there are about 400 million people in the world afflicted by these diseases.

So-termed neglected diseases are diseases that cause serious health problems above all in the poorest populations of the world, in particular in Africa and Latin America. According to the Director General of the WHO, Dr. Margaret Chan, 'they cause great suffering and are often concealed'. The phrase 'neglected diseases' was coined in 1986 by the North American doctor Kenneth Warren, a specialist in tropical diseases. The great majority of these diseases are caused by infections and they are most frequent in geographical areas with a tropical climate where there is no drinking water, in the presence of a low level of hygiene, with inadequate housing conditions and a lack of basic hygiene services. The WHO calculates that in the world there are more than 1.4 billion people afflicted by these diseases and 500 million of them, that is to say over 35%, are children.

Neglected diseases are also neglected by the great pharmaceutical companies and the agencies that allow access to medical producers. The same is true of government functionaries, public health programmes and the mass media. Usually, private pharmaceutical companies do not invest in this sector because, following their priorities, they are not able to recoup the high costs of the development and production of the medical products that are needed for the treatment of these diseases. In essential terms, neglected diseases are not seen as a priority when it comes to their prevention, eradication or treatment because they do not have a significant impact on the populations of developed or industrialised countries such as the USA, Europe, Australia, Japan and others. These are diseases of the invisible part of the world which affect the poorest populations and as a consequence the people afflicted by such pathologies do not have the resources to pay for treatment and thus they are once again forgotten about. These diseases constitute 12% of the overall global disease burden but only 1.3% of new medical products were created to combat them (so-called 'orphan medical products') in the period 1974-2004. In the year 2015, the overall expenditure on health-care research was 160 billion American dollars, of which only 3.2 billion were allocated to dealing with so-termed 'poverty diseases'. At the present time, for the World Health Organisation there are seventeen diseases that are defined as neglected tropical diseases: 1. Buruli ulcer; 2. Chagas disease; 3. cysticercosis; 4. Dengue and dengue hemorrhagic fever; 5. dracunculiasis (guinea worm disease); 6. echinococcosis; 7. fasciolosis; 8. African trypanosomiasis (sleeping sickness); 9. leishmaniasis; 10. leprosy; 11. lymphatic filariasis; 12. onchocerciasis; 13. rabies; 14. schistosomiasis; 15. helminthiasis transmitted from the soil; 16. trachoma; and 17. yaws.

The WHO calculates that 2.4 billion people still do not have basic sanitation services such as bathrooms and latrines and over 660 million people continue to drink water from contaminated

sources.¹³ We must ask ourselves how we can still see the process of economic globalisation as progress when today it still allows 1.2 billion people to live with less than 1.25 dollars a day.

4) *Possible Ways of Overcoming Rare and Neglected Diseases*

How can this chaotic state of affairs be overcome? In his address to those taking part in the international conference on rare and neglected diseases organised by the Pontifical Council for Health Care Workers, Pope Francis recognised the immense complexity of the problem and observed that ‘The challenge, from an epidemiological, scientific, clinical/care, hygienic and economic point of view is, therefore, enormous because it involves responsibilities and commitments on a global scale: international and national health-care and political authorities, health-care workers, the biomedical industry, associations of citizens/patients, and lay and religious volunteers’. For this reason, ‘a multidisciplinary and joint approach is necessary; an effort that calls on all the human realities involved, whether institutional or otherwise. Amongst them there is also the Catholic Church which has always found a motivation and impulse in her Lord, Jesus Christ, who was crucified and rose again, the figure both of the patient (‘Christus patiens’) and the physician (‘Christus medicus’, the Good Samaritan)’.¹⁴

Pope Francis argued that to solve this problem of global health, ‘wisdom of the heart’ was needed. Together with scientific and technical study, the testimony of those who set themselves to work in the existential and geographical fringes of the world is of fundamental importance. Another observation of the Pope was connected with the subject of justice in the sense of ‘giving to each his due’ and avoiding forms of discrimination. At the same time, there must be access to effective treatment because of the needs of health, independently of socio-economic, geographical and cultural factors. Here three fundamental principles of the social doctrine of the Church were invoked. The first is the principle of sociality, according to which the good of the person reverberates through the community. Therefore, care for health is not only a personal responsibility but also an example of good social responsibility. The second principle is that of subsidiarity which, on the one hand, supports, promotes and develops socially the capacity of each person in attaining fulfilment and his or her legitimate and good aspirations, and, on the other, comes to the aid of a person where he or she is not able on his or her own to overcome possible obstacles, as is the case, for example, with illness. And, lastly, there is the principle of solidarity, by which health-care strategies should be directed towards the person and the common good.

¹³http://www.who.int/neglected_diseases/global-partners-meeting/en.
http://www.paho.org/bra/index.php?option=com_content&view=article&id=5401:relatorio-da-oms-informa-progressos-sem-precedentes-contradoencas-tropicais-negligenciadas&Itemid=812

¹⁴ Pope Francis, message to the participants in the XXXI international conference in rare and neglected diseases organised by the Pontifical Council for Health Care Workers, the Vatican, 12 November 2016: cf. http://w2.vatican.va/content/francesco/pt/messages/pont-messages/2016/documents/papa-francesco-20161112_conferenza-operatori-sanitari.html

The Pope ended his message by saying: ‘On these three cornerstones, which I believe can be shared by anybody who holds dear the eminent value of the human being, one can identify realistic, courageous, generous and supportive solutions to addressing even more effectively, and to solving, the health-care emergency of ‘rare’ and ‘neglected’ diseases’.¹⁵

From rare and neglected diseases let us now move on to the question of global health inequalities.

5) *Addressing Global Health Inequalities*

The new dicastery of the Holy See for the Promotion of Integral Human Development, in cooperation with the International Confederation of Catholic Health-Care Institutions, on 16-18 November 2017 held the thirty-second international conference which was on ‘global health inequalities’.¹⁶

The objectives of this important event of the Catholic Church, which was open to all those who are interested in the ‘promotion of health’, were ‘Informing in order to know; knowing in order to act; acting in order to treat; treating in a way that respects life and the dignity of the sick and the environment, with the wished-for prospect of a global network response in order to address the international challenges of inequalities’.

The data of some international studies call our attention to factors that lie behind global health inequalities. Let us have a look at certain data: life expectancy increased by five years between 2000 and 2015. The greatest increase took place in the region of Africa (over 9.4 years) as a consequence of the increase in the survival of children, advances in the control of malaria, and increased access to anti-retrovirals for the treatment of HIV/AIDS. Life expectancy for children born in the year 2015 was 71.4 years (73.8 years for females and 69.1 years for males). However, these studies demonstrate that the gap between low- and high-income countries is continuing to grow. Indeed, children born in 29 countries – all high-income countries – have an average life expectancy of 80 years or more (the highest is 86.8 years for Japanese women), whereas neonates in 22 countries in sub-Saharan Africa have a life expectancy that is less than 60 years, with the lowest rate in Sierra Leone of 50.8 years for women and 49.3 years for men.

The challenge that humanity has to address to overcome this situation of illness and death is gigantic. Just to remind us of what happens every year: 300,000 women die because of complications linked to pregnancy or during childbirth; almost six million children die before the age of six; two million people have HIV/AIDS; there over 9.6 million new cases of tuberculosis and 214 million cases of malaria; 1.7 billion people need treatment for neglected tropical diseases; more than ten million people die before the age of 70 because of cardiovascular diseases and cancer; 800,000 people commit suicide; more than a million people die because of road accidents;

¹⁵ Pope Francis, *ibidem*.

¹⁶ Cf. www.vatican.va

4.3 million die because of pathologies connected with pollution caused by fuels used for cooking; and three million people die because of air pollution.

The report *World Health Statistics 2016* of the World Health Organisation states that these challenges cannot be overcome without addressing the risk factors that contribute to the development of these pathological conditions: 1.1. billion people smoke tobacco; 156 million children under the age of five are stunted and 43 million children under the age of five are obese; 1.8 billion people drink contaminated water; 946 million people do not have sanitation services in their homes; and 3.1. billion people use polluting fuels to cook.¹⁷

6) *World Public Health: the Latest Developments*¹⁸

The final declaration of the fifteenth world congress on public health, which was entitled ‘Demand for Action – Melbourne 2017’, defines public health as ‘the science and art of preventing disease, prolonging life and promoting health through the organized efforts of society. Health systems and public health functions can be treated as global public goods. It is the role of public health professionals and their organisations to contribute to: improving health outcomes for all; fighting inequity as the primary driver of poor health, with particular emphasis on women, children, indigenous peoples as well as poor and marginalized communities, demanding political, social, environmental and economic change across all sectors for better and more sustainable health’.¹⁹

The fourteenth world congress on public health was held in Kolkata in India in April 2015 and addressed the subject ‘Healthy People – Healthy Environment’, with the aim of taking ‘urgent action to mitigate environmental conditions that are contributing to the deaths and diseases of millions of inhabitants of our small planet’. The delegates drew up a declaration entitled ‘The Kolkata Call to Action’ in which it was stated that ‘*the time for study and debate is past* for the vast majority of the social, environmental and economic killers that stalk human kind. *The time for action has arrived*’ (my italics).²⁰ I will now highlight some fundamental aspects of this ‘Kolkata Call to Action’, namely:

a) *The social, economic and environmental determinants of disease* – We have before us an unfinished agenda as regards the millennium development goals (2000-2015) and we have begun another programme for the next fifteen years – the Agenda 2030 for sustainable development. Political, economic, social and environmental development is in itself a consequence of social equity. This means the promotion of the quality of life of citizens at all stages of life. Health is

¹⁷ World Health Organization (WHO). *World Health Statistics 2016. Monitoring Health for the SDGs – Sustainable Development Goals*. Geneva, World Health Organization, 2016. See also: World health statistics 2017: monitoring health for the SDGs, Sustainable Development Goal., Geneva, World Health Organization 2017: cf. www.who.int

¹⁸ The fifteenth world congress on public health was organised in Melbourne in Australia on 3-7 April 2017 and its general subject was ‘Voices-Vision-Action’. In the final documents the fiftieth anniversary of the World Federation of Public Health Associations (1967-2017) was also commemorated. <http://wcph2017.com/media-release-13-demand-for-action.php>. Consulted on 15 December 2017.

¹⁹ Demand for Action- Melbourne 2017. <http://wcph2017.com/media-release-13-demand-for-action.php>

²⁰ The Kolkata Call to Action Healthy People – Healthy Environment. https://www.wfpha.org/images/declarations/150216_Kolkata_Call_to_Action_FINAL.pdf. Consulted 23 December 2017.

one of these concepts of political, economic, social and environmental equity. Health cannot be solely purchased by the rich, but is, rather, a fundamental human right of the whole of humanity, and especially of most vulnerable humanity which lives in situations of poverty and a lack of resources. Here there must be a priority in terms of assistance. Without this commitment, diseases will increase and everyone will be at risk. The epidemic of Ebola in West Africa illustrates the challenge. This disease spreads rapidly because of poverty. There is a lack of community infrastructures such as clean water and sanitation services, buildings, equipment and qualified health-care professionals. Without these facilities, this disease spreads rapidly.

b) *Climate and health* – The threat to human health caused by global warming derived from climate change is one of the greatest challenges of this century. The responsibility for this is completely human as regards the warming caused by the use of energy generation through fossil fuels, and coal in particular. We are faced with the need to mitigate these effects, as well as air pollution, to protect the lives of thousands of people at risk. They are the poorest people of the world who live in the poorest countries of the planet and suffer. We need sustainable and renewable energy technologies. Health depends on the good functioning of the earth's ecosystems and the sustainability of its resources.

c) *Non-communicable diseases (NCDs)* – Tobacco, alcohol and obesity. These are the so-called 'diseases linked to lifestyle'. The constant increase in illnesses such as cancer, diabetes and cardiovascular disease associated with poor diets and the continued use of tobacco and alcohol illustrates the need for urgent measures. What is needed is a strengthening of community action to influence physical exercise and lifestyle and a greater control of tobacco, alcohol, obesity, bad oral health, exposure to chemical substances, and the occupational environment.

d) *Universal health coverage* – The risks outlined above fall unevenly upon the poorest countries and people, as does the lack of adequate access to health care and a lack of awareness on the part of citizens, that is to say a lack of recognition that health care is a fundamental right of human beings. Those taking part in this congress re-affirmed the commitments made at the previous declarations of the previous congresses: in Istanbul, on the subject 'Health, the First Human Right' (2009);²¹ in Rio de Janeiro, on the subject 'Social Determinants of Health' (2011);²² the Declaration of Bangkok on 'Universal Health Coverage' (2011); and the Declaration of Addis Ababa on 'Equity in Global Health: Opportunities and Threats' (2012).²³

We have to improve analyses and study but this is also the moment when we should 'roll up our sleeves', protect the health of the population and call everybody to action. Theory and science

²¹ Declaration of Istanbul – *Health: the First Human Right*. *Cad. Saúde Pública* vol.25 no. 9 Rio de Janeiro Sept. 2009. *On-line version* ISSN 1678-4464. <http://dx.doi.org/10.1590/S0102-311X2009000900022>

²² Rio Political Declaration on Social Determinants of Health. <http://www.who.int/sdhconference/declaration/en/>. Consulted on 23 December 2017.

²³ The Addis Ababa Declaration on Global Health Equity: A Call to Action. https://www.wfpha.org/images/declarations/Addis_Declaration.pdf. Consulted on 23 December 2017.

are absent in this field and it is urgently necessary to implement them in the practices of public health and spread a new concept which is not as yet popular: that of ‘One Health’. Such is the next subject of my analysis.

7) *Information on the Concept of One Health, as Something that is Global*²⁴

What do we mean by human health? In general, people remember the definition of the World Health Organisation (WHO) of 1948, according to which human health is ‘a state of complete physical, mental and social wellbeing and not only the absence of illness and infirmity’. The definition of health is a very important concept because it is on this that governments and the agencies that deal with civil society base themselves and organise themselves in terms of infrastructures and finance in order to meet this need. This definition of the World Health Organisation has been very much criticised by the academic world because it is a concept that is too idealistic, utopian, and practically unobtainable: after all, what is ‘complete wellbeing’ and is it possible to measure this? Such are the questions that have been posed. Despite all the criticisms, this definition continues to be appreciated and demonstrates to us a horizon of meaning to be pursued: to say that we are healthy, it is not enough to say we are not sick.²⁵

Experts on public health are unanimous in declaring that human health cannot be seen separately from the broader context in which human beings live. Human health is bound up with social determinants and with the cosmic and ecological environments (animals, plants, etc.). In this context new insights about health and definitions of health are born. These constitute an overall and more correct scientific vision of what health is that protects humanity as a whole from epidemics and pandemics which, indeed, often push entire populations into a state of panic. There thus emerges the concept of ‘one health’.

The concept of ‘one health’ comes from the English language and its author is the American veterinary physician Dr. Calvin W. Schwabe (1927-2006) who in 1984 published his work ‘Veterinary Medicine and Human Health’ in which he discussed the importance of the connection and interdependence of human health, animal health and environmental health. In his book, Schwabe adopted the phrase ‘one medicine’ and continued to defend this new concept of his which shortly afterwards was re-baptised as ‘one health’. This new term gradually acquired greater visibility and importance in scientific discussion, in the field of epidemiology, and in the world of global public health, at meetings of planetary health-care agencies and at international congresses. The term ‘one health’, translated by ‘*Saúde Única*’ in Portuguese, refers to the integration of human health, the health of animals and the health of the environment, and the adoption of public policies that are effective in the prevention and control of illnesses and

²⁴ One Health Global Network, ‘What is one health? One Health: a concept that became an approach and then a movement’: cf. <http://www.onehealthglobal.net/what-is-one-health/>.

²⁵ On the concept of health see: Moacyr Scliar, ‘História do Conceito de Saúde’, *PHYSIS: Revista de Saúde Coletiva*, Rio de Janeiro, 17 (1)29-41, 1007; Marco Segre and Flavio Carvalho Ferraz, ‘O conceito de saúde’, *Rev. Saúde Pública*, 31 (5):538-42, 1977; Naomar de Almeida Filho, *O que é saúde?*, (Rio de Janeiro, Fio Cruz Editora, 2013).

diseases. Human beings and animals will not be healthy if the environment in which they live is 'sick'. This vision, which leads to the concept of 'one health', seeks to increase communication and cooperation between health-care professionals when it comes to humanity, the animal world, and the environment.

In 2007, during the international conference on pandemic bird flu that was held in India (New Delhi), governments were encouraged to apply the concept of 'one health' and create bridges between the human, animal and environmental systems. The next year, international organisations such as the World Organisation for Animal Health (OIE), the World Health Organisation (WHO), and the United Nations Organisation for Food and Agriculture (FAO), began to develop joint strategies based upon this new concept of health which seeks to reduce the risk of the outbreak and spread of infectious diseases derived from direct contact between animals, man, and ecosystems.²⁶

At the present time, of the 1,461 diseases known to afflict man, about 60% are related to animals and are caused by pathogens that have the capacity to circulate amongst different species. Over the last thirty years, 75% of the new infectious diseases that have afflicted man have been animal-related, that is to say diseases transmitted from animals to man (for example rabies). Today, we have before us a context in which various factors foster the emergence and spread of these animal-related diseases.

The term 'one health' is of recent use but the concepts that underlie it are much older. The German pathologist Rudolf Virchow (1821-1902) stated as early as the nineteenth century that there are no partitions between animals and human medicine and that there should not be. Virchow was responsible for coining the term 'zoonosis'. For the whole of the next century scientists connected with various specialisations found similarities between infectious processes caused by illnesses found in men and in animals. However, human medicine and veterinary medicine followed their trajectories with practices that were totally independent of each other. Only in recent years have we witnessed a major effort to draw these two areas of knowledge closer together.

Some of the great discoveries of the history of medicine and public health took place thanks to the study of human and animal health. For example, the British physician Dr. Edward Jenner (1749-1823) found that milk products were immune to smallpox because they had what was termed cowpox. He applied this concept to practice and coined the term 'vaccination', which comes from the Latin word '*vacca*', which means cow. About two centuries later, the vaccine of Dr. Jenner was used to eradicate smallpox from the world's entire population.

The concept of zoonotic diseases is a very old one. During the history of humanity there have always been viruses and bacteria transmitted from animals to man. The difference is that today there are some factors which are highly favourable to the outbreak of these diseases. Closer contact between men and animals, and in particular wild animals, is one of these factors. The deterioration of the environment and the increase in the population have intensified contacts

²⁶ *One Health: Food and Agricultural Organization of the United Nations Strategic Action Plan*, FAO/United Nations, Rome, 2011. The approach of this agency of the UN is in line with the concept of 'one health'.

between different cultures, populations and animals in their habitat, and this has notably favoured the transmission of infectious agents. More rapid means of transport, and the facility and the speed with which people move on the planet, are a factor that is relevant in the spread of diseases. An interesting aspect, which is not directly correlated to the transmission of diseases but which has a strong impact on public opinion and which even leads to panic, is the fundamental role of the mass media in these situations.

Today we learn almost immediately if someone is sick in another part of the world. In a few days or weeks it is possible to have accurate information about health-care events in any part of the planet. It is a good thing to think of the importance of the spread and use of this information. On the other hand, it often generates disproportionate concerns for the population of the world. You will remember what happened with the news about the epidemic of Ebola in West Africa in 2015, bird flu caused by the H5N1 influenza, and SARS, which, indeed, provoked authentic panic in the population in the countries in which they broke out and amongst global travellers.

Medical experts affirm that discoveries in the field of veterinary medicine can be of advantage to human medicine and vice versa. As is the case with human beings, an increase in canine obesity has led to an increase in diabetes. Studying the similarities and the differences between the diseases of species can lead to important information about the advance, the treatment and the control of diseases.

There are many advantages when an attempt is made to implement policies of public health care that are aligned with this new concept of ‘one health’. These advantages include: a) an improvement in animal and human health throughout the world through cooperation between all the health sciences, and in particular between the professionals of human medicine and veterinary medicine, in order to address key questions. b) Meetings and discussions about how to address the new global challenges through cooperation between a number of sectors: veterinary medicine, human medicine, environmental health, the health of wild fauna, and public health. c) The creation of centres of excellence for the education and training of professionals in specific sectors through greater cooperation between universities and schools of veterinary medicine, human medicine, and public health care. d) The use of the scientific knowledge of the various disciplines involved in addressing health-care challenges through the development of innovative programmes that contribute to improving the health of all – human beings, animals and mother earth.

Whatever the case, why should the concept of ‘one health’ be taken seriously? Here are some reasons that have been made clear by experts: a) about 75% of all the human infectious diseases that have emerged over the last three decades come from animals. b) Environmental health can influence human and animal health through contamination, pollution, and conditions of poverty that can create new infectious agents. c) It is envisaged that the world’s population will grow from the current 7.3 billion (2017) to 9 billion by 2050. d) As regards the provision of adequate care, food and water for the growing population of the world, the health-care professions and their related disciplines as institutions must work together. e) The man-animal nexus has a beneficial effect on human and animal health. After these observations about public health and

individual health, we will now address what we mean by ‘environmental health’ and its importance for human health.

8) *The Concept of Environmental Health*²⁷

According to the World Health Organisation (WHO), environmental health covers aspects of the human physical condition that include quality of life and are determined by physical, chemical, biological, social and psycho-social factors of the environment. Reference is also made to the practice of assessing, correcting, controlling and preventing those environmental factors that have a negative influence on the health of present and future generations.

Human health and wellbeing are strictly connected with the quality of the environment. This is important and well demonstrated by the consequences that have been described, for example 24% of life years lost because of disability and 23% of premature deaths throughout the world attributable to exposure to avoidable environmental and occupational risks. Pollution is one of the greatest existential challenges of our time given that climate change, the loss of biodiversity, the acidification of the oceans, desertification, the depletion of reserves of drinking water and pollution endanger the stability of the support systems of the earth and jeopardise the survival of human societies.²⁸

The report of the Environmental Agency of the United Nations published on 16 November 2017 offers figures that are quite simply alarming in terms of the loss of human lives. Pollution of nature is responsible for a quarter of all human deaths every year – 12.6 million. At the present time, air pollution kills 6.5 million people a year and in 80% of urban centres the quality of the air does not meet the health standards laid down by the United Nations. Even when a person does not live in one of these cities, it is likely that they are one of the 3.5 billion people who depend for food on polluted seas or belong to that part of the world’s population that does not have access to adequate hygiene services – two billion people. The largest waste dumps of the planet endanger the lives of over 64 million people. Every year 600,000 children endure brain damage because of the presence of lead in paint. Over 80% of the world’s waste water is put into the environment without being treated and pollutes the land used by agriculture and lakes and rivers that supply 300 million people.²⁹ In the classification of the World Health Organisation, respiratory infections caused by air pollution and passive smoking are the fatal factors that are most incisive,

²⁷ The contents of this article on environmental health and an interview by Sucena Shkara Resk published on the blog ‘Citizens of the World’, 01-12-2017. The person interviewed was the medical doctor Telma de Cassia dos Santos Nery. Telma has a long experience in her career in the fields of social prevention, work and environmental health. A member of the executive committee of the Latin American and Caribbean section of the International Society for Environmental Epidemiology (ISEE), she also works as a university lecturer and medical doctor and is a member of the Paulist Forum which combats the effects of agrochemical and transgenic products (cf. <http://cidadasdomundo.webnode.com/news/medica-sanitarista-telma-ner-y-fala-sobre-o-universo-da-saude-ambiental-com-destaque-sobre-os-impactos-dos-agrotoxicos>).

²⁸ The Lancet Commission on Pollution and Health, Executive summary, published online on 19 October 2017: cf. www.thelancet.com. [http://dx.doi.org/10.1016/S0140-6736\(17\)32345-0](http://dx.doi.org/10.1016/S0140-6736(17)32345-0).

²⁹ United Nations Environment Assembly of the United Nations Environment Program, Towards a pollution-free planet, Report of the Executive Director, Third session. Nairobi, 4-6 December 2017: cf. <http://www.unep.org/assembly/backgroundreport>.

killing no less than 570,000 people every year. Diarrhoea, which can be easily reduced by policies to improve basic hygiene, claims at least 361,000 victims every year. Furthermore, more than 200,000 people die because of malaria, a disease that can be prevented with environmental measures.

According to a report of the WHO entitled ‘Inheriting a Sustainable World? Atlas on Children’s Health and the Environment’ (2017), the principal causes of the deaths of children are the following:

- 570,000 children under the age of five die because of respiratory infections such as pneumonia attributed to domestic and external pollution and cigarette smoke.

- 361,000 children under the age of five die because of diarrhoea caused by bad access to treated water and to poor sanitation services.

- 270,000 children die during the first month of life because of complications such as prematurity which could be prevented through access to treated water, sanitation services and health-care units.

- 200,000 children under the age of five die because of malaria where this could be prevented through environmental initiatives such as the reduction of centres for the reproduction of mosquitoes and improvements in sources of drinking water.

- According to the World Health Organisation, 200,000 children under the age of five die because of non-intentional lesions attributed to the environment in which they live, such as poisoning, falls and drowning. In the year 2015, 5.9 million children under the age of five died in the world. Of these deaths, 26% were linked to environmental factors.³⁰

According to the commission on pollution and health of *The Lancet*, ‘Pollution is the largest environmental cause of disease and premature death in the world today. Diseases caused by pollution were responsible for an estimated 9 million premature deaths in 2015 – 16% of all deaths worldwide – three times more deaths combined than from AIDS, tuberculosis, and malaria and 15 times more than for all wars and other forms of violence: In the most seriously affected countries, pollution-related disease is responsible for more than one death in four’.³¹

Environmental factors also have an impact: 25% to 30% of the burden of illness is linked to environmental factors (WHO), 23% of all deaths, 36% of illness of children between the age of 0 and 4 and 37% of deaths of children of the same age band, according to the PAHO. It is important for every citizen to have information about the risks caused by the impact of the environment on our lives and for the state, which has an obligation to protect public health, to adopt strategies for environmental health. To act in the field of environmental health directly means the reduction of the burden of preventable illnesses and premature deaths. Amongst the principal environmental factors there are illnesses caused by the consumption of, use of, and

³⁰ World Health Organisation, ‘Inheriting a Sustainable world? Atlas on Children’s Health and the Environment’, 2017: cf. source: Saúde - iG @ <http://saude.ig.com.br/2017-03-06/oms.html>

³¹ The Lancet Commission on Pollution and Health, Executive summary, published online on 19 October 2017: cf. www.thelancet.com. [http://dx.doi.org/10.1016/S0140-6736\(17\)32345-0](http://dx.doi.org/10.1016/S0140-6736(17)32345-0).

exposure to, chemical substances, in particular pesticides. Brazil was the greatest consumer in the world of these products in 2008-2009.

The principal challenges to improve the system of health-care surveillance, according to the medical doctor Telma de Cassia dos Santos Nery, ‘involve the use of the information that is available to achieve effective action. We already know the various and grave effects of pesticides on human health. We need these consequences to be notified; measures of public health should be activated; and pesticides that are known to cause cancer should be prohibited within nations because they have grave effects on human health. They should be banned’.³²

Is there a way out of this situation? Ligia Noronha, one of the coordinators of the report, has emphasised that the production and sustainable consumption are of fundamental importance in reducing pollution: ‘the only answer to the question as to how we can all survive on this planet with our health and dignity intact is for us to change radically the way in which we produce, we consume and we live our lives’.³³

9) *The Evolution of Concepts of Health: Public Health, International Health, Global Health and Lastly the New Concept of ‘Planetary Health’*

The field of global health as an emerging discipline has important precedents such as public health and international health. Public health directs attention to society as a whole, to an interdisciplinary approach and to activity to promote, prevent and restore human health. The concept of international health, which was coined in 1913 by the Rockefeller Foundation (New York, USA), in fundamental terms is characterised by actions developed to prevent and control contagious infectious diseases; the fight against malnutrition, against the death of mothers at childbirth and afterwards and the death of children; and activity involving technical assistance, in particular in less developed countries. Traditional international health, instead, was based upon medical and biological aspects and on positive relations between developed countries and poor countries.

During the last decades of the twentieth century, the (complex and polysemous) term of ‘global health’ became consolidated. Global thought and global action are of fundamental importance because the various contemporary problematic realities of health such as influenza, SARS, tuberculosis that is resistant to treatment by medical products, malaria, polio and dengue do not respect national boundaries. Their study requires us to engage in joint work and action and achieve the cooperation of all the nations on the planet.³⁴

³² Cf. Telma de Cassia Dos Santos Nery, interview published in the Blog *Cidadãos do Mundo*, 1 December 2017.

³³ Cf. Ligia Noronha, *Poluição ambiental causa 12,6 milhões de mortes ao ano no mundo*: cf. www.onu.org.br

³⁴ Paulo Antonio de Carvalho Fortes when discussing the ethical value of public health, *Saúde Sociedade*, vol. 24 supol.1 São Paulo abr./jun.2015. This author who is a doctor in public health and a bioethicist, as well as the former president of the Brazilian Society of Bioethics, offers three ethical values that guide the field of public health: social justice, equity and solidarity. The objective of global health is to reduce inequalities and the social and health-care inequalities that exist in the world, offering to this field a direction based on the value of equity. I will now try to comment briefly on one of these values: equity. Equity, differently from the principle of equality, addresses differences, such as avoidable and useless social inequalities, in the search for what is just. Equity is said to be the attempt to ‘treat the unequal in an unequal way’ according to their needs. Global health directed towards equity should be developed to eliminate or at least reduce useless, avoidable and

Jeffrey P. Koplan defines global health ‘as an area of study, research and practice that gives priority to health and the achievement of fairness in health for all the inhabitants of the planet. Global health emphasises transnational health-care problems, their determinants and solutions, involves a number of disciplines within and beyond the health sciences, and promotes interdisciplinary collaboration. It is a synthesis of prevention based upon clinical assistance for the population at an individual level’.³⁵

In the view of Judith Rodin, the current president of the Rockefeller Foundation, the work of the Rockefeller and Lancet commission on planetary health has increasingly believed that public health as a discipline did not pay sufficient attention to climate change and its effects on our wellbeing: ‘We had the idea of integrating thought about the health of the planet with thought about human health’, Rodin explained, ‘In our global governance and also in our private sectors, we did not assess ecosystems as a global good. We treated it as a free good. In this way, we concentrated on problems of the air, the soil and water. Up to that moment nobody thought that they had control over them’.³⁶

In conjunction with this conversion, which explains the birth of the new concept of ‘planetary health’, Judith Rodin, a grant-receiver with a post-doctorate in psychology, introduced the term ‘resilience’ and became an enthusiastic proclaimer of the ‘gospel of resilience’. What is this? She defined it as ‘the capacity of people and organisations to deal with disasters, repair the damage, whether this is structural or social, learn from this experience and continue to prepare better for the next time’.³⁷

The document of the Rockefeller Foundation and the Lancet commission on public health defines planetary health in the following way: ‘The concept of planetary health is based upon the understanding that human health and human civilization depend on the flourishing of natural systems and a good management of natural systems’. The document goes on and seeks to clarify this new concept, observing: ‘The definition of health of the WHO is ‘a complete state of physical, mental and social wellbeing and not only the absence of illness or infirmity’. Our definition of planetary health wants to achieve a higher standard of health, of wellbeing and of world equity through special attention to the political-human and socio-economic systems that model the future of humanity and the natural systems of the earth, in addition to defining the limits of a secure environment within which humanity can prosper. Defining it in a simple way, planetary health is the health of human civilisation and the state of the natural systems on which it depends’.³⁸

unfair inequalities that exist amongst human beings. The militants of this area of public health lay emphasis on the assumption of ‘justice as fairness’ as formulated by John Rawls in the 1970s. ‘To ask how things are and if they can be improved is a constant and indispensable element in the search for justice’ observes Amartya Sen: *A ideia de justiça* (São Paulo, Companhia das letras, 2011).

³⁵ Jeffrey P. Koplan, ‘Towards a Common Definition of Global Health. Viewpoint’, cf. www.thelancet.com, vol. 273 June 6, 2009.

³⁶ Geoff Watts, ‘Judith Rodin: on the Path to Resilience in Planetary Health’, www.thelancet.com. Vol. 386 November 14, 2015, p.1936

³⁷ Geoff Watts, *ibidem*, p. 1936. The glossary of the document of the Rockefeller Foundation and the Lancet Commission on Planetary Health defines the term ‘resilience’ as ‘the capacity of an entity – a person, a community, an organization or a natural system – to prepare for interruption, to recover from a shock or stress, and to adapt and grow starting from this fragmented experience’.

³⁸ The Rockefeller Foundation – Lancet Commission on Planetary Health, ‘Safeguarding Human Health in the Anthropocene Epoch: Report of the Rockefeller Foundation – Lancet Commission on Planetary Health: cf. www.thelancet.com, vol. 386 November 14, 2015, 1973-2016.

The concept of planetary health places us in a new field of ethics. It teaches us that everything is interconnected on this planet, both the people who are now living and the people that will live as future generations. Every decision that we take about what to eat, how to move around, where to go for our holidays, what we buy, whether we should have a domestic pet or not, or also whether we should have a child, influences our natural planetary system. As a consequence, it also influences the health and the wellbeing of every person on the planet. The impact of each individual decision is infinitely minimal but its collective impact is enormous.³⁹ The new concept and the vision of health as planetary health also highlights problems relating to fairness. And as regards fairness or equity, we may remember that this concept is at the centre of the agenda for sustainable development for 2030, which means ‘nobody should be left behind’. In many cases the poorest people of the world and those with least resources at institutional, cultural, governmental or philanthropic levels, must be helped because they are the most vulnerable to environmental conditions that are undergoing rapid change. It is the poorest people with deficient diets who will be pushed towards a worsening of their nutrition, towards areas with higher concentrations of CO₂, which are increasing as a result of the emissions of coal in the world. Future generations will suffer the consequences of today’s unsustainable models of consumption. This disconnection between those who benefit and those who endure its consequences is profoundly unjust. We must redouble our efforts to place humanity on a new trajectory in the management of the natural systems of the earth. This is not simply a question of health – it is an ethical imperative! ‘We need to broaden the domain of public health to include the way in which we manage the natural system of our planet: which kinds of cities we build, how we produce energy, how we feed ourselves and how we protect our marine and land biodiversity. In the context of planetary health, the boundary between public health and other aspects of human activity becomes more porous. In short, we will need a new paradigm’.⁴⁰ And this paradigm is the concept and vision of ‘planetary health’.

This new paradigm identified a series of threats to health and requires a new science to address priority research (Samuel S. Myers sees planetary health as a ‘new field of research’). In what way do multiple changes, biophysical developments, from the loss of biodiversity to the shortage of land and water to climate change, influence the quality and the quantity of food that we can produce? Whose health is put at risk? In what ways will changes in the global climate and in the use of soil influence our future exposure to infectious diseases? What are the consequences in terms of the movement of populations and conflicts derived from interaction between the raising of sea levels and the growing occurrence of extreme and dangerous natural events with ruined harvests and scarce resources? What can be done to help the most vulnerable people? These problems will need researchers and health-care workers. Urban experts will be needed, as will

³⁹ The creative initiative of the UN, ‘The Environment’, is curious and surprising. This initiative seeks to value and spread the importance of the direct action of individuals in this global and planetary context, with the launch of the ‘Guide to Save the World!’ There are 42 suggestions available for anyone who can contribute to improving the life of the planet. In terms of marketing, it is emphasised that ‘change begins with you’ and ‘don’t pollute my future!’

⁴⁰ Samuel S. Myers, ‘Planetary Health: Protecting Human Health on a Rapidly Changing Planet’, p. 7: cf. www.thelancet.com, published online on 13 November 2017.

planners for urban areas, civil engineers and agronomists, as partners in achieving planetary health, and the same may be said for medical doctors, nurses and epidemiologists.⁴¹

Like every new concept, the concept of ‘planetary health’ acquires various nuances in the attempt to obtain a better definition, a better understanding and subsequent practical application. In this sense, the argument of Richard Horton, Robert Beaglehole and others is illuminating. In commenting on the report of the Rockefeller Foundation and the Lancet commission on planetary health they observe: ‘Planetary health is an approach to life, it is a philosophy of life. It assigns priority to the person, not to illnesses, and to fairness not to the creation of unjust societies. It seeks to reduce to the minimum differences in health based upon wealth, instruction, gender and place. It supports knowledge as a source of social transformation and the right to self-fulfilment and, progressively, the achievement of a higher standard of health and wellbeing!’

‘We know that we have a planet that feeds and sustains life diversity, by which we live and on which we depend. Our objective is to create a movement for planetary health’. To reach this goal, ‘an urgent transformation of our values and our practices is necessary which must recognise our interdependence and interconnections and the risks that we are facing. We need a new vision of cooperative and democratic action at all levels of society and a new planetary principle of wellbeing for every person on the earth. We must conserve, support and make resilient human and planetary systems, where health is achieved by giving priority to the wellbeing of everyone’.⁴²

The health-care dimension is a fundamental aspect for the progress of the agenda 2030 of the United Nations and for sustainable development. Amongst the seventeen goals, the third relates to health and wellbeing: guaranteeing a healthy life and promoting wellbeing for everyone and all ages.⁴³

⁴¹ Samuel S. Myers, *ibid.*, p. 7.

⁴² Richard Horton and Robert Beaglehole *et al.*, ‘From Public to Planetary Health: a Manifesto. Comment’: cf. www.thelancet.com, vol. 383 March 8, 2014, p. 847.

⁴³ By the year 2030 the following is envisaged: 3.1) reducing the overall rate of maternal deaths to less than 70 deaths every 100,000 live births; 3.2) avoiding the avoidable deaths of neonates and children under the age of five, with all countries aiming to reduce neonatal deaths to at least 12 every 1,000 live births, and death rates of children under the age of five to at least 25 every 1,000 live births; 3.3) ending the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combating hepatitis, water-borne diseases and other transmissible diseases; 3.4) reducing premature deaths caused by non-transmissible illnesses through prevention and treatment by a third and promoting mental health and wellbeing; 3.5) improving the prevention and treatment of substance abuse, including the use of drugs and the injurious use of alcoholic drinks; 3.6) by the year 2020 reducing by a half the victims of road accidents at a global level; 3.7) assuring universal access to sexual and reproductive health services, including family planning, information and instruction, as well as the integration of reproductive health with national strategies and programmes; 3.7) attaining universal health-care coverage, including financial risk protection, access to health-care services of an essential level of quality and access to medical products and vaccines that are safe, effective, high quality and affordable to all; reducing substantially the number of deaths and illnesses caused by dangerous chemical substances and contamination and pollution of the air and underground water sources; 3.10) strengthening the implementation of a framework agreement about the control of tobacco in all countries of the world according to cases; 3.11) supporting research and development as regards vaccines and medical products for transmissible and non-transmissible diseases which in particular afflict developing countries, in order to provide access to essential medical products and vaccines at affordable prices; 3.12) increasing substantially the funding of health care and the recruitment, development, training and maintenance of health-care personnel in developing countries; 3.13) strengthening the capacity of all countries, and in particular developing countries, for rapid alarms, risk reduction and national and global risk management.

10) *Is there Hope that we Can Build a Sustainable Future? Looking Ahead and Planning Opportunities for a New Beginning!*

Let us begin our analysis of this subject by understanding what connecting the value of health to the environment, to the planet earth, means, and going on thereby to the concept of ‘planetary health’ which evokes the thoughts of the astronaut Bill Anders. We will end this analysis by going back to him. It is very difficult to know what was going through the mind of Bill Anders when he went to the moon and discovered the earth. Perhaps one of the reasons why many people were amazed by the photographs of space was not only the extraordinary beauty of the blue, green and white corners of the earth but also a new awareness, a new discovery, that was evoked. Our planet seen from space is beautiful and unique, small and after a certain fashion also surprisingly contained. They are not pictures that speak about unlimited resources or about an unlimited capacity to absorb or the waste that we produce. Fascination and admiration are evoked and in us a feeling of protection and care is awakened.

Another American astronaut, Edgar Mitchell, the sixth person to walk on the surface of the moon, described the appearance of the earth from the surface of the moon in the following way: ‘Suddenly, from behind the rim of the moon, in long, slow-motion moments of immense majesty, there emerges a sparkling blue and white jewel, a light, delicate sky-blue sphere laced with slowly swirling veils of white, rising gradually like a small pearl in a thick sea of black mystery. It takes more than a moment to fully realize this is Earth . . . home’.⁴⁴

The Russian cosmonaut Alexei Leonov, for his part, spoke as follows: ‘The Earth was small, light blue, and so touchingly alone, our home that must be defended like a holy relic’.⁴⁵ For our analysis we can take up the words of the cosmonaut Bill Anders who stated that he had ‘discovered the earth’. We could say that we are discovering a new relationship with our planet. Our ‘common home’ is at the same time a fascinating inspiration, but equally it is fragile. As a ‘living organism’, on the one hand it sustains us as human beings, like all the other living beings; on the other, it also needs, at this moment more than ever before, our responsible care. Here there emerges the urgency and the need for the ethics and bioethics of human responsibility.

This human responsibility starts with a responsible and respectful management of the earth. James Irwin, the eighth man to walk on the soil of the moon, described his vision of the earth as a profound mystical experience: ‘That beautiful, warm, living object looked so fragile, so delicate, that if you touched it with a finger it would crumble and fall apart. Seeing this has to change a man, has to make a man appreciate the creation of God and the love of God’.⁴⁶

During the Enlightenment, Western civilisation embraced Cartesian dualism and emphasised the material and scientifically accessible aspect of the spiritual. The explosion of scientific knowledge and the consequent technological advances led to enormous benefits for humanity but they also made us blind to other forms of knowledge. The astronauts who first looked at the earth

⁴⁴ Edgar Mitchell, <http://www.beliefnet.com/inspiration/2009/07/famous-astronaut-quotes.aspx?p=9> (consulted on 12 December 2017).

⁴⁵ Alexei Leonov, <http://beliefnet.com/inspiration/2009/07/famous-astronaut-quotes.aspx?p+7> (consulted on 17 December 2017).

⁴⁶ James Irwin, <http://beliefnet.com/inspiration/2009/07/famous-astronaut-quotes.aspx?p+7> (consulted on 21 December 2017).

from space did not exalt the power of the science and technology that had taken them there. First of all they expressed wonder and reverence. ‘Developed societies have generally drawn away from such a feeling of enchantment and reverence for the natural world that sustains us, or they have internalised it, reducing it to a dimension separate from our lives that does not form a part of our daily activities...It may be that native or aborigine cultures and many faith traditions have an important role in reconnecting us with other important forms of knowledge that are more consistent with the responsible management of our natural systems’.⁴⁷

At the beginnings of the studies connected with bioethics (USA, 1970), an encounter took place with Van Rensselaer Potter (1911-2001), a biochemist at the University of Wisconsin (Madison, WI), one of the fathers of this subject (indeed the inventor of the neologism ‘bioethics’). The problem was immediately posed of progress that brought with it ‘dangerous knowledge’, hence the idea that knowledge had to be used for the social good (the common good) and only in this way would it become wisdom. And here bioethics began as the wisdom of using human knowledge for the social good ‘as a bridge towards the future’ (1971) – the name of his first publication and the first book of bioethics to be published in the contemporary world.⁴⁸ Potter defended an ethics of life that went well beyond human beings and embraced the cosmic-ecological dimension. He recognised that his vision of bioethics included a cosmic dimension and was linked to the ecology of life. The guiding point of departure of this vision was Aldo Leopold (1887-1949), one of the pioneers of the environmental movement in America who was also a lecturer at the University of Wisconsin and wrote ‘The Land Ethic’.

Leopold proposed the need for a new ethical basis for a new relationship between people and the land. He imagined the awakening of a new ecological awareness that would redefine humanity as a part of nature rather than an external conqueror. Conservation was a terrible challenge, he observed; the erosion of soil, the pollution of water and the loss of wild fauna required solutions based not only on ecological concerns but also on ethical beliefs.⁴⁹ A pungent declaration of Aldo Leopold reveals his philosophy and his understanding of this question: ‘The fact that the earth is a community is the concept that underlies ecology, and that the earth must be loved and respected is an extension of ethics’.⁵⁰

The Lancet commission on health and climate change, which monitors the development of this health-care problem in relation to climate change every year, recalled what was observed in the report of 2015: ‘Anthropogenic climate change threatens to undermine the last fifty years of gains in public health and, in contrary fashion, a global response to climate change could be the greatest global health-care opportunity of the twenty-first century’. It concluded in 2017 that ‘overall, the trends presented in this report are deep worry, highlighting the immediate threats to health posed by climate change and its consequences in all parts of the world. However, the more

⁴⁷ Samuel S Myers, ‘Planetary Health: Protecting Human Health on a Rapidly Changing Planet’, *The Lancet online*, published on 13 November 2017, p. 7: cf. [http://thelancet.com/journals/lancet/article/PIIS0140-6736\(17\)32846-5/fulltext](http://thelancet.com/journals/lancet/article/PIIS0140-6736(17)32846-5/fulltext).

⁴⁸ Van Rensselaer, *Bioética ponte para o futuro*, São Paulo, Edições Loyola, 2016.

⁴⁹ Tony L. Goldberg and Jonathan A. Patz, ‘The Need for a Global Health Ethic’: cf. www.thelancet.com vol. 386 November 14, 2015, p. 38.

⁵⁰ Aldo Leopold, ‘The Land Ethic’, in *A. Leopold, A Sand County Almanac and Sketches Here and There* (Oxford University Press, New York, 1949), pp. 201-26.

recent trends of the last five years demonstrate a rapid increase in action which solidified with the Paris agreement 2015. These timid signs of progress serve as a stimulus and reflect a growing political consensus and ambition which was forcefully seen in response to the withdrawal of the United States from the treaty on climate change of 2015. Whereas action should increase rapidly, progress provides a clearer signal: we are in a stage of transition towards low carbon emissions. No country or head of state can stop this progress and the direction of the journey, by 2030, has already been established'.⁵¹

In general, today a very negative and apocalyptic vision of the future is cultivated. We already have works with a science fiction character about what will happen. Stephen Hawking, for example, an English physicist, is convinced of the end of the world and believes that humanity has less than 600 years to leave the earth. Humanity 'needs a new home' and in this sense it is necessary to develop technologies that would allow the colonisation of another planet. Much less pessimistic than Stephen Hawking is James Lovelock who argues that everything is already lost and that the damage done to the earth cannot be corrected. In the report 'Safeguarding Human Health in the Anthropocene Age' by the commission for planetary health, the Rockefeller Foundation and *The Lancet*, which we have commented upon and subjected to study in this analysis, conclude by stating that there would be a future if human beings achieved an agenda of work and behaviour starting today. 'Humanity can manage successfully and live well in the twenty-first century if it corrects the unacceptable inequalities in health and in economic wealth, within the limits of the environment of the earth. But this will require the generation of new knowledge, the implementation of wise public policies, decisive action and stimulating leadership'.⁵²

In addition, it will be necessary to adopt the agenda 2030 of the United Nations on 'humanly sustainable development', guaranteeing a healthy life and providing wellbeing for all people of all ages (goal 3) and assuring that nobody belonging to humanity is left out (fairness).

I share the promising vision of better days for the health of humanity and the planet of Samuel S. Myers who on this point argues that 'To reach a state of planetary health a new vision will be needed of how we define our place on the planet. A new narrative will reject the consumerist dogma – which sees the achievement of happiness as being through an infinite race to purchase – and embraces the values that we all know. What makes us truly happy is the time that we spend with the people that we love, being connected and belonging to a specific place and community, feeling ourselves connected to something greater than ourselves and taking care of each other'.⁵³

We need add nothing else than to admire and revere this vision of 'science with wisdom' and say 'let it be so'! We have before us an urgent moment when we should begin to be constructive actors of another possible world, with our innovative activity involving responsible care for life

⁵¹ Cf. Nick Watts, Markus Amann *et al.*, 'The Lancet Countdown on Health and Climate Change: from 25 years of inaction to a Global Transformation for Public Health': cf. www.thelancet.com published online 30 October 2017.

⁵² The Rockefeller Foundation – Lancet Commission on Planetary Health, 'Safeguarding Human Health in the Anthropocene Epoch: Report of the Rockefeller Foundation – Lancet Commission on Planetary Health': cf. www.thelancet.com, vol. 386 November 14, 2015, p. 274.

⁵³ Samuel S. Myers, *op. cit.*, p. 7.

and human and planetary health! This is the ethical moral imperative of everyone – without exceptions.