HEALTH EQUITY
THE KEY FOR TRANSFORMATIONAL CHANGE

AN ATLAS THROUGH GRAPHS AND MAPS REVEALING THE NEED FOR AN INTERNATIONAL, NATIONAL AND SOCIAL CHANGE TO ENABLE THE UNIVERSAL RIGHT TO HEALTH

JUAN GARAY

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Prologue by Dra. María del Rocío Saénz Madrigal, Executive President, Caja Costarricense de Seguro Social, San José, Costa Rica.

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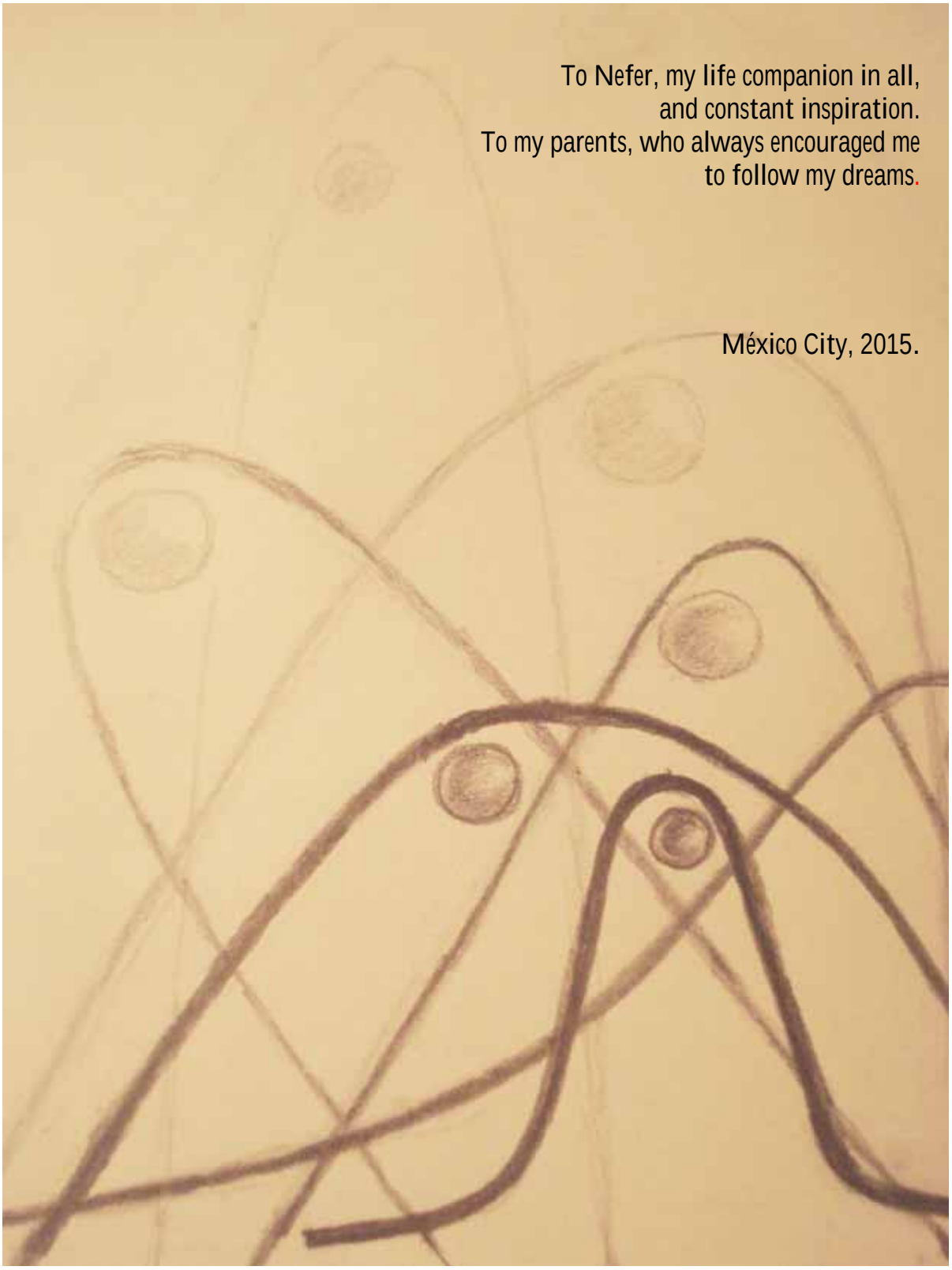

This image is a work made by my father, Enrique Garay. It represents the multiple, perhaps endless, equity curves that coexist in the universe. The distortion that the human species suffers from extreme hoarding of their resources and depletion of nature that sustains it, all this has a tragic price in avoidable deaths. But mostly, it is a tribute to my father and his constant inspiration and support in my life. Juan Garay.

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ABOUT THE AUTHOR

Juan Garay is a medical doctor from Spain, specialized in internal medicine, infectious diseases and public health. Since the 80s, he has combined clinical, public health, research and design on health systems (as some of the early AIDS treatment programs in Africa), in many countries in Europe, Africa and America, with governments, universities and non-state actors.

In 2002 he joined the European Union, working initially in the design of EU health cooperation policies and programs. He gradually explored the roots of health in the areas of human rights -coordinating the work towards the EU external policy on children rights- and the multisectorial dimensions of health which led to his coordination in the development of the EU policy on global health. In relation to global health challenges, he has focused on research on global health equity in the last years, now reflected in this book. Since 2013 he works as head of EU cooperation in Mexico, with special emphasis on analysis and policy dialogue on social cohesion.

In parallel to his responsibilities in the EU, Juan Garay is professor of global health in Granada and Madrid, advisor to the South American Institute of Health Governance, visiting lecturer in UC Berkeley, as well as guest lecturer in several universities in America and Europe, where he continues research and academic activities in relation to health and social equity metrics.

His passion for justice and health, within and between generations, is reflected in a novel which mixes his life experiences with his vision of the future (http://www.bubok.es/libros/209095/Valentia-y-Ternura-Todos-somos-la-misma-energia).

PROLOGUE

Regarding the health of our populations, there converge multiple social organizations, and academic and labor sectors that debate and coordinate over a minimum basis of consensus, something that in recent years we have considered sacred and immutable: the concept of health, its enjoyment as a fundamental right, and its relevance as a part of sustainable development.

Starting from this common base, with somewhat less consensus, we attempt to define the organized response of society to this collective aspiration of health. The role of the individual, the State, the private sector, and intergenerational responsibility have a wider range of conceptual, ideological, and cultural approaches; so, depending on how these factors come together, we also find a greater variance in performance grades and justice of health systems.

The exponential speed of change as the main feature of our times, coupled with the inability we have had to ensure optimal conditions for everyone, ironically, could have led us to an acceptance of such basic concepts as "universal and timeless" or even -to those who often reject critical and creative thinking in favor of the *status quo*- as an "unattainable aspiration", or, in other words, as unquestionable ideals to be supported by all ages and generations.

However, those same justifications demand that we pause to deconstruct and review the foundation of our actions. We must do it in such a way that we can understand if the broad marginal gaps of the performance of our health systems originate from those paradigms that have governed modern health management, and, therefore, could now contribute to their reduction by way of a revised and renewed ethic, and from the challenges posed by this historical moment.

This exercise, deep and scientific as it may be, cannot ignore that there is a clear social demand for the pragmatic implications of every effort we make in the construction and management of health. In this sense, the debate on health equity (with its intrinsic framework of social justice) and sustainability in health, and various complementary frameworks for action such as global health, must be a path to produce viable policies, swift actions, useful tools, and concrete and measurable health impacts of current and future populations from different areas of health management (the individual, the local service networks, health systems, and the global community).

The work of Dr. Garay serves three main purposes in this roadmap. The first is to introduce the renewed debate over our paradigms or basic concepts mentioned above: health, the right to health and sustainable development. These should all be seen with a critical view of our new century and assuming that it is an ethical responsibility to adapt our conception of the world into a vision focused on the health needs of the people, understanding needs as a concept that reconciles the biases of supply and demand in health through evidence and real participation.

The second purpose, addressed with an important proactive approach, is to propose a concrete measurement of the discourse of (in) equity and the dimension -as yet ethereal- of the best achievable status of health. Concepts such as the burden of inequity or the holistic health index make way for the new generation of metrics to address the analysis of health systems, the management of public policies, and their performance models, and move them toward more humanistic and sustainable approaches.

This idea, if it is good for any health system, is mainly valuable for middle- and low-income countries. These two groups of countries urgently deserve strategies differentiated and tailored to the availability of resources to organize their health systems, and a guarantee for their people of the best possible performance in health status, without falling back on the old idea of "unsustainable spending focused on disease care".

The third purpose, interdependent of its predecessors, is to place a large amount of "responsible hope" on the basis of scientific evidence and the collective potential of humanity. In this ambitious undertaking, the analysis developed by Dr. Garay presents an ontological question about the ethical and socio-economic implications for our universal model of development that is usually avoided: "... there is a minimum level of per capita income (minimum threshold of dignity) below which the dignity of life is not respected…".

That approach does not lead to the conclusion (conviction) that only the growth of per capita income, *per se*, implies an improvement of those living conditions. Instead, it reinforces the bidirectional relationship confirmed already by previous analyses: sufficient resources are required to improve living conditions (and, in turn, health), and good living conditions are *sine qua non* conditions for income growth.

Beyond that premise, Dr. Garay posed the existence of Equitable-Sustainable Health models (ESH), that optimize health spending (investment), for the best possible performance in health. And this is the best news that we can provide to middle- and low-income countries in our century: the health of our populations owes a lot to models, approaches, and management styles that policymakers and practitioners of health implement in our environments.

This grand conclusion ultimately presents us with a great challenge, which Costa Rica, along with other developing countries, has come to sponsor in the global context: there is no international framework for monitoring levels and dynamics of health (in) equity, but we are still making decisions based on a framework of inequalities in health, both locally and globally.

Is here where knowledge becomes an ethical demand to human beings and, in particular, those who have the ability and access to study this work: if there is a best possible health status for our generation, which, in turn, does not compromise the generations to come, why are we waiting to bring the desired and possible future of health-however many struggles we may face- to the present? The time for action is now!

Dra. María del Rocío Sáenz Madrigal
Executive President
Caja Costarricense de Seguro Social
San Jose, Costa Rica
July, 2015

FOREWORD

Have you ever wondered why is it that the World Health Organization's definition of health as the optimal level of physical and psychological wellbeing and not just the absence of infirmity is such a vague statement? How this lack of precision in the definition prevents us from having a clear-cut overarching and measurable global health goal? And, how this ambiguity allows global health inequities to continue growing under the radar, while governments are not accountable to their constituents or to any international body regarding the universal right to health of all people?

"HEALTH EQUITY, THE KEY FOR TRANSFORMATIONAL CHANGE" proposes an urgent need to have a new and practical definition of the best attainable health for all that will allow us to express a concise, ethical and universal goal, incorporating individual and collective dimensions to objectively measure the health equity gap between and within countries. The book not only uncovers a stark reality, but also renders a grim picture of global health inequity with comprehensive documentation, highlighting a long-standing and ongoing worldwide death toll of about 50,000 avoidable deaths every day, which is ethically intolerable and can only be explained by economic injustice.

With a deep understanding of the issues at play drawn from his extensive experience working as a primary healthcare physician in Zimbabwe and from his lead in the EU Policy on Global Health, Dr. Juan Garay identifies a clear global health objective that takes into consideration not only viable, but ecological targets, developing a healthy, feasible and sustainable (HFS) model, through a novel approach, utilizing readily available data and identifying specific countries which fit the criteria of the model. The analyses also identify countries and population subgroups mostly affected by inequity. Dr. Garay shows important conclusions from these analyses and articulates practical insights to eliminate global health inequities with extensive information with time trends from the 1960's to the present, organized in detailed tables, figures and maps. After quantifying the cost of bridging the global health equity gap, he manages to outline a mechanism to finance the necessary interventions through a principled-approach of a binding global redistribution system; he compares such a methodology with the outdated, arbitrary and inefficient international cooperation model. The approach considers global levels of poverty and excessive global accumulation, which abuses natural resources in such a way as to deprive current and future generations from the access they deserve, while contaminating the planet beyond its capacity, alluding to the concept of intergenerational equity.

The book discusses crucial concepts like the difference between equity and equality, the global burden of health equity, the minimum income threshold for dignity, the maximum threshold of income above which excessive accumulation or hoarding occurs, and how resource hoarding is directly linked to the burden of health equity; while also proposing a holistic health index, including healthy life expectancy by gender, the happiness index, and life-years lost of others due to the hoarding effect and to exhausting effect.

From my perspective as a physician working for many years with underserved indigenous communities in Ecuador, and from a public health point of view, as former Minister of Health of Ecuador and former President of the Council of Health Ministers of South America, this exceptional volume provides an alternative and practical approach to identifying and quantifying gaps in health equity. The methodology provides tools to defend the right to health for all by supporting the development of binding instruments linked to concrete health standards attainable through a financially sustainable mechanism. As such it is an important contribution to the efforts of healthcare workers, public health officials and scholars, in addition to those of community and political leaders at the local, national, regional and global levels. This remarkable book will transform your perspective on global public health, and will motivate you to join the fight for health equity, one of the most important challenges of our generation.

David Chiriboga, MD, MPH
Zumbahua, Ecuador
Former Minister of Health of Ecuador
Former President of the Council of Health Ministers of South America

Juan Garay has written a book that is of the highest value to the pursuit of global health justice. He shines a light on the glaring and unconscionable health inequalities that exist in rich and poor countries alike.

With new methodology and meticulous precision, Juan estimates for the first time that there are some 17 million annual deaths each year that are needless according to healthy, equitable and sustainable models. The world needs to reflect on how to move people and resources to the “equity zone", compatible with the universal right to health.

Professor Lawrence O. Gostin
Founding and Faculty Director - O'Neill Chair in Global Health Law
Director, WHO Collaborating Center on Public Health Law & Human Rights
Georgetown Law School, Washington, USA

This is a book which aims at something very few dare to do: establish a relation between ethics and quantitative probability sciences. On the one side, equity, the right to health, dignity and the social responsibility of the State; on the other, the measurement of avoidable mortality and the burden of global health inequity, the estimates of the effects of hoarding and exhausting resources, besides the proposal of an holistic health index. The interpretation of these relations requires a multidisciplinary approach, another interesting dimension of this manuscript.

Finally, the book´s reading suggests a debate on the importance of the access to quality care and the efficiency of the provision of health services, two health determinants that while the book does not directly deal with, will allow discussion on the classifications hereby presented and benefit the analysis based on the parameters explored by Juan Garay in his innovating essay.

Professor Jean Pierre Unger
Public Health Department
Eminent Scientist of the Year 2004 International Award
Institute of Tropical Medicine- Antwerp- Belgium

I. SUMMARY

Before reading this work, be aware that it challenges many of the present global concepts and policies on health. It dares to do that based on the evidence of the tragic death toll from global health inequity (injustice), which requires a deep transformation of concepts and dynamics towards the universal right to health.

This work challenges the definition of health (to include equity and sustainability dimensions), the lack of accountability in the guarantee of the right to health (so that the ICECSRs and its optional protocol not be ignored), the international denial of measuring health equity (and instead describing inequalities), the strategies of measuring inequalities-acting on poverty (and the need to shift to measure inequity and ensuring minimum dignity for all), the present international cooperation framework (versus a binding redistribution mechanism to enable the right to health) and the human development indicators (proposing a holistic health index which incorporates individual and also collective dimensions of our effects on others).

Health is a universal human right, as recognized in the Universal Declaration of Human Rights (UDHR). Health equity -best feasible health for all- is the main principle of global health accepted by all countries, as recognized in the founding objective of the World Health Organization. However, as the levels of best feasible health have never been agreed upon, the state and trend of health equity and inversely the burden of health inequity have never been measured.

Daring to set best feasible health standards for all, across and within countries, is essential to operationalize and measure the universal right to health.

We hereby propose a very simple, solid and understandable (and sustainable, to expand the feasibility across generations) method to set best feasible health standards: we define countries that for the last 70 years have complied with three criteria (UN available demographic statistics): 1) life expectancy above the world´s weighted average (by countries population sizes), 2) GDP pc below the world´s weighted average (feasibility) and 3) carbon footprint below the planetary boundary (sustainability). This method can be applied at subnational and regional levels.

Only fourteen countries have constantly met the mentioned criteria. We analyzed their average health indicators disaggregated by age periods, sex and across time, and enable the calculation of the burden of health inequity by countries, ages, sex and time periods. Such analysis is represented in charts and maps which are only a small sample of the interactive database of maps and graphs of global health equity.

This analysis concludes that over one in three annual deaths worldwide are avoidable by global health equity. In the last five year period, the annual average of avoidable deaths was over 17 million deaths, 2000 every hour. Most of the avoidable deaths took place in the countries with GDP pc below the minimum income threshold defined by the healthy-feasible-sustainable (HFS) models.

This tragic death toll due to global injustice challenges the global economic and cooperation framework. The redistribution required to enable all persons in the world to have the chance to enjoy a globally feasible-sustainable minimum level of life expectancy challenges the far lower, inequitable and volatile levels of development "aid".

The work ends by challenging also the global rating of development (as the Human Development Index), by introducing the dimensions of our effects on others (here or to come), through the effects of hoarding and/or exhausting natural and economic resources.

II. INTRODUCTION TO THE CHALLENGE OF HEALTH EQUITY

Health is -even by the limited physical dimensions we often measure it: a lengthy life deprived of disability-, one of the main aspirations of human beings, across times in history, across cultures and religions. It is one of the main forces driving research and innovation, economic activity, and political attention.

The term *global health* has replaced the *international health* definition, incorporating the complex variety and interaction of health actors and factors. The main principles of global health -at international or local level- may be summarized in that health should be by all people -Alma Ata-, in all policies -Ottawa- and for all persons -universal health coverage.

The main guarantee towards such principles is a legal framework that recognizes the *right to health*. At country level, over 100 national constitutions recognize the right to health of all their citizens and most national health policies have such aim as their main objective. All countries declared the recognition of the right to health in article 25 of the Universal Declaration of Human Rights, but very few countries are held accountable to an international committee where their citizens may report to if governments fail to comply.

Beyond national constitutions and international treaties, how can the status of the universal right to health *be assessed*? Some estimate that over one third of people in the world have no access to health services. But even those with access to health services may be deprived of their right to health as living conditions deter their health and even the best health care does not recover more than one third of health lost to other causes. On the other side, health disparities may be due to people (genetic), places (epidemiology) or even the culture (religion, traditions), contexts difficult to change within a generation. This challenge is phrased in the only common health objective shared by all countries: article 1 of the constitutional charter of the World Health Organization (since 1945): to achieve the *best feasible standard of Health by all peoples*[1].

Health differences are regularly measured and reported within and between countries. The world health statistics report every year a wide array of countries' average health indicators which picture health inequalities between countries. The Commission on Social Determinants for Health reported on health inequalities between and within countries and the factors (almost every political, social, economic and cultural factor) associated with such disparities. The report's recommendations were welcomed by the World Health Assembly in 2010, and based on this report, they agree to call the members countries to report on "*health equity*". However, only one in three countries is recorded under WHO's "Health equity monitor" on the differences or ratios (inequalities) of health and health services' indicators between populations of different places (urban/rural), education (mother's education) or income (by income quintiles). Only low and low-middle income countries are included through the analysis of surveys[2].

Even those reports fail to estimate "health equity". There is a fundamental *difference between inequality and inequity*. Inequality measures the mathematical differences of a variable between two individuals or groups featured by another influencing variable. In contrast, inequity measures the fair level of inequality. It recognizes a range of differences due to factors not amenable to change (as genetic and epidemiologic) and the threshold beyond which differences are unfair and avoidable. It defines, therefore, the beast feasible levels of health and how it reaches -or doesn't (burden of inequity)- reach all people. But, so far, the burden of health inequity is not regularly monitored or reported in most countries.

[1] http://www.who.int/governance/eb/who_constitution_en.pdf

[2] Demographic Household Surveys (DHS) and Multiple Indicator Cluster Survey (MICS).

Being health one of the main individual and collective aspirations, recognized in national and international declarations (yet with failed accountability) and the common health goal of all nations, why has the level of its common global objective -the *best feasible health* - never been estimated, and hence neither how that level reaches *all* peoples?

Health is a consequence (and often an interactive cause) of almost every policy area. Therefore, health inequity may be the best *indicator of social cohesion* and social justice.

There is an additional dimension of equity which needs to be considered 70 years after the shared international health goal, and, in fact, to every national or international policy objective: *sustainability*. The abuse of natural resources today has an impact in the health of coming generations, that is, on inter-generational health equity. This was well recognized by the Lancet commission on Global Governance for Health: that the global economic system should serve a global population of healthy people in sustainable societies, *within the boundaries of nature*[3]*.*

Health equity may be the most sensitive indicator of social cohesion -social justice- and contributes to modulate the root causes of health, shifting from a mitigating to a transformational role.

[3] Ottersen OP, Dasgupta J, Blouin C, Buss P, Chongsuvivatwong V, Frenk J, *et al*. The political origins of health inequity: prospects for change. Lancet (Internet) 2014; 383(9917): 630-667. Available from: http://www.globalweek.gu.se/

III. RESCUING AND UPDATING THE ETHICAL PRINCIPLES OF HEALTH IN XXIST CENTURY

UPDATING THE WORLD HEALTH ORGANIZATION DEFINITION OF HEALTH

At the time of the foundation of the World Health Organization, *health was defined* as "a state of complete physical, social and mental well-being, and not merely the absence of disease or infirmity"[4].

Such definition has been widely accepted and repeatedly quoted in the last 60 years, but the *psychological and social wellbeing* dimensions have not been defined and no standard indicators have been agreed upon.

These dimensions are not captured in the world health statistics or in any of the targets agreed in the thousands of world health resolutions or international agreements. Despite the global neglect this definition has been subject to, it also requires, in our opinion, an *update* or review of:

a. Firstly, the "complete" wellbeing may seldom be felt by most people, and rather we all *adjust* to some acute or chronic health challenges and handicaps so as to enjoy life personally and our relation with society and nature. For instance, wearing glasses does not necessarily mean a limitation to our well-being but an adequate adjustment to a physical challenge.

b. Secondly, our wellbeing should not be -by accumulating limited resources- at the *expense of others' health*, or based on the destruction of nature -at the expense of the health of next generations-. Individual health should therefore be qualified by its *equity* and *sustainability*.

We hence propose an update in the definition of health linked with the global health objective, which would read:

> *"Health is a state of wellbeing through the adjustment to physical, social and mental challenges in an equitable and sustainable way, which enables the attainment of best feasible standards of health by all peoples".*

According to this health definition hereby proposed, individual health should also relate to the *responsibility on the health of others* (in our generation and those to come).

This concept calls for *new ways of measuring health* beyond its individual enjoyment, often the gravitational centre of the western monotheist religious and philosophical references.

At an individual level, we could measure our health not just in healthy life years, but also including the *dimensions of social and mental wellbeing* (as with the *happiness index*[5]).

At a collective level, we need to consider our effects on the health of others in our generation through the "*hoarding effect*" (surpassing the maximum threshold of resources which prevents health equity) and of future generations through the "*exhausting effect*" (living above the maximum ethical limit of hectare use and carbon footprint below which we may preserve nature -and a healthy life- for coming generations).

[4] http://www.who.int/about/definition/en/print.html
[5] http://unsdsn.org/wp-content/uploads/2014/02/WorldHappinessReport2013_online.pdf

Such *consolidate health index* would inform people and communities on the balance between their enjoyment of health and their effects on others and the need to maximize and balance both. As the following sections will show, the measurement of the burden of health equity will enable the assessment of individual and collective negative impacts on the health of others though the mentioned hoarding and exhausting effects.

RECOGNITION AND OPERATIONALIZATION OF THE RIGHT TO HEALTH: STATE, INTERNATIONAL, SOCIAL AND INDIVIDUAL RESPONSIBILITIES

At present, health is a *human right for some and a commodity or optional benefit for others*. This is what differentiates the understanding of the roles of the state and civil society, the legal frameworks and the market regulations, and the national and global health policies and strategies.

Since 1947, article 25[6] of the Universal Declaration of Human Rights, is clear on the right to health and many of its determinants. Around the same time, the World Health Organization was founded with the objective, as mentioned above, to achieve the best possible for all peoples.

Such declaration took almost 20 years to translate in an international binding framework with right holders (citizens) and duty bearers (the States) in *article 12 of the International Covenant of Economic, Social and Cultural Rights*[7]. While only six countries have failed to ratify the Covenant[8] -the United States amongst[9]-, only 18 have signed the *optional protocol*[10], whereby countries are held accountable to an international committee where their citizens may report to if governments fail to comply. Similarly, only a minority of countries have committed to accountability on the other four main international treaties related to the right to health for specific groups (children, women, migrants and disabled).

As a consequence, the recognition of the right to health remained like a nice intention, but not binding declaration for most, and the majority of world's citizens *cannot report anywhere* at national or international level, when their basic health needs or access to adequate health services are not met.

At the same time, the global agreements or initiatives that targeted only some health problems or some populations, had more visibility and political and social attention.

At the turn of the Century, they influenced the setting of the *non-right based health MDGs,* while the *general comment* on the right to the Highest Attainable Standard of Health of the ICESCRs[11] went largely un-noticed. Certainly, the shorter term of results of targeted initiatives (yet partial, discriminative and often short lived) provides the political credits during politician's mandates and is more amenable to specific results and front-page news, than the longer term approach of establishing health right frameworks and universal and comprehensive health services which leave no people nor health conditions out.

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[6] http://www.un.org/en/documents/udhr/index.shtml#a25
[7] https://treaties.un.org
[8] https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=IV-3&chapter=4&lang=en
[9] Economic, social and cultural rights: Questions and answers" (PDF). Amnesty international. p. 6. Retrieved 2 June 2008: "The United States signed the Covenant in 1979, under the Carter administration, but is not fully bound by it until it is ratified. For political reasons, the Carter administration did not push for the necessary review of the Covenant by the Senate, which must give its 'advice and consent' before the US can ratify a treaty. The Reagan and George H.W. Bush administrations took the view that economic, social, and cultural rights were not really rights but merely desirable social goals and therefore should not be the object of binding treaties. The Clinton Administration did not deny the nature of these rights but did not find it politically expedient to engage in a battle with Congress over the Covenant. The George W. Bush administration followed in line with the view of the previous Bush administration. The Obama Administration stated it does not seek action at this time on the Covenant".
[10] https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=IV-3-a&chapter=4&lang=en
[11] http://www.nesri.org/sites/default/files/Right_to_health_Comment_14.pdf

There is a deep contradiction of some high-income countries in championing the cause of health at global level yet not recognizing the universal right to health at home. Before more and more declarations of commitment in improving the health of all, many of them repeated in cycles during the last 65 years, and expensive international conferences and grand declarations, all member states in the world should *recognize the universal right to health* and accept international means of reporting and verification.

> The first commitment in the international debates on health should be the recognition of the right to health in a binding and accountable way.

This challenge of the universal right to health involves the *responsibilities of all*, not just States and their institutions (beyond the shifts of governments). It involves citizens through the above mentioned balance of the individual and collective dimensions of health.

It involves health professionals. Their shared code of ethics, the *Hippocratic oath*[12], 2500 years old, or various adaptations, is sworn by most medical students upon graduation[13]. It was adapted in 1948 by the World Medical Association as the Declaration of Geneva (Physician's Oath) and amended in 1968, 1983, 1994, with editorial revisions in 2005 and 2006.

The text[14] still concentrates on the health professional´s duty for his or her individual patient. However, it has one sentence that related to equity[15] (how many doctors engaged in private practice -over half of the world´s health professionals- commit to their oath of "*preventing social standing to intervene between their duty and their patients*"?), but it does not relate explicitly to the right to health.

The health professionals role in the universal right to health, demands an additional sentence in the physicians oath when taking the responsibility of the health profession in the XXIst Century:

> "In my personal and professional capacities, I will preserve and promote the universal right to health through health equity within and between generations".

SETTING PRINCIPLES OF GLOBAL HEALTH

In 1978 the International Conference of Alma-Ata[16] agreed on principles to advance on the health for all peoples, with an emphasis on the democratization of health, recognizing that health was to be achieved for all peoples and by all people.

Some years after, the Ottawa charter[17] acknowledged that health was deeply related to all others policies and that it should be addressed in all policies.

From the nineties, the reference to the world's shared health challenges was progressively referred as *global health,* gradually replacing the term of *international health* and recognizing the growing diversity of factors and actors influencing the health of all nations and peoples.

[12] Edelstein L. The Hippocratic oath: text, translation and interpretation. 1943.
[13] Kaji S, Russell G, Fritz Z, Wong D, Rollin M, Dunning J, *et al*. Medical oaths and declarations. BMJ 2001; 323(7327): 1440-1441.
[14] http://www.wma.net/en/30publications/10policies/g1/
[15] "I WILL NOT PERMIT considerations of age, disease or disability, creed, ethnic origin, gender, nationality, political affiliation, race, sexual orientation, social standing or any other factor to intervene between my duty and my patient"
[16] http://www.who.int/publications/almaata_declaration_en.pdf
[17] http://www.who.int/healthpromotion/conferences/previous/ottawa/en/

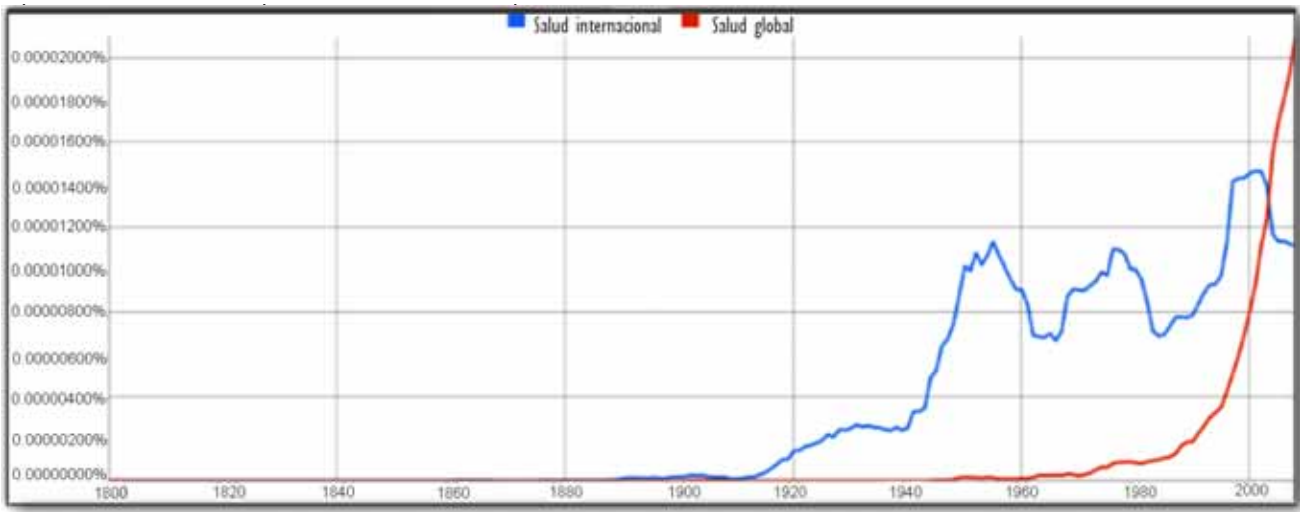


FIGURE 1: USE OF GLOBAL HEALTH VS INTERNATIONAL HEALTH IN A SAMPLE OF PUBLISHED BOOKS.

The main principles of health agreed through the major international conferences in the last thirty years, may be summarized as health for all people (WHO constitution 1945), by all people (Alma Ata 1978) and in all policies (Ottawa).

These principles[18], however, are not reflected in many of the health initiatives claiming to be «global», while often restricted to some population groups or diseases -as even the Health MDGs- (not for all), by some central decisions taken vertically far from the targeted communities, in capitals or even in Geneva or New York (not by all) or focused on medical interventions and detached from structural changes in socioeconomic policies (not in all policies). Many of these not-really «global» initiatives concentrate a large share of the international resources[19] for health and influence the international health agreements and commitments.

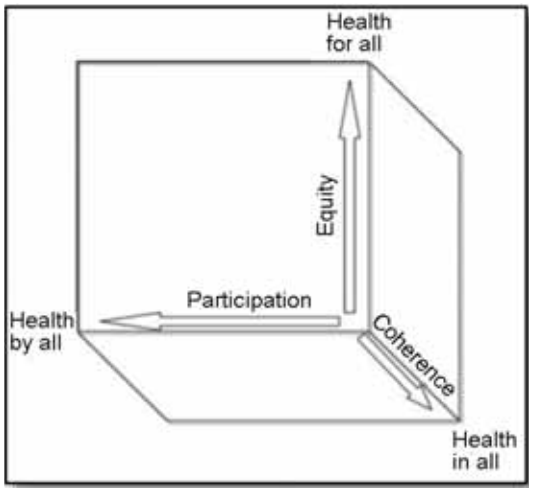


FIGURE 2: PRINCIPLES AND VECTORS OF GLOBAL HEALTH.

[18] Garay J, Harris L, Walsh J. «Global health: evolution of the definition, use and misuse of the term», FACE À FACE. (Internet). 2013. Cited: April 23, 2014. Available from: http://faceaface.revues.org/745

[19] McCoy D, Chand S, Shidar D. Global health funding: how much, where it comes from and where it goes. Health Policy Plan (Internet) 2009; 24(6): 407-417. Available from: http://heapol.oxfordjournals.org/content/24/6/407

The complexity of factors and actors influencing the world's health, with the biased interests for some issues or groups, often prioritized in arbitrary ways and influenced more by lobbies than by evidence, are also a reflection of a weak democratic governance of international health today.

If we'd wish nothing less for the democratic governance of health than what we demand for a democratic government in all countries, we'd wish a democratic forum of health representatives (ministers of health from democratic countries) which would gather in a parliament (World Health Assembly) and influence (according to their population weight and respecting minorities) international decisions. At present, Nauru's vote at the World Health Assembly counts as much as China's (with over hundred thousand times population). While minorities and small countries interests cannot be overshadowed by majorities or major countries, there needs to be some balance to respect the principle of equal weight of all persons in global agreements.

The resolutions proposed for this biased vote, are linked to targeted funding coming from those with greater financial capacity (hence influencing the international health agenda) or some private groups or foundations (one[20] being at present the largest founder of this meant-to-be international government of health).

This is a common feature in our Washington consensus era, above mentioned, where the power and freedom of movement of capital -hence called "liberal policies"-, larger than those of persons, enables the influence of a few -dominating the capital- in the lives of most. What is most striking is that the funding to work on WHO governance reform comes from the main private donor[21]. A democratic WHO requires a budget through binding and regular contributions according to financial capacities (as in an equitable fiscal scheme).

A truly democratic World Health Assembly should aim at commitments and resolutions into programs based on the health for all, by all and in all policies.

[20] http://www.who.int/about/resources_planning/AnnexA67_43-en.pdf?ua=1

[21] See chapter 4 of resolution 64.2, in annex 6: Financial and administrative implications for the Secretariat of resolutions adopted by the Health Assembly. Available from: http://apps.who.int/gb/ebwha/pdf_files/WHA64-REC1/A64_REC1-en.pdf#page=85

IV. EQUITY VS INEQUALITY

The Commission on Social Determinants of health calls on national governments to establish a national health equity surveillance system[22], with routine collection of data on social determinants of health and health inequity; and calls WHO lead the creation of a global health equity surveillance system as part of a wider global governance structure.

THE NEUTRAL STATISTICAL APPROACH

Inequalities are a mathematic feature measured, in a large enough sample where quantitative variables tend to have a "normal" distribution, by the standard deviation (average differences with the mean value) and the dispersion index (the relation of the standard deviation, to the mean).

In health we may see at international level the differences in life expectancy (LE). The figure below shows from the World Health Statistics data[23] the evolution of the world average of national averages of life expectancies. It shows a steady increase of such average, from 53.8 in 1960 to 70.3 in 2012, at an average rate of some 115 days of annual increase in life expectancy at birth, that is, almost an increase of one day of higher LE every three days. This is surely the highest rate of increase in life expectancy through humankind time. Such privilege needs to be seen with responsibilities.

FIGURE 3: EVOLUTION OF WORLD AVERAGE LIFE EXPECTANCY.

Let us look at the inequality hidden behind the global average figures. If we look at the difference between the extremes, we see that the best performers (Nordic countries until the 90s and thereafter Japan) have steadily increase their LE levels while the worst performers have fallen abruptly in cases of genocides (Cambodia in the 70s, Rwanda in the 90s) or epidemics (AIDS in Zimbabwe from the late 90s).

[22] http://www.who.int/social_determinants/thecommission/finalreport/en/
[23] http://www.who.int/gho/publications/world_health_statistics/2013/en/

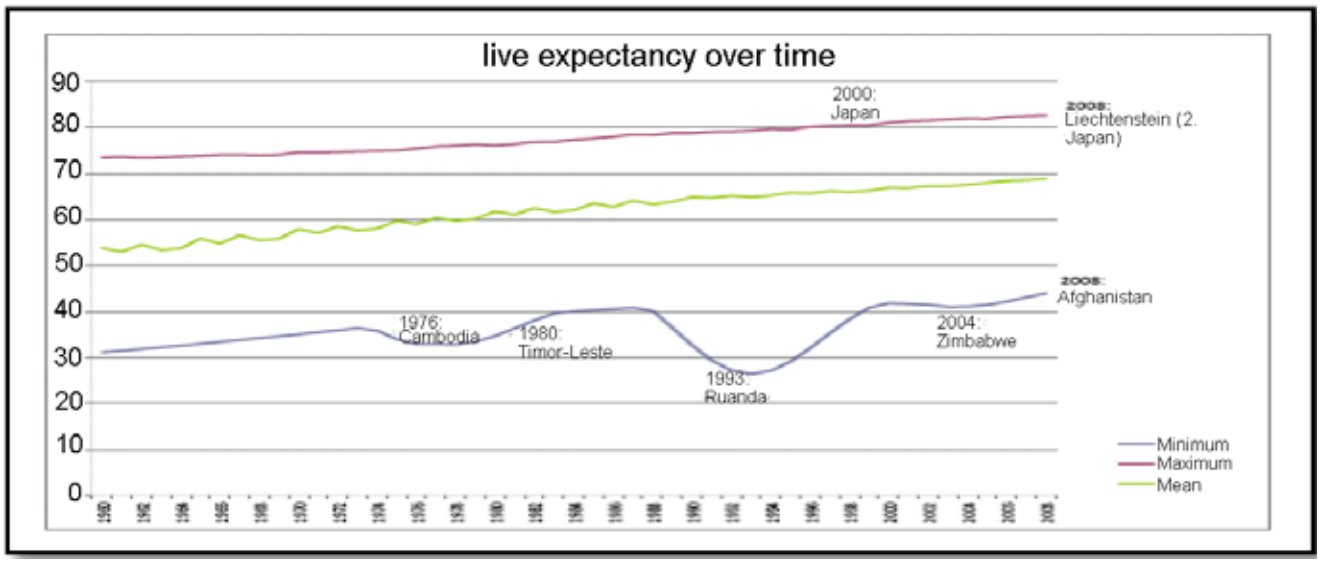


FIGURE 4: DIFFERENCE IN NATIONAL LIFE EXPECTANCY BETWEEN EXTREMES.

But the difference between extremes may not be representative of the dispersion of data.

Below we show the graphs representing the world´s population distribution according to their national average life expectancy by 5 and 1 year LE intervals in 2012.

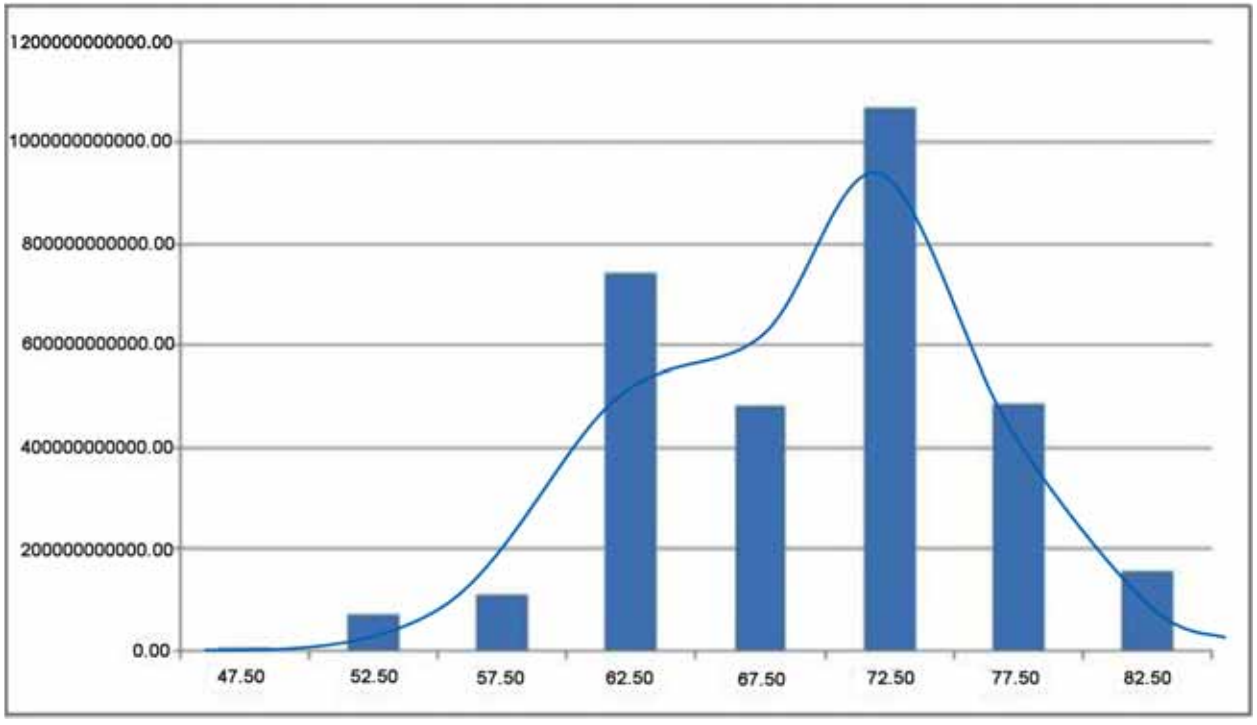


FIGURE 5: DISTRIBUTION OF NATIONAL AVERAGE LIFE EXPECTANCY LEVELS, 5 YEARS INTERVALS, 2012.

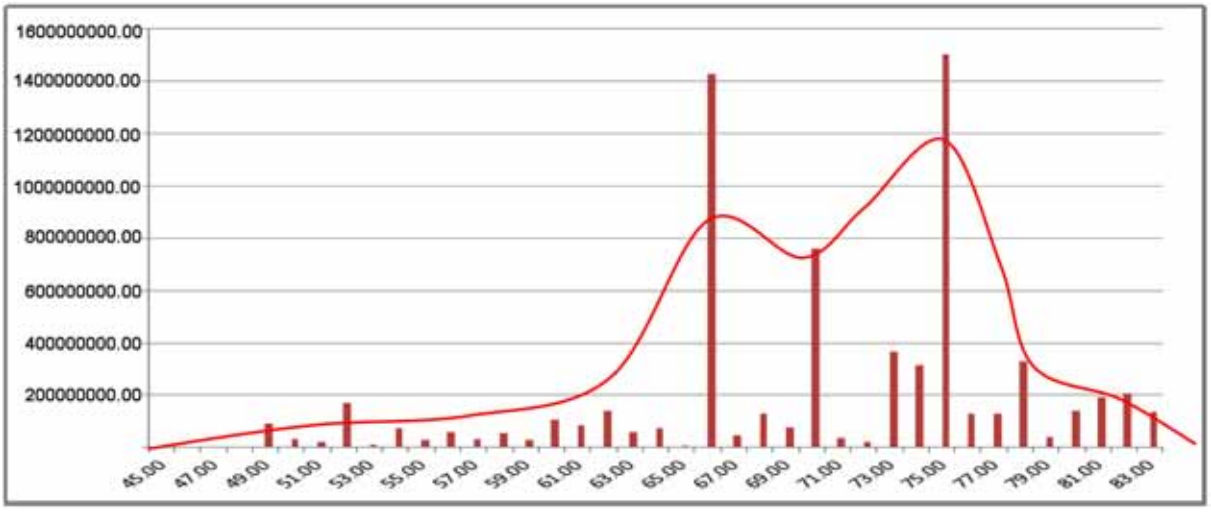


FIGURE 6: DISTRIBUTION OF NATIONAL AVERAGE LIFE EXPECTANCY LEVELS, ONE-YEAR INTERVALS, 2012.

The distribution of the world´s population by their national average LE shows three main peaks at 67 years (India), 71 years (Russia, Bangladesh and Indonesia) and at 75 (China). Even of smoothed, the curve shows a skewed distribution towards lower values.

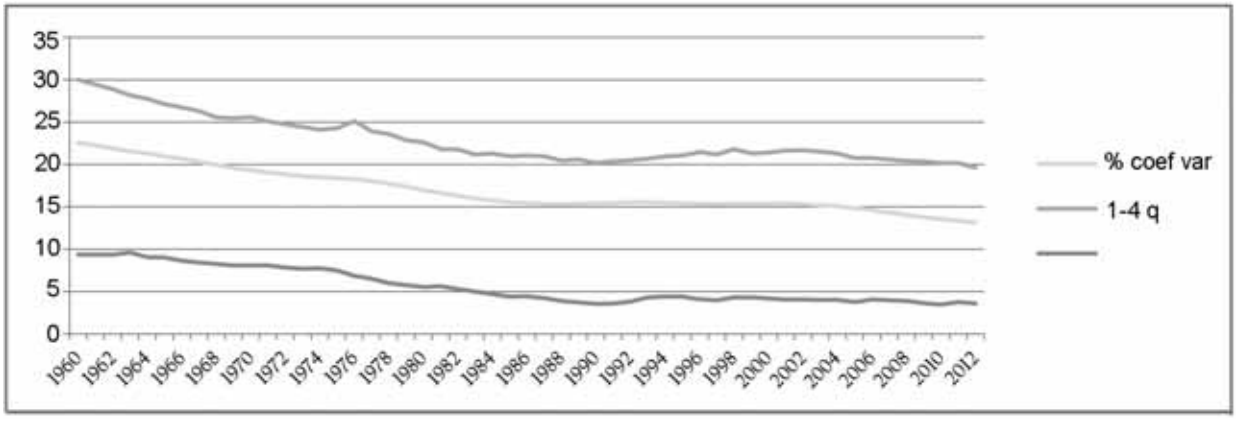


FIGURE 7: COEFFICIENT OF VARIATION AND RATIOS OF QUARTILES OF LE, OVER TIME.

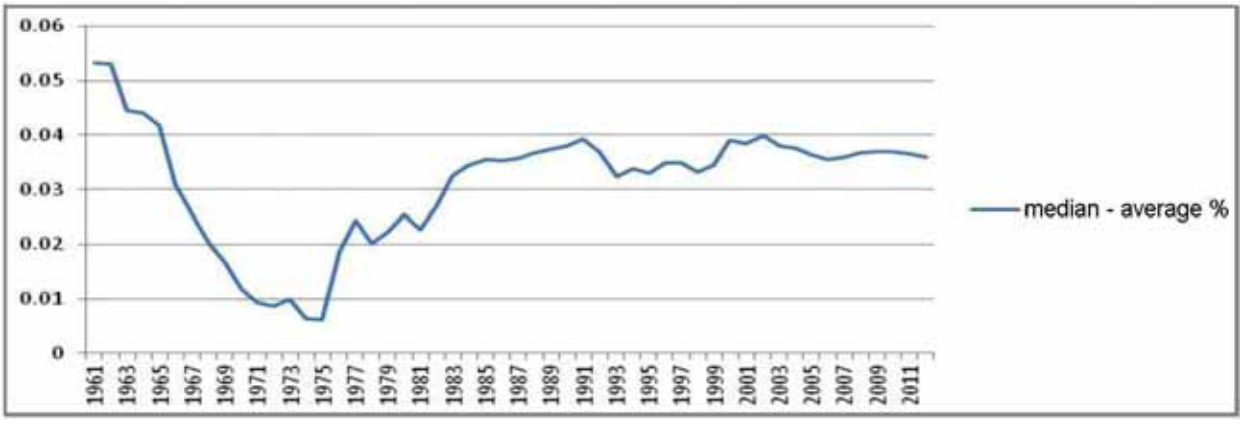


FIGURE 8: MEDIAN-MEAN GAP OF LE OVER TIME.

The analysis of dispersion amongst national life expectancies has the limitation of the validity, the internal dispersion and the different weight of populations we should consider in each national average. Notwithstanding these limitations, the analysis seems to indicate that the dispersion (differences) of national life expectancies have diminished over time although the rate of decrease has slowed down since the mid-80s. In the second half of the last decade, the dispersion of national life expectancies seems to shrink again, mainly due to the decrease of the ratios of extremes rather than the dispersion of the mid quarters. This may be due to the increase of life expectancy of China and the narrowing of the differences of best and worst levels of under-5 mortality (with a strong influence on life expectancy), like the trends of decrease of such mortality rates in the best performing countries that are reaching a plateau at very low rates.

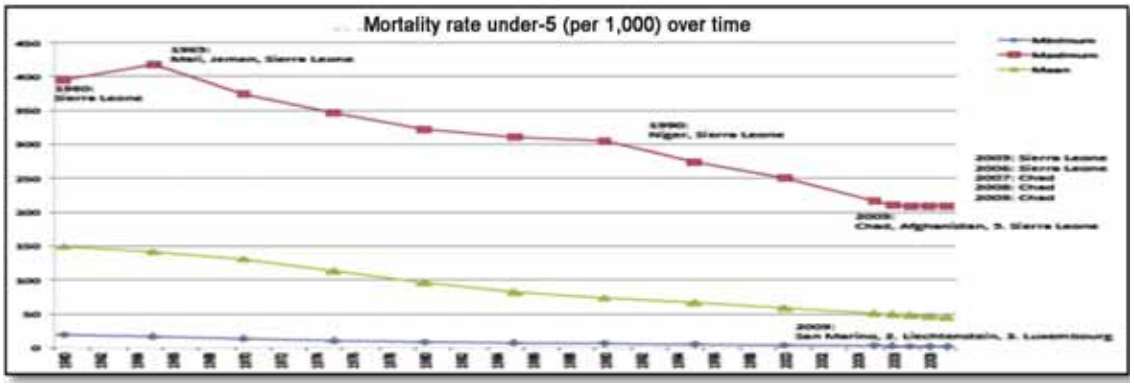


FIGURE 9: DIFFERENCE OF LOWEST AND HIGHEST UNDER-5 MORTALITY RATES OVER TIME.

The percentage gap between median and mean shows a reduction from the 50s till the 70s, followed by a slightly growing rate since the mid-70s and stable since the 90s in favor of a median higher than the mean reflecting concentration of greater number of countries under the lower half of the world average life expectancy.

Another way to represent the dispersion of values (inequalities) and which takes into account the population of each national average is the Gini curve, normally used in income distributions[24]. It shows the divergence between the egalitarian distribution (all people with identical life expectancy values) and the cumulative values of countries population by their life expectancies. The graphs below show that comparison and the surface under the egalitarian line, known as Gini coefficient.

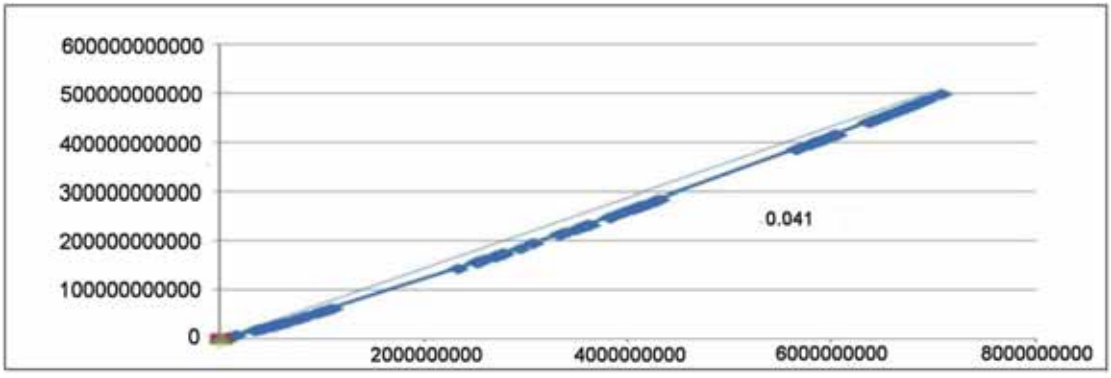


FIGURE 10: GINI CURVE DISTRIBUTION OF NATIONAL AVERAGE LIFE EXPECTANCIES, 2012.

[24] Gini index measures the extent to which the distribution of income or consumption expenditure among individuals or households within an economy deviates from a perfectly equal distribution (http://data.worldbank.org/indicator/SI.POV.GINI).

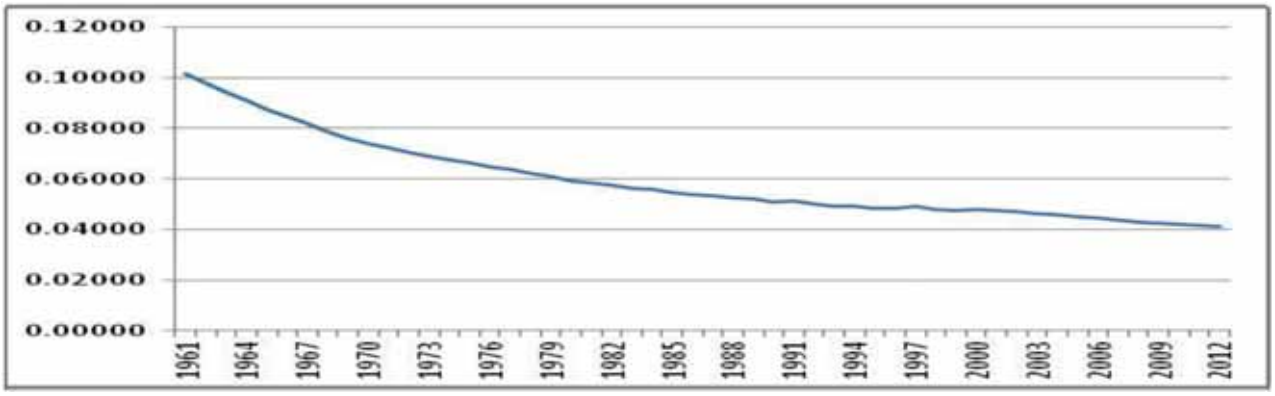


FIGURE 11: GINI COEFFICIENT OF THE DISTRIBUTION OF NATIONAL AVERAGE LIFE EXPECTANCIES, OVER TIME.

The evolution of the Gini index of life expectancy shows a decline until the mid-80s and a stable rate around 4% since then, with a mild decrease in the last decade.

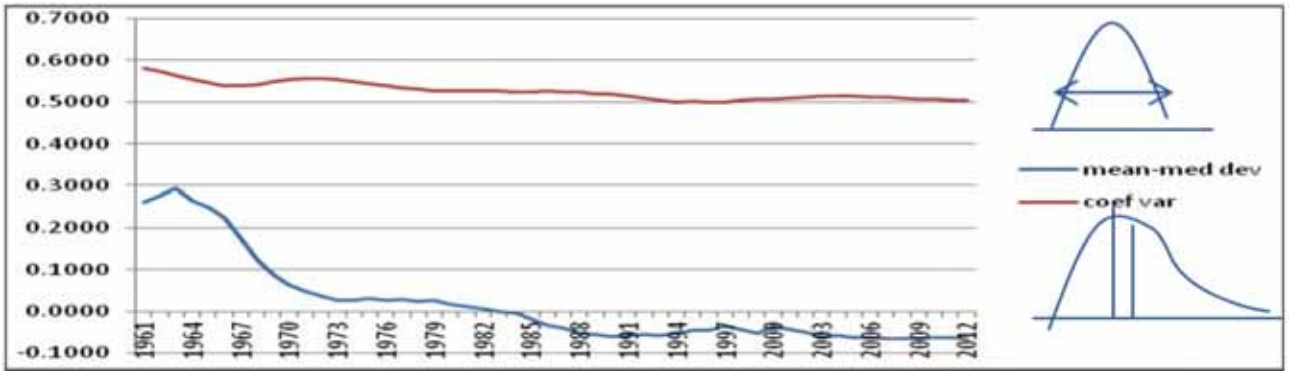


FIGURE 12: INEQUALITY OF GINI COEFFICIENT AND ASYMMETRY RATE, OVER TIME.

As with the normal distribution´s dispersion and asymmetry figures, the inequality of Gini coefficients (estimated by the standard deviation of the distribution of differences of each cumulative population x life expectancy with the egalitarian line) and its asymmetry (median- mean gap of the mentioned distribution) shows a stable inequality, but shifting from a higher median-than-mean scenario before the 80s to slightly lower thereafter. This means an evolution to a skewed distribution of the inequality towards lower values.

In summary, the statistical analysis of the international distribution of national average LE in the last 50 years reflects the highest increase in human history, lowering dispersion of LEs until the 80s and stable thereafter with a stable skewed distribution towards lower values. In a few words, us, the most privileged -concerning quantity of life- of the 60,000 human generations, has a high degree of inequality skewed to lower values (concentration of higher LE in fewer countries and population) since the 80s.

Our generation enjoys the highest ever life expectancy in humankind history, but with a stable degree of inequality since the 80s, with a concentration of higher LE in fewer countries and population.

MAIN HEALTH INFLUENCING VARIABLES

By the turn of the century, WHO´s controversial world health report 2000 estimated health inequalities through complicated mathematical formulas and disconnected from any variable which would enable analysis of its root causes. Moreover, such estimates were used to rate health systems performances and did not incorporate the critical dimension of their approach to ensure health equity.

In order to identify the main variables influencing health, we reviewed the international reports on health risks. In 2002 the World Health Report reviewed the main risks associated to ill health[25]. Twenty six major risks were selected and their attribution (attributable-risk) to the diseases and the burden of ill health (measured in Disability Adjusted Life Year -DALYs-) was estimated. The list did not identify a hierarchical structure of causes and included in the same level, for instance, zinc deficiency and climate change.

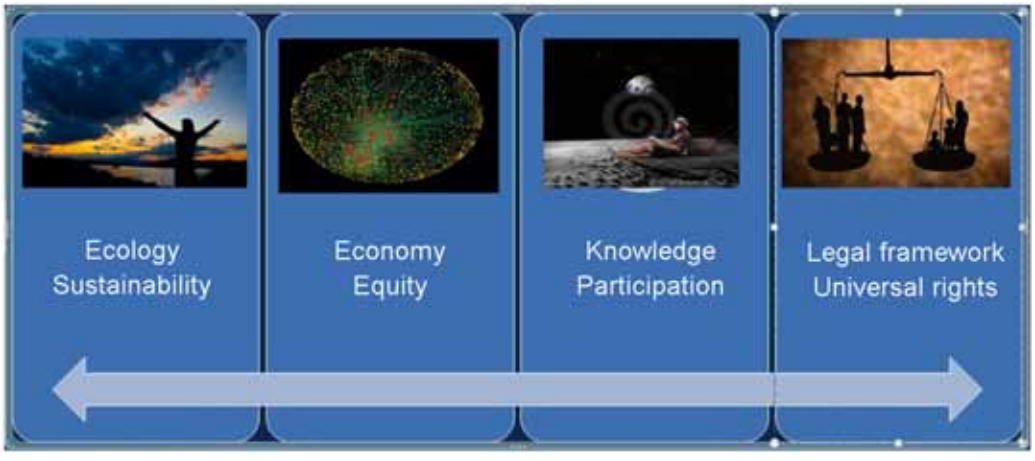
Ten years later, the report of the Global Burden of Disease 2010, selected 67 major health risks and their attributable burden of disease by years, regions, age groups and sexes[26]. Again such long list lacked a hierarchical structure of causes and some major causes of the previous report (2002), such as unsafe sex, were dropped from the list.

The report on the Commission of Social Determinants for Health (CSDH) identified root causes of inequalities and focused on life conditions such as preschool care, healthy cities, decent jobs, universal and equitable health care, as well as equity in the economic, gender, governance, participation and trade[27].

These choices were also arbitrarily chosen and did not clearly include two main policy areas: legal frameworks of universal rights and the ecological determinants of health.

Here we attempted to simplify and identify the main policy areas influencing health and aim at estimating the associated burden of health inequity.

In order to structure the analysis of the main policy areas influencing health, we selected the main four domains which may include all policy areas at local, national and global levels. They can be summarized in policies aimed at ecological sustainability, economic equity, knowledge towards public goods and legal frameworks based on universal human rights.



[25] http://www.who.int/whr/2002/en/
[26] http://www.healthdata.org/gbd
[27] http://www.who.int/social_determinants/thecommission/finalreport/en/

Then, we selected sensitive indicators in each of these main policy domains and estimated the correlation power of those variables and life expectancy by time and across all countries average values[28].

The figure below shows the correlation between life expectancy and two indicators, the UN democratic index and the years of education as proxy indicators of the legal frameworks guaranteeing universal rights and the access to knowledge and opportunities in society.

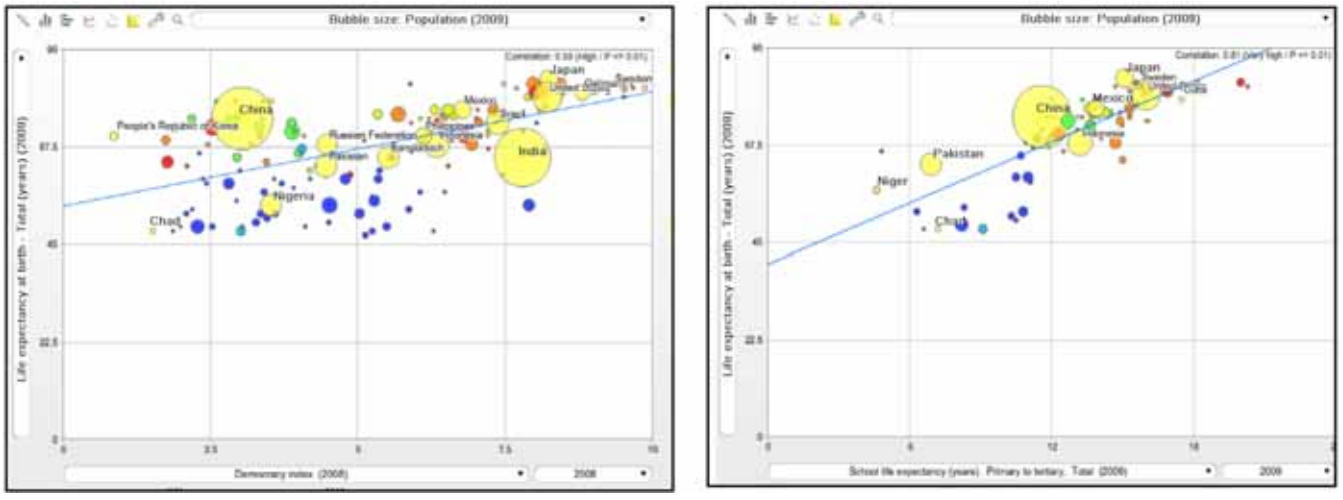


FIGURE 13: CORRELATION BETWEEN DEMOCRATIC INDEX AND YEARS OF EDUCATION, AND LIFE EXPECTANCY.

When considering the weight of populations, the analysis of the correlation between the democratic index and life expectancy resulted in a weak correlation coefficient. The two main countries which include one third of the world's population, China and India, had in fact a negative correlation: higher life expectancy in China with a lower democratic index, and the opposite case for India.

In the case of education, there is a strong correlation between the years of education throughout life and the life expectancy at birth for countries with life expectancy below 60 years, but not so clear for countries with higher life expectancy[29]. On the other side, the quality of education varies greatly between countries, regions and times, and the analysis lacks consistency in that respect[30].

The high degree of "externality" of ecological policies and dynamics results in the contradictory fact that countries and groups in society with higher degrees of exhaustion of natural resources (measured for instance in carbon emissions per capita) are often less exposed to their related ill effects for health.

[28] Data analysis based on UN data and indexes, World Health statistics for health indicators and World Bank data for economic indicators.
[29] http://www.academia.edu/289307/Examining_the_Relationship_Between_Life_Expectancy_Reproduction_and_Educational_Attainment_A_Cross-Country_Analysis
[30] http://www.oecd.org/edu/eag2013%20(eng)--FINAL%2020%20June%202013.pdf

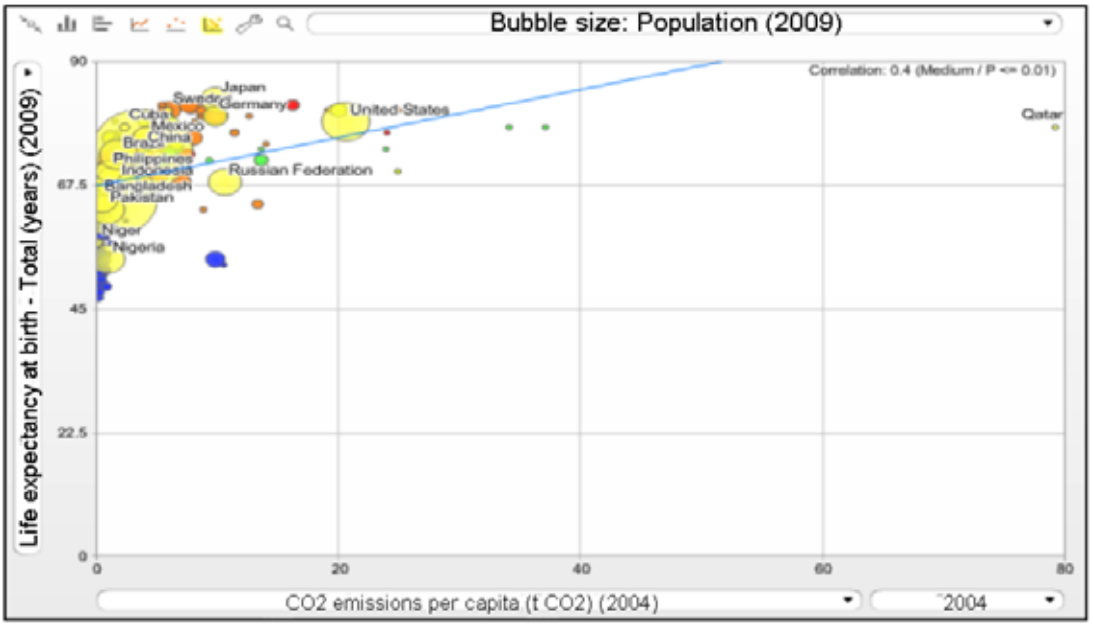


FIGURE 14: CORRELATION BETWEEN CARBON EMISSIONS PER CAPITA AND LIFE EXPECTANCY.

When we selected GDP pc[31] for measuring economic policies, this was the most influential variable of national average life expectancy. The figure below shows a logarithmic strong relation with a correlation rate above 0.70, suggesting that over two thirds of the differences found in national average life expectancy may be explained by the differences in national average income (GDP per capita).

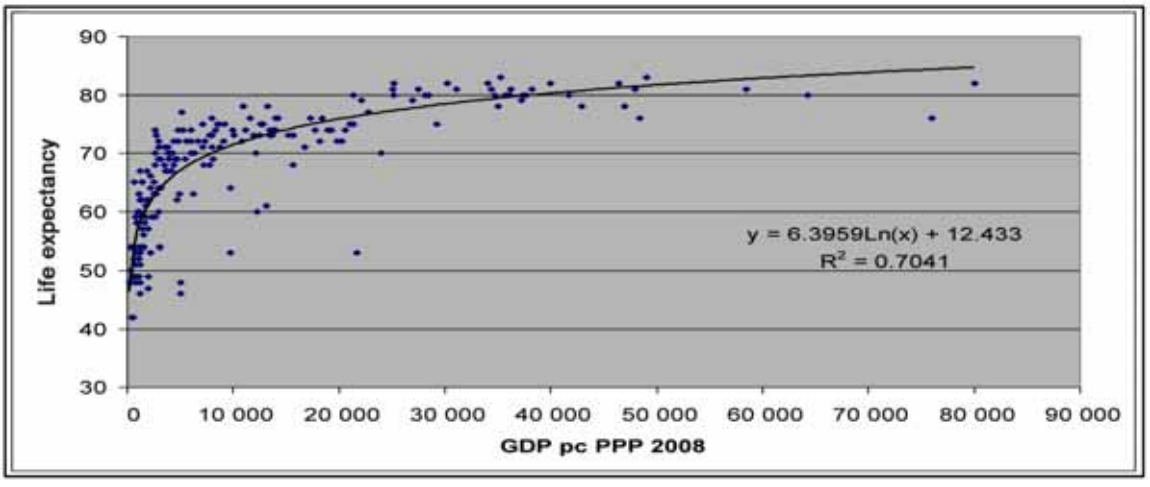


FIGURE 15: CORRELATION BETWEEN LIFE EXPECTANCY AND GDP PC.

[31] The use of GDP per capita is controversial as the wealth produced/consumed per capita includes foreign companies and citizens which may concentrate and even flow out of the country, especially in low-income countries, a large proportion of resources. While GINI (which deducts those external flows and inversely counts the inflows from national citizens and companies abroad) may better reflect the citizens average wealth (and through GINI its distribution), it would not allow to set the challenge of real national and global redistribution, including for foreign investments and benefits, generally in favor of high-income countries. (See http://www.diffen.com/difference/GDP_vs_GNP).

Such correlation remains with some degree of variation over time and with other basic health indicators, such as healthy life expectancy, among men and women and with adult and child (reduced correlation) mortality rates.

	LE men	LE women	LE all	HALE men	HALE women	HALE all	U5MR boys	U5MR girls	U5MR all	AMR men	AMR women	AMR all
Pearson r^2	0.67	0.64	0.66	0.69	0.66	0.68	0.52	0.50	0.51	0.60	0.54	0.58

The graph below shows how that correlation (linear) has evolved over time. It reflects a stronger correlation before the 80s and a stabilization round 0.6 since then. The trend of logarithmic curves over time shows a growing number of countries entering the plateau along which higher GDP pc do not translate in higher LE.

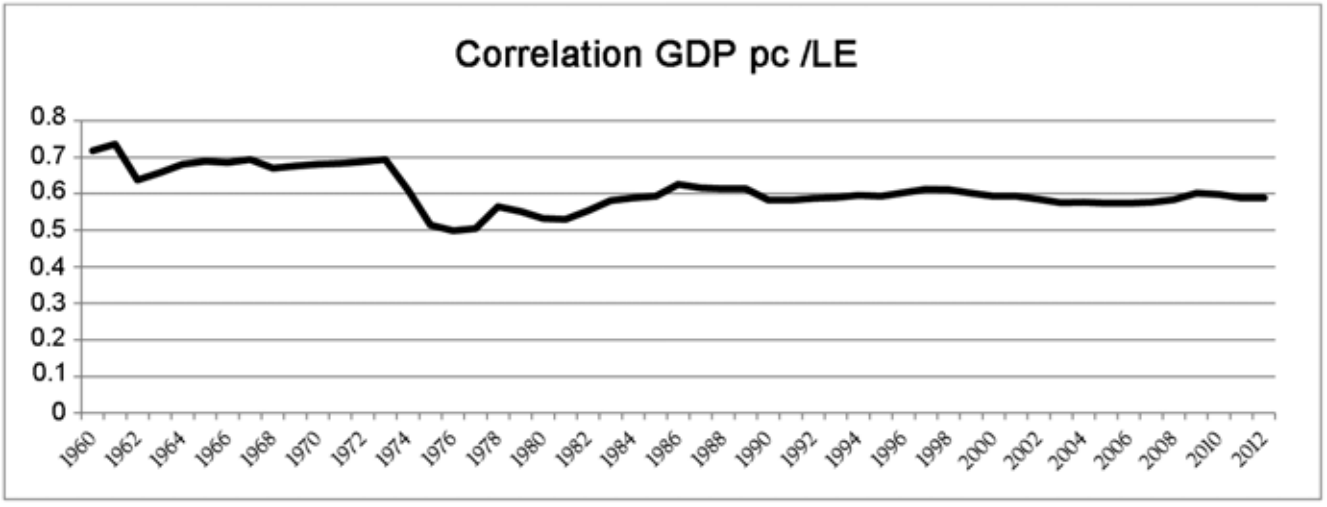


FIGURE 16: EVOLUTION OF THE CORRELATION BETWEEN LIFE EXPECTANCY AND GDP PER CAPITA.

INEQUALITIES ACROSS DISAGGREGATING VARIABLES

When we compare health indicators between population groups disaggregated by the health influencing variables, we remain measuring differences and ratios. This has been the case of the international database of health "inequities" (really reporting on inequalities): the health equity monitor.

The graph below, taken from WHO health equity monitor[32], shows the distribution around median values of under-five mortality rates disaggregated by economic status (income) of the household (lowest to upper quintiles), level of the mother's education (non, primary or secondary), place of residence (urban or rural) and sex.

[32] http://www.who.int/gho/health_equity/en/

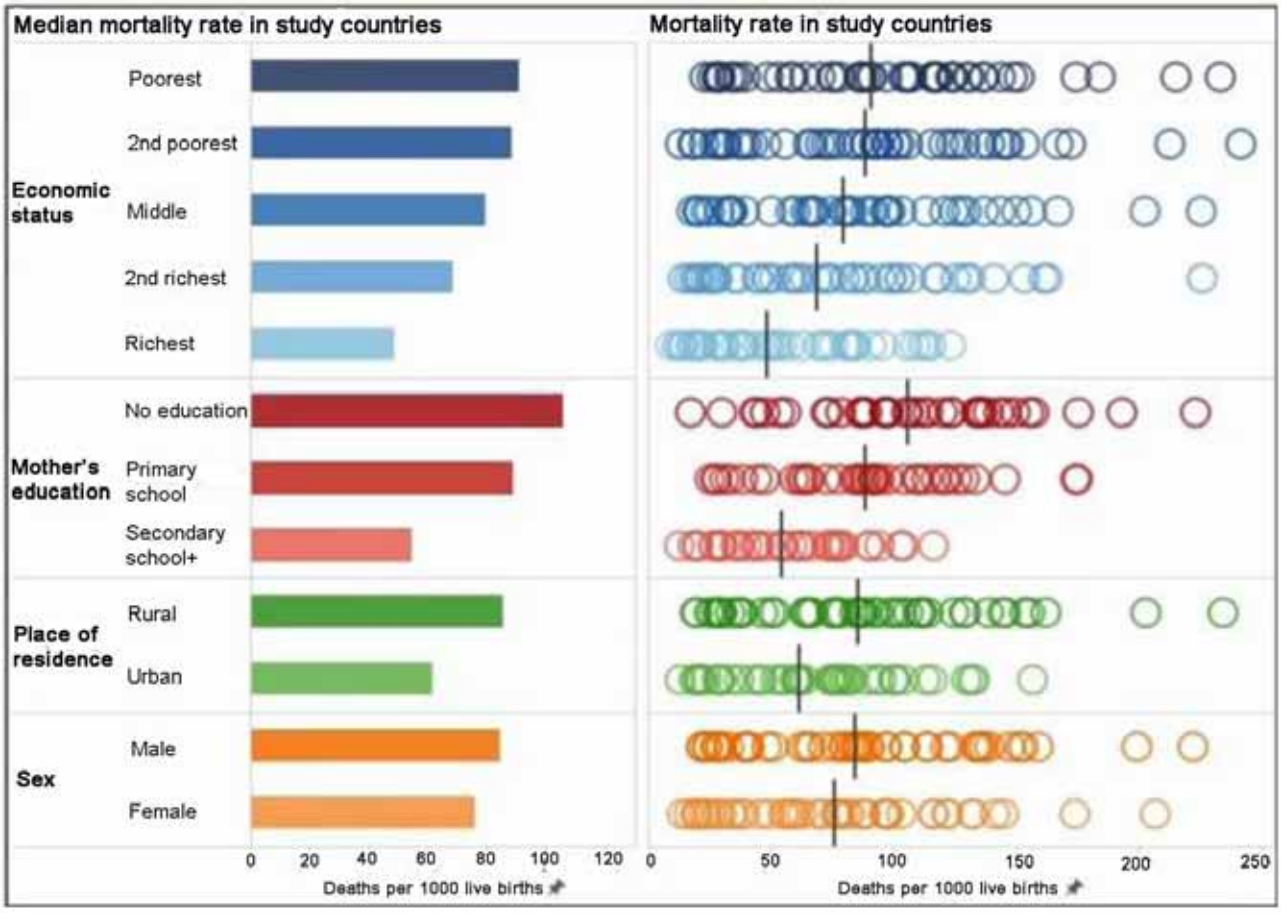


FIGURE 17: ANALYSIS OF HEALTH INEQUALITIES OF UNDER 5 MORTALITY RATE IN WHO HEALTH EQUITY MONITOR.

Data are gathered from US-financed Household Demographic Surveys[33] and UNICEF MICS[34] in low and middle income countries, since 1993. In total, some 70 countries analysis was included and only 6 for 2012.

In a more elaborated way, the so called "Marmot indicators" look at social determinants but still measure differences across variable disaggregated groups[35]. Other have looked at key socioeconomic influences in health and specific groups of diseases in the EU[36], in Australia[37] and in low and middle income countries[38].This kind of analysis describes inequalities among subgroups, but cannot inform a common objective, measure the burden of health inequity, set the minimum income threshold and redistribution required and other transformational conclusions of measuring health inequity, as will be seen hereafter.

[33] http://www.dhsprogram.com/Data/
[34] http://mics.unicef.org/surveys
[35] http://www.instituteofhealthequity.org/presentations/presentation-slides
[36] Dalstra JA, Kunst AE, Borrell C, Breeze E, Cambois E, Costa G, *et al*. Socioeconomic differences in the prevalence of common chronic diseases: an overview of eight European countries. Int J Epidemiol 2005; 34(2): 316-326.
[37] Glover JD, Hetzel D, Tennant S. The socioeconomic gradient and chronic illness and associated risk factors in Australia. Aust New Zealand Health Policy 2004; 1: 8.
[38] Hosseinpoor AR, Bergen N, Mendis S, Harper S, Verdes E, Kunst A, *et al*. Socioeconomic inequality in the prevalence of noncommunicable diseases in low -and middle- income countries: results from the World Health Survey. BMC Public Health 2012; 12: 474.

INEQUALITY VS INEQUITY

Most proposals pretending to measure health equity really define statistical analysis of dispersions[39]. The statistical approach does not allow correlation with the underlying causes of health inequalities. Identifying fair limits of inequality through the distribution of the most influencing variable of health distribution, adds an ethical component.

In 2003 Whitehead and Gruskin proposed as operational definition of health equity "the absence of systematic disparities in health between groups with different levels of underlying social advantage/disadvantage; that is, wealth, power, or prestige. In 2006 Paula Braveman proposed an updated definition: "Systematic health differences between socially advantaged and disadvantaged groups"[40]. If we combine the features of Whitehead[41] and Braveman's definitions, we would point at a threshold of health equity based on social differences which are unfair and avoidable.

The following table describes the key differences and consequences of measuring inequality versus inequity.

TABLE 1: DIFFERENCES BETWEEN MEASURING INEQUALITY AND INEQUITY

	Inequality	**Inequity**
Concept	Differences.	Unfair differences.
Measurement	Differences or ratios between subpopulations.	Gap from best feasible and sustainable level: burden of inequity.
Conclusions	Arbitrary conclusions.	Measurable objective, inter and intra national, intra and inter generational.
Strategy	Approach to disadvantaged groups: poverty alleviation.	Approach to minimum thresholds: social cohesion (address both extremes), levels of dignity and universal rights.
Effect	**Mitigation.**	**Transformation.**

Equity is the fair distribution of inequality.

[39] González GJ, Vega MG, Cabrera CE. Desigualdad social y equidad en salud: perspectivas internacionales. México: Universidad de Guadalajara, Centro Universitario de Ciencias de la Salud; 2010. p. 25-45. Available from: http://www.cucs.udg.mx/revistas/libros/DESIGUALDAD_SOCIAL_Y_EQUIDAD_EN_SALUD.pdf

[40] Braveman P. Health disparities and health equity: concepts and measurement. Annu Rev Public Health (Internet) 2006; 27: 167-194. Available from: http://www.ncbi.nlm.nih.gov/pubmed/16533114

[41] http://jech.bmj.com/content/57/4/254.short

THE RELEVANCE OF ESTIMATING THE BURDEN OF HEALTH INEQUITY

The setting of minimum and progressive thresholds has been considered by others as critical to enable the recognition and exercise of economic, social and cultural rights[42]. However, this approach never resulted in standardized thresholds[43].

The *burden of ill health* has been assessed for all diseases when comparing the effects of one disease event due to disability (by much debated arbitrary grading of disability and even different values to age periods) and live years lost due to premature death, with best national average level of healthy live years expectancy: Japan[44].

That method defined the unit of Disability Adjusted Life Year -DALY-. The methodology of burden of ill health by specific diseases has meant the basis of health economics by estimating the cost-utility (cost related to its impact on burden of ill health prevented/recovered) and opportunity-cost (the difference between options according to their cost-utility) of health preventive or therapeutic interventions.

Such methodology -led by the World Bank- guided the prioritizations of health interventions based on their efficiency. This *health econometrics* fed the strategy of structural adjustments, led by World Bank: reducing public spending to address the national budget deficits and reducing the tax revenues considered as barriers to global flow of capital. It followed faithfully the conceptual framework of the Washington consensus[45].

The power of the conditions of World Bank loans influenced health policies and strategies aimed at reducing public spending and increasing its impact through specific *cost-effective interventions*.

In the early 90s the threshold of efficiency for low income countries' interventions with public budget (or loans) was at 30 US $/DALY[46]. In parallel, the growing evidence of HIV/AIDS triple therapy/life-saving treatments diluted that threshold. But the emphasis on specific cost-effective interventions (including consideration of externalities), started the still ongoing *fragmentation of health* services, their financing, organization and even health politics, activists, academics and organizations, during the last two decades.

The selected views of diseases have led to today´s fragmentation which rather than advancing on the goal of the universal right to health, introduces another dimension of inequity across diseases. In that context, it is essential to estimate, as committed by all countries in the World Health Assembly´s resolution on social determinants of Health, the overall burden of health inequity, across and within countries[47].

1. Burden of health inequity by best standards of influencing variables

We hereby present how we attempted to estimate the burden of global health inequity in relation to standards based on the most influencing variables on health.

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[42] CEPAL. La hora de la igualdad: brechas por cerrar, caminos por abrir. 2010. Chapter 4. Available from: http://www.cepal.org/publicaciones/xml/0/39710/100604_2010-114-SES.33- 3_La_hora_de_la_igualdad_doc_completo.pdf
[43] Asada Y. A framework for measuring health inequity. Journal Epidemiol Community Health (Internet) 2005; 59: 700-705. Available from: http://jech.bmj.com/content/59/8/700.full.pdf+html
[44] http://www.who.int/healthinfo/statistics/GlobalDALYmethods_2000_2011.pdf?ua=1
[45] http://www.who.int/trade/glossary/story094/en/
[46] Investing in health. The World Bank report. 1993.
[47] See WHO 62.14 in http://apps.who.int/gb/ebwha/pdf_files/WHA62-REC1/WHA62_REC1-en-P2.pdf

As income (GDP pc) was found to be the strongest associated factor influencing inequalities in national average LE, we took as the reference level of best health those of the countries with GDP pc in the upper quintile, almost identical to the World Bank classification of "high income countries".

Once we concluded that the mean health indicators of high income countries are the health standards desirable globally (WHO's original objective "best health for all"), we could estimate, as others have done at subnational level[48], the health inequity burden: the difference between the present health situation and the desired one.

Any information on the progress or failure on the objective of health equity at country or global levels, needs to be easy to understand and interpret by statisticians, health professionals, policy makers, politicians and civil society alike.

This is why we aimed at measuring the burden of health inequity against the mentioned reference (high income countries) in excess deaths ("avoidable" if there were economic equity).

We used under-five and adult mortality rates because there are national average data of both and over 90% of the premature deaths take place during the first five years of life and from 15 to 60 years of age.

Hence we then applied -with data from the world health statistics annual reports- the desired high income adult and under-five mortality rates to the under-five and adult populations of the equivalent population groups of other than high income countries (adjusted mortality rates).

When we compare that figure with the present levels of under-five and adult deaths in low and middle income countries, the estimates of excess mortality due to global inequity is close to 20 million deaths per year, over half of them in children under-five. This represents over one third of all deaths and the numbers and proportions have remained stagnant over the last two decades. The following graphs show those figures and proportions.

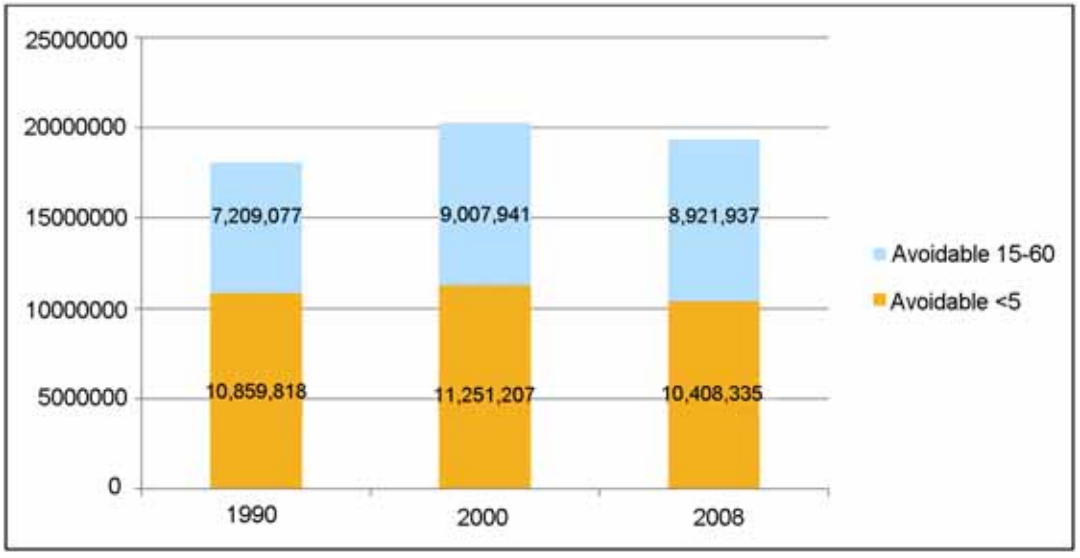

FIGURE 18: AVOIDABLE DEATHS DUE TO ECONOMIC GLOBAL HEALTH INEQUITY (REF. HICS).

[48] Esnaola S, Aldasoro E, Ruiz R, Audicana C, Pérez Y, Calvo M. Desigualdades socioeconómicas en la mortalidad en la Comunidad Autónoma del País Vasco. Gac Sanit 2006; 20(1): 16-24.

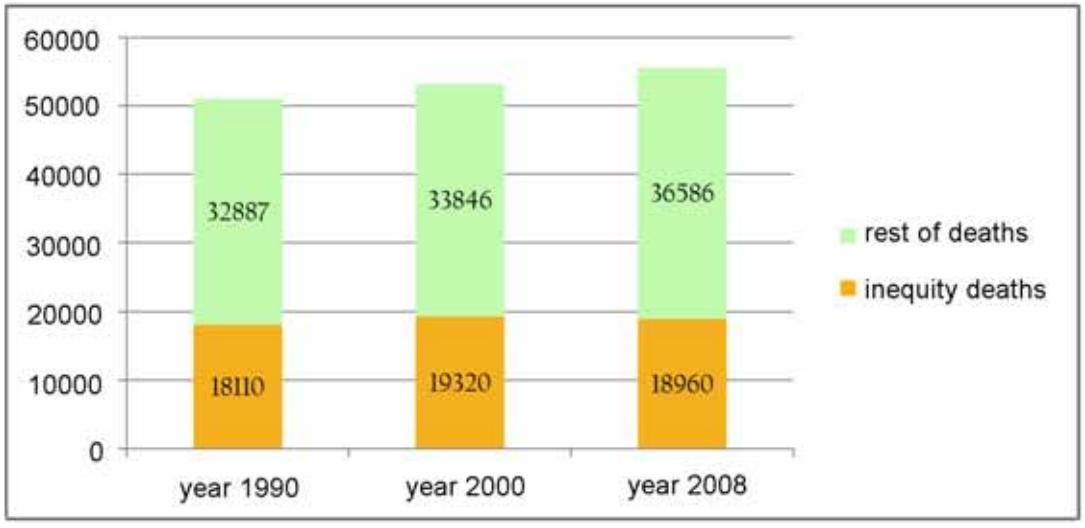

FIGURE 19: NUMBER OF AVOIDABLE DEATHS (MILLIONS) BY GLOBAL ECONOMIC INEQUITY 1990-2012 (REF HICS).

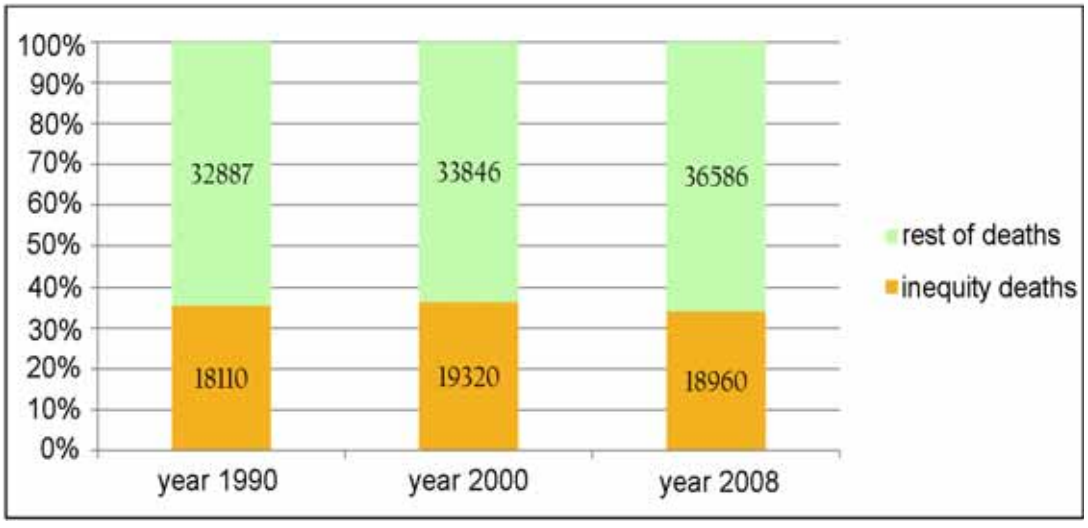

FIGURE 20: PERCENTAGE OF ALL DEATHS DUE TO GLOBAL HEALTH INEQUITY DEATHS 1990-2012 (REF HICS).

When the data of the GBD 2010 were made public, with national average mortality rates since 1970 by five year age groups, the same estimates were analyzed, this time with a much finer age adjustment of mortality rates by 190 countries, during 40 years and across 16 age groups each country and year.

The results are very similar to the more gross estimates based on under-five and adult mortality rates alone form the world health statistics, with a slightly higher share of all deaths due to global economic inequity (over 40%) and since 1970. They seem to confirm the hypothesis of a very high and stagnant level of health inequity[49].

[49] https://apha.confex.com/apha/141am/webprogram/Paper291133.html

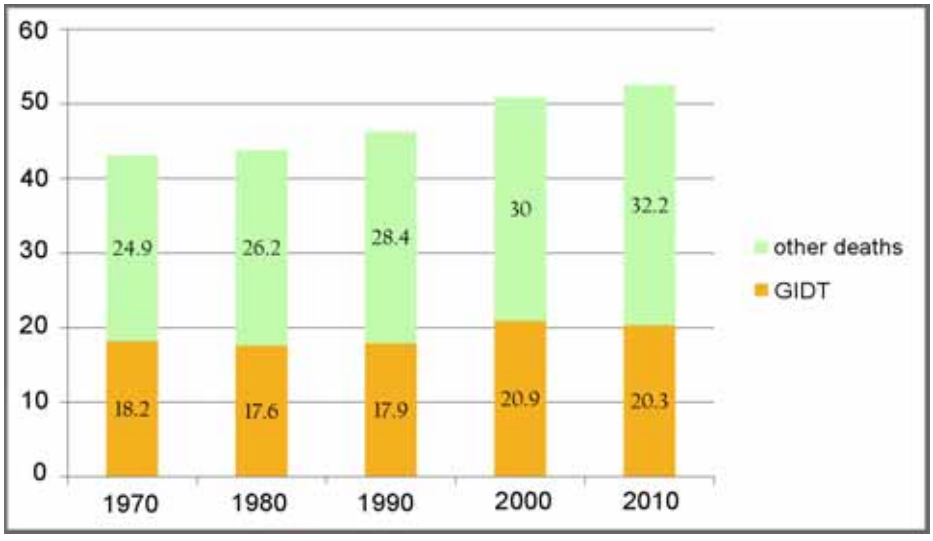

FIGURE 21: NUMBER OF AVOIDABLE DEATHS DUE TO GLOBAL ECONOMIC INEQUITY 1970-2012 (SOURCE: GBD 2010).

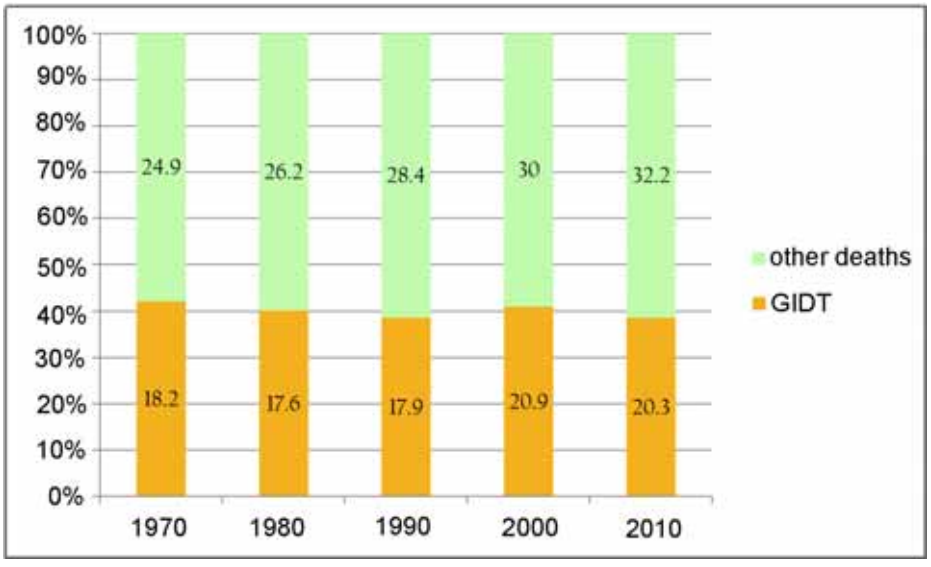

FIGURE 22: PERCENTAGE OF DEATHS DUE TO GLOBAL ECONOMIC INEQUITY 1970- 2010.

While this method does indicate the effects of economic inequity on health and measures it in avoidable deaths, it has a number of weaknesses:

- It arbitrarily chooses a cut-off point (e.g. top quintile) as the standard of best health levels.
- While we checked on feasible models (countries below world average GDP pc with life expectancy within the confidence interval of high income countries), the method has one major contradiction: the standard levels of health are determined by health models with a concentration of economic resources which is not only non/replicable at global level, but also partly the reason why many others remain under income levels incompatible with those best health levels.
- It ignores the dimension of ecological sustainability, related to intergenerational equity, as will be seen in the following sections.

2. Burden of inequity by thresholds of feasibility and sustainability

This third approach (which we hereby propose) is based on the definition of healthy, replicable and sustainable thresholds models across and within countries, avoiding arbitrary cut-off points and proposing levels of health truly replicable for all and sustainable for coming generations.

Among the four major policy areas influencing health (ecologic sustainability, economic equity, participatory knowledge and legal frameworks on universal human rights) there are differences in the resources available. The very conceptual nature of legal frameworks relates to universality. The participatory knowledge should avoid limits to human creativity, innovation and participation. However, economic and ecologic resources are limited and their use and distribution meets feasibility and sustainability thresholds.

In the case of economic resources, no country with average GDP pc above the world's weighted average can serve as a globally replicable model, as there would not be -arithmetically- enough resources for all.

Moreover, the growth thesis whereby "economically" successful countries guide global progress and development is in contradiction with equity, sustainability and even human wellbeing (see later chapter VI).

The previous methodology based on standards of high income countries is therefore flawed by this contradiction.

As for ecologic resources, no country with carbon footprint or use of hectare per capita and year above the planetary boundaries may serve as a standard to estimate health equity, as the ecologic -and all others derived from them, including economic- resources would be exhausted for coming generations and so would their health be compromised.

We therefore selected countries with national average LE above the global weighted average and economically feasible and ecologically sustainable models.

We used for this purpose the World Bank data on life expectancy, GDP pc and population from 1960 till 2012[50].

The first screening was to find out the weighed (according to population) average of national life expectancies and select countries with life expectancy above the world average ("healthy countries").

The second screening aimed at calculating the weighed (according to population) average of GDP pc and select countries with life expectancy above world average and also GDP pc below the world average ("healthy feasible countries").

The third screening meant selecting from the above screened health feasible countries those with carbon emissions per capita below the planetary boundary, estimated for the decade 2000-2010 on average 2.5 metric Tons per capita and year[51].

The following maps[52] show the countries (in dark green) that belonged in 2010 to each level of screening towards the healthy-feasible-sustainable (HFS) models:

[50] http://data.worldbank.org/
[51] http://www.nature.com/nature/journal/v461/n7263/fig_tab/461472a_T1.html
[52] These maps are interactive during period 1960-2012 in the Onix Institute webpage.

FIGURE 23: MAP OF COUNTRIES IN 2010 ABOVE THE WEIGHTED WORLD AVERAGE OF LIFE EXPECTANCY.

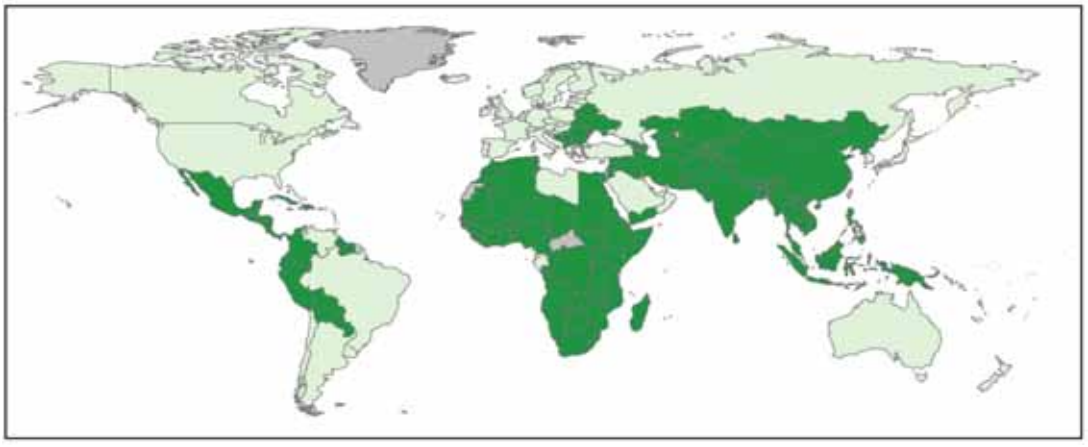

FIGURE 24: MAP OF COUNTRIES IN 2010 WEIGH GDP LOWER THAN WORLD WEIGHTED AVERAGE.

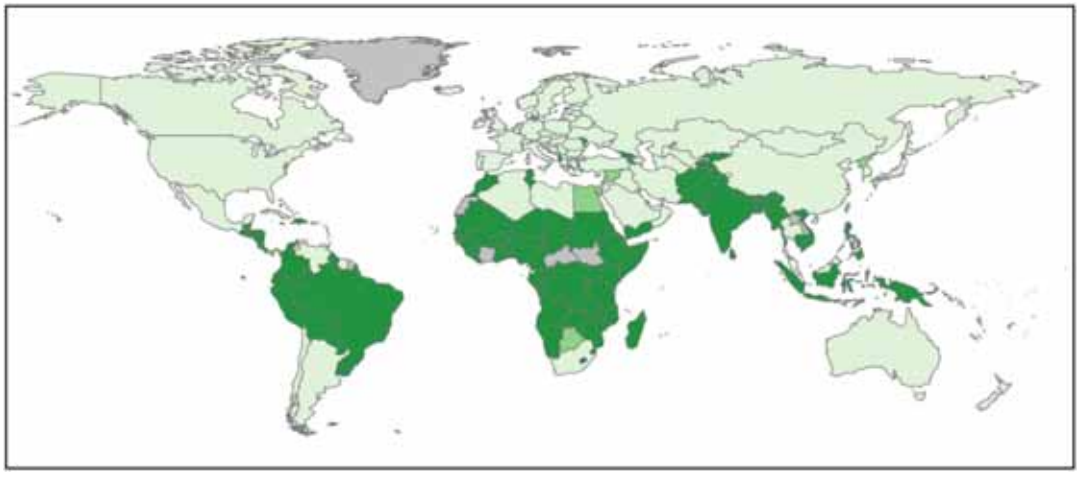

FIGURE 25: COUNTRIES WITH CONSTANT RATE OF CO_2 EMISSIONS PER CAPITA BELOW PLANETARY BOUNDARY.

The number of countries belonging to each screened category and throughout 1960-2012 is represented in the following graph.

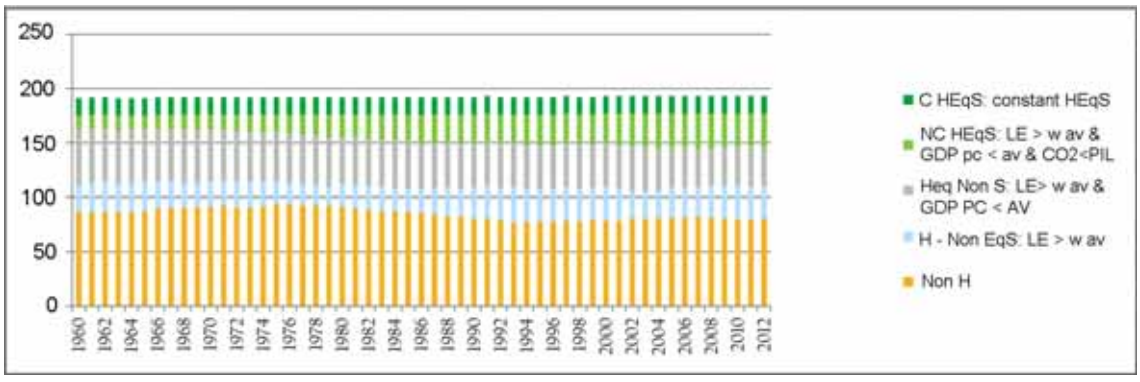

FIGURE 26: NUMBER OF COUNTRIES ACCORDING TO CATEGORIES OF HEALTHY, FEASIBLE AND SUSTAINABLE CRITERIA, 1960-2012.

The following graphs show the distribution of national average life expectancies and of carbon emissions per capita according to the national average GDP pc levels and the economic, healthy and sustainability thresholds.

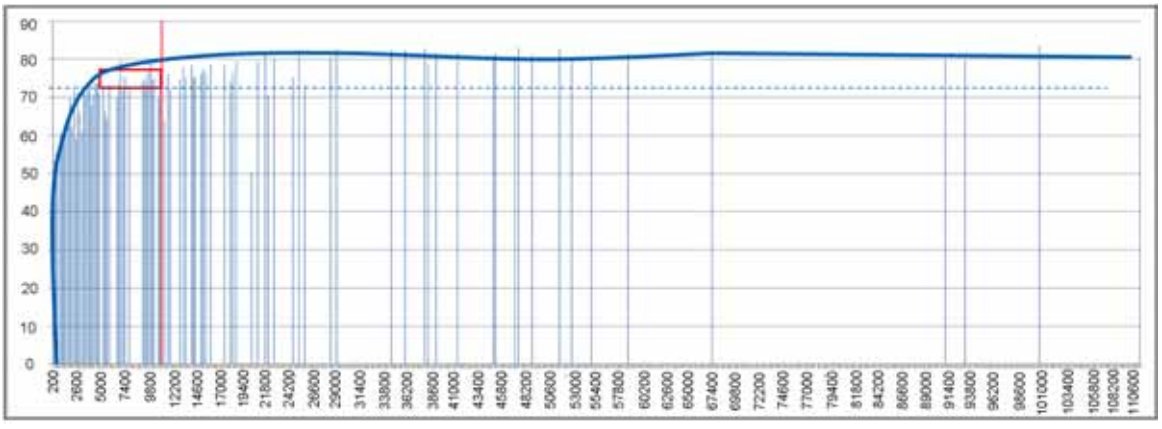

FIGURE 27: LIFE EXPECTANCY ACCORDING TO GDP PC AND THRESHOLDS OF HEALTHY AND EFFICIENT (FEASIBLE AND EQUITABLE) STANDARDS, 2012.

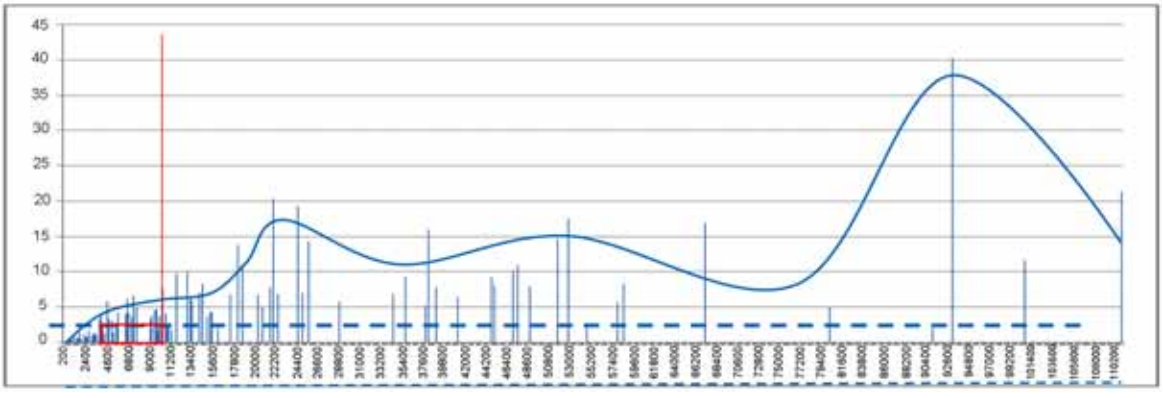

FIGURE 28: CARBON EMISSIONS PER CAPITA ACCORDING TO GDP PC AND THRESHOLDS FOR FEASIBLE AND SUSTAINABLE STANDARDS, 2012.

The final selection of countries which have had between 1960-2012 constant features of life expectancy above world's weighted average, GDP pc below world's weighted average and carbon emissions per capita below planetary boundaries are represented in the following map, while listed with their threshold features in the following chapter.

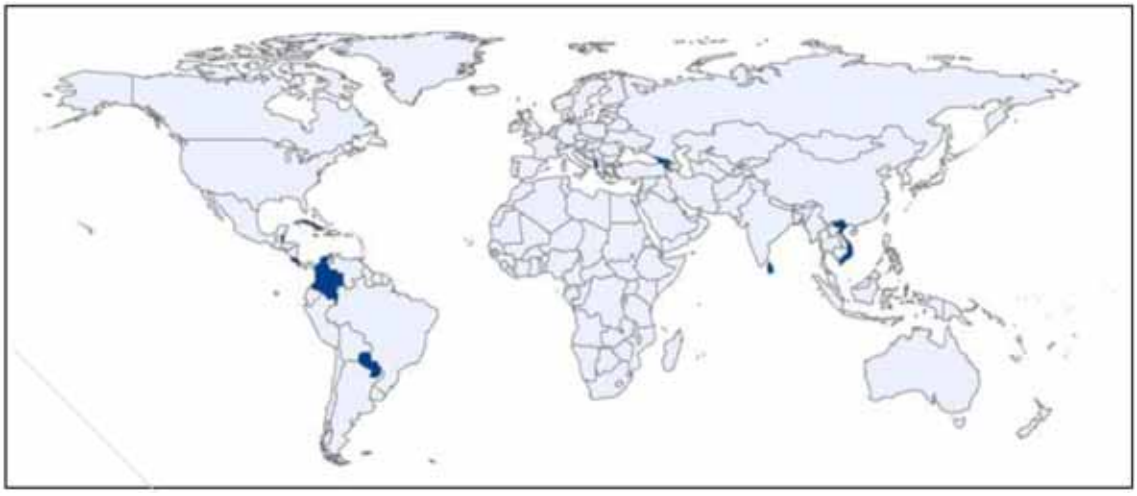

FIGURE 29: CONSTANT (1960-2012) HEALTHY-FEASIBLE-SUSTAINABLE (HFS) MODELS.

- **Features of the healthy, feasible and sustainable model countries**

The 14 countries which represent average healthy, feasible and sustainable models add together close to 200 million people, some 3% of the world's population; almost half living in Vietnam and over 80% in the three largest countries: Vietnam, Colombia and Sri Lanka.

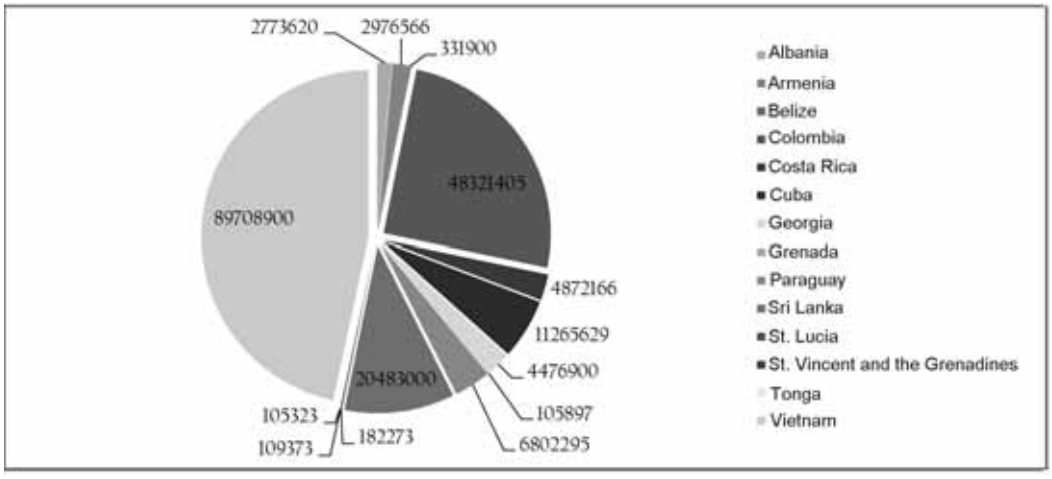

FIGURE 30: POPULATION OF 14 HFS.

Life expectancy

The average life expectancy of the fourteen constant healthy-feasible-sustainable (HFS) (14 HFS) countries is 7-10% higher than the world weighted average (by countries' population sizes), although it is 10% lower than the world's best performing country: Japan. Among them, Cuba has had the highest life expectancy on average 1960-2012 and **Costa Rica** since 1980, reaching in 2012 the top 5% of national LE levels, in fact higher than high income countries.

TABLE 2: LIFE EXPECTANCY OF 14 HFS COUNTRIES

Country name	Average 1960-2012	Average 1980-2012	2012
Cuba	71.17	73.52	77.35
Costa Rica	70.24	70.79	74.44
Albania	69.06	71.25	73.70
Armenia	66.64	69.92	73.78
Georgia	73.15	76.72	79.71
Belize	73.70	76.08	79.07
St. Lucia	69.66	71.19	73.94
Sri Lanka	67.34	69.58	72.61
Vietnam	67.92	69.36	72.19
Tonga	68.42	70.92	74.07
St. Vincent	68.53	71.67	74.67
Paraguay	68.06	70.34	72.40
Grenada	68.22	70.23	72.49
Colombia	68.24	72.08	75.61
Average 14 HFS	69.31	71.69	74.72
Weighted average	68.61	71.72	75.13
World average	63.28	66.30	70.62
Best country	78.18	80.13	83.48

The overall evolution of the 14 HFS countries shows how after Cuba Rica and Armenia topped LE up to the sixties, **Costa Rica** joined Cuba in the 70s and them both remained with the highest values, with Armenia dropping its life expectancy in the 80s, as did Vietnam in the 70s, due to the effects of dramatic wars.

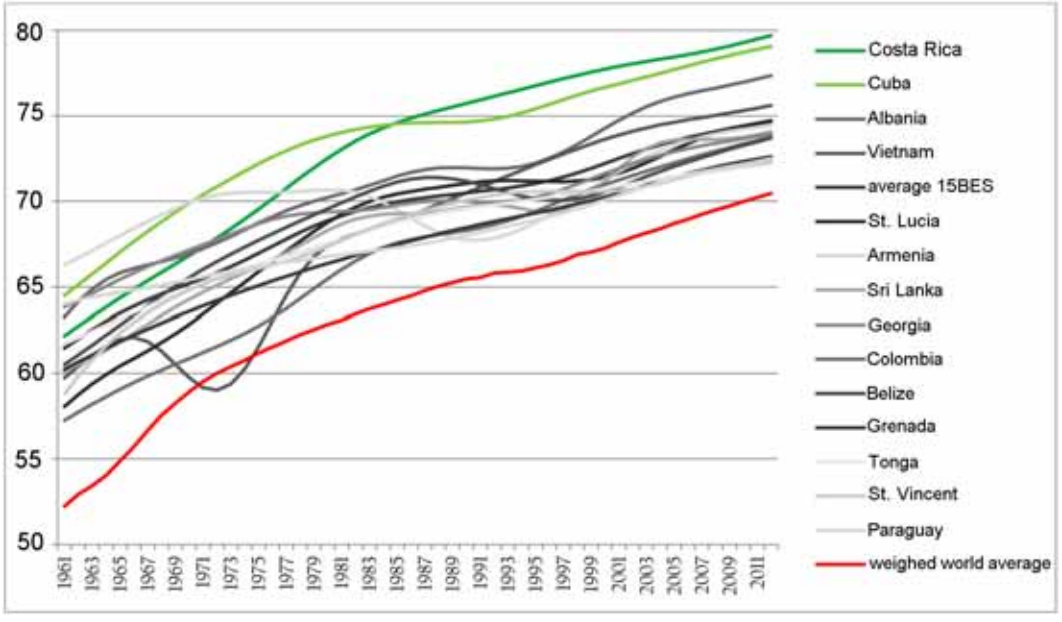

FIGURE 31: EVOLUTION OF 14 HFS 1960-2012.

The breakdown by sex shows that while **Costa Rica** and Cuba have the highest levels throughout time, Vietnam and Albania also surpass the 80 years of life expectancy for women, among the highest in the world. As for men, **Costa Rica** and Cuba also have the best values, followed by Albania and the rest.

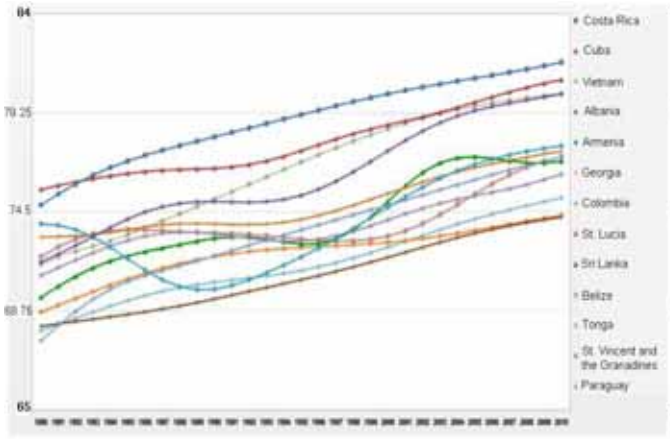

FIGURA 32: FEMALE LE OF 14 HFS

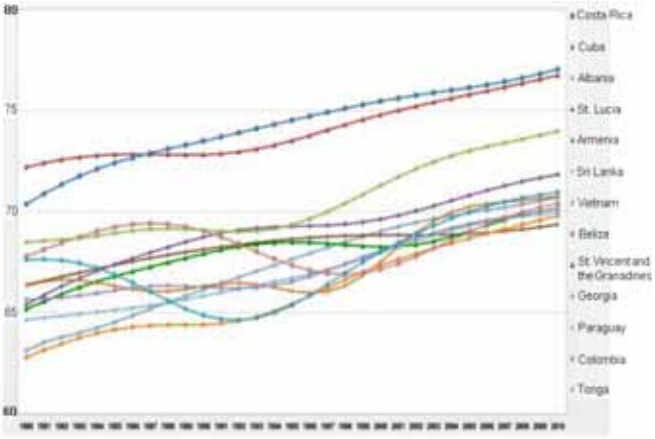

FIGURA 33: MALE LE OF 14 HFS

Gross Domestic Product per capita

GDP per capita varies widely (by a ratio of 5-6) in the 14 HFS countries. It is higher ("higher cost of life") in Central America and the Caribbean, followed by South America (yet much higher in Colombia than Paraguay), the Balkans and the Pacific, and lowest in Asia, with the most efficient model, by far, in Vietnam. On average, the 14 HFS countries have a GDP pc half of the world's weighted average.

TABLE 3: GDP PC OF 14 HFS

Country	1960-2013	2000-2013	2013
Vietnam	626	989	1911
Sri Lanka	725	1745	3280
Paraguay	1374	2328	4403
Armenia	1513	2233	3505
Georgia	1516	2014	3602
Tonga	1773	2956	4427
Albania	1832	3159	4652
Colombia	1981	4535	7826
Belize	2126	4256	4834
St. Vincent	2195	5438	6634
Costa Rica	2800	6111	10185
Cuba	2832	4624	6825
Grenada	3730	6703	7876
St. Lucia	3947	6050	7309
14 HFS average	1747	3796	5519
World average	3656	7461	10256
World max	66244	127809	111162

The evolution of the GDP pc shows that Cuba had the highest GDP pc of the 14 HFS countries until the early 80s, when **Costa Rica** gradually took the lead and surpassed the Caribbean islands. Costa Rica and Colombia have increased their GDP pc very steeply in the last five years and the former is reaching the world's average, hence could soon be leaving the HFS group. In the lower -most efficient- end, Georgia, Tonga, Colombia and Paraguay had decreasing levels in the 80s and 90s and all have picked up in the last decade. Vietnam has consistently been the most health-efficient country among the 14 HFS, with GDP pc 5 times lower than the world's average -as reflected in the previous section- and a 10% higher life expectancy during the last 20 years.

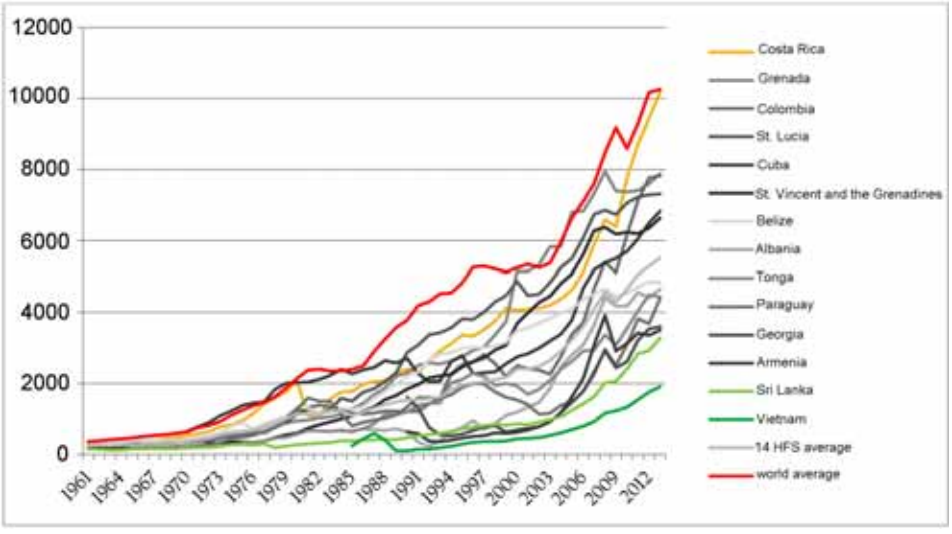

FIGURE 34: EVOLUTION OF GDP PC OF 14 HFS, 1960-2013.

CO_2 emissions per capita

The map below shows that the 14 HFS countries are in the lower half of polluting countries and far lower than the top 20 countries with highest CO_2 emissions (above 7 metric tons per capita -see map-), responsible for most of the global warming.

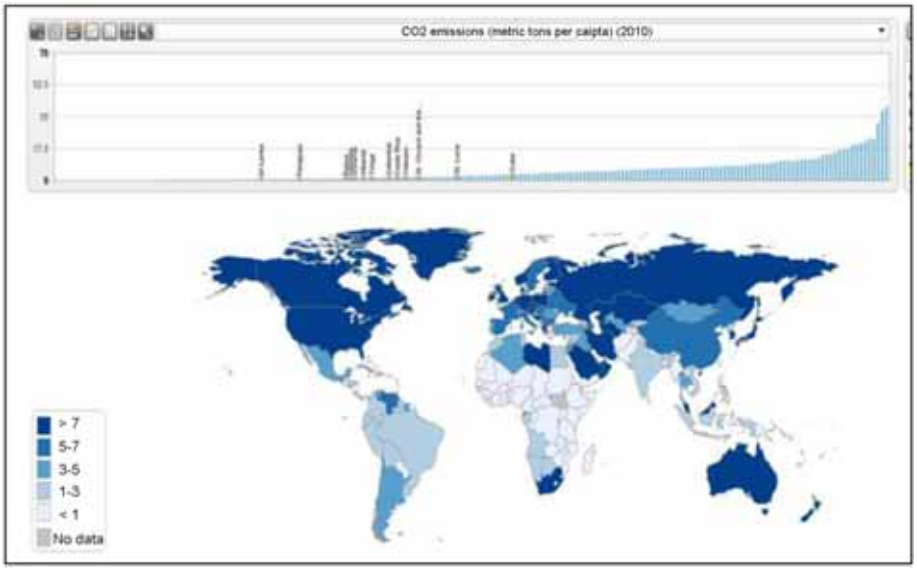

FIGURE 35: WORLD DISTRIBUTION OF CO_2 EMISSIONS PER CAPITA, 2000-2010.

As the graph below shows, the available data on CO_2 emissions per capita (only since 2000) show that the world's average is reaching twice the level of the planetary boundary. Among the 14 HFS countries, Cuba is close to the planetary boundary in the last years and could soon be leaving that group of countries if the trend of growth on carbon emissions continues. The most sustainable countries among the 14 HFS are Paraguay and Sri Lanka with Belize joining in the last years.

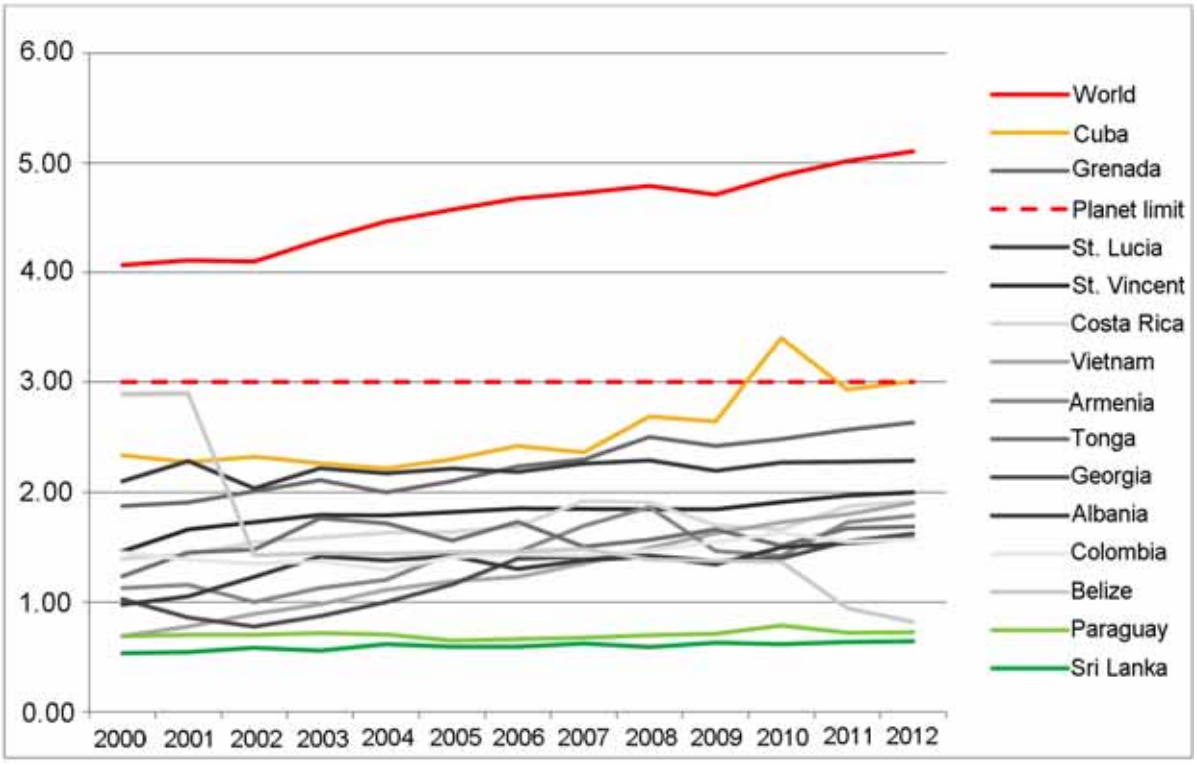

FIGURE 36: EVOLUTION OF CO_2 EMISSIONS IN 14 HFS, 2000-2012.

In summary, the 14 HFS countries have an average 7% higher life expectancy, 50% lower GDP pc and CO_2 emissions than the world's weighed per capita average. The most effective -highest LE- models in the last 60 years are **Costa Rica** and **Cuba** (with average 10 years longer life expectancy than the world average), the most efficient -lowest GDP pc- is Vietnam (5 times lower than world's average), while the most sustainable -lowest CO_2 emissions- are Sri Lanka and Paraguay (lower than half the planetary boundary). There is a risk that the two most effective countries trespass the feasibility (**Costa Rica** reaching the world's GDP average) and sustainability (Cuba surpassing the planetary boundary on CO_2 emissions per capita) limits and leave the HFS group.

V. THE BURDEN OF GLOBAL HEALTH INEQUITY

Following the methodology described in the previous chapter, we compared the health levels of the reference healthy-feasible-sustainable (HFS) countries, taken as the objective of best feasible (and sustainable) state of health, applied to all countries, with the countries' real values.

BURDEN OF INEQUITY IN LOSS OF LIFE EXPECTANCY

The following maps show the evolution of the difference of average national life expectancy with the standard HFS models.

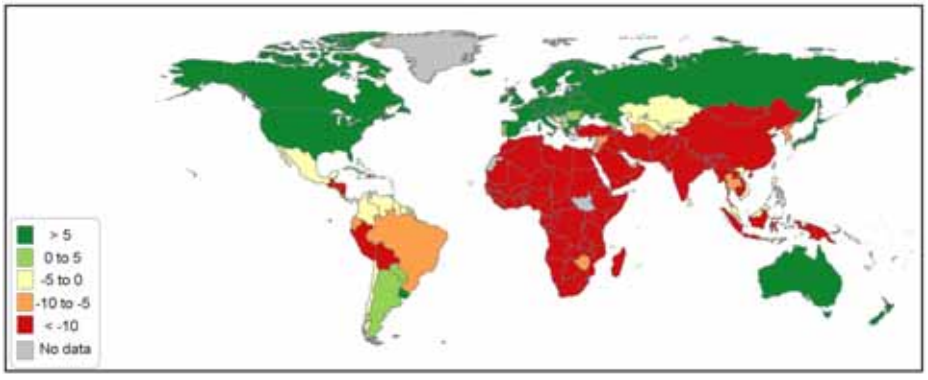

FIGURE 37: MAP OF LE GAP FROM HFS STANDARDS IN 1960.

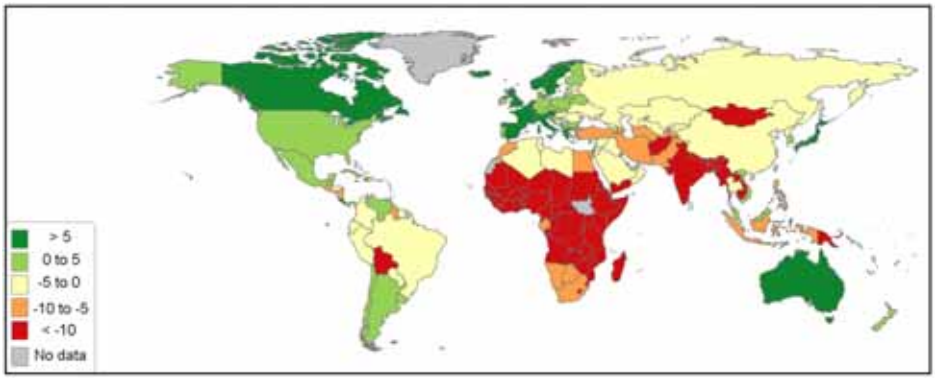

FIGURE 38: MAP OF LE GAP FROM HFS STANDARDS IN 1990.

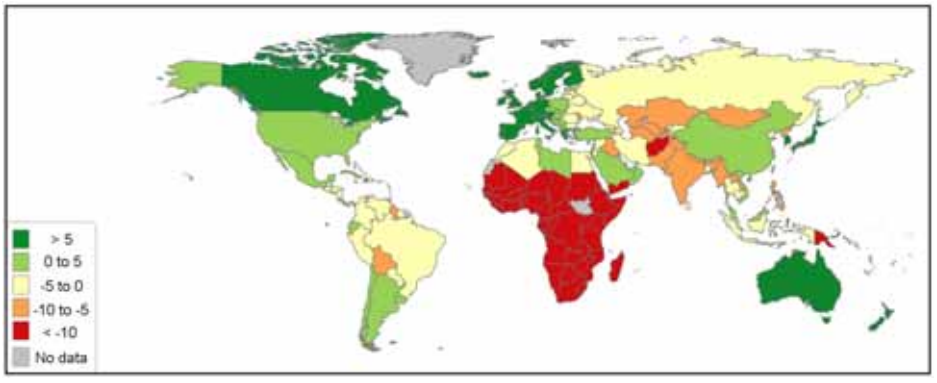

FIGURE 39: MAP OF LE GAP FROM HFS STANDARDS IN 2012.

As the maps show, the countries with more than 5 years of life expectancy above the healthy-feasible-sustainable (HFS) models have shrunk from 1960 to concentrate in the EU15 + Norway, Switzerland and Iceland, Australia and Nez Zealand, Japan and South Korea, and Canada, all of them countries with accumulation of economic resources far above the average (and in the hoarding area, as will be shown later) and exhausting natural resources from coming generations. On the other extreme, countries with more than 10 years less than the life expectancy of HFS models were initially spread from the Andean region and Central America, the whole of Africa, the Middle East and almost all Asia, south to the Soviet Union, and are now concentrated in sub-Saharan Africa, Yemen, Afghanistan and Papua New Guinea, yet with still many countries in Central and South Asia, and Bolivia, 5 to 10 years below the standards.

Annex 1 shows the table of countries by decades 1960-2012 with the gap of life expectancy with the HFS models as a measure of burden of global health inequity in LE loss.

BURDEN OF GLOBAL HEALTH INEQUITY IN AVOIDABLE DEATHS

While the loss of life expectancy reflects the effects of global inequity from feasible and sustainable models accumulated through life time with an effect on life years, as mentioned in the previous chapter, the notion of avoidable deaths due to global health inequity is easier to understand across countries and groups in society. It also allows disaggregating in age groups and provides a finer analysis of the evolution of such gap across society in time.

We used the following methodology to estimate the number of avoidable (and unfair) deaths due to global health inequity:

1. We took the UN statistics database on demography[53] which estimates annual average population and number of deaths by 5 year period from 1950 till 2010, by 5 year age group (from 0 to 80)[54] and by sex.

2. We estimated the annual average mortality rates by five-year period (1950-2010), age group and sex, of the 14 healthy-feasible-sustainable (HFS) models described in the previous section (from now on called 14 HFS rates).

3. We then equally estimated the annual average mortality rates by five-year period (1950-2010), age group and sex, for each of the countries in the world.

4. The previous analysis allowed the calculation of the aim (WHO 1945 objective) of best feasible health for all measured in number of deaths, by applying the 14 HFS rates to the disaggregated (period, age and sex) populations of each country.

5. We could then calculate the difference between the aimed best feasible/sustainable number of deaths and the actual numbers disaggregated by country, period, age and sex.

6. By adding all excess deaths due to global health inequity, we calculated the global burden of health inequity.

7. The relative burden of global health inequity was defined by calculating the proportion of all deaths (in each country, period, age group and sex) which were due to global health inequity.

[53] http://unstats.un.org/unsd/snaama/dnllist.asp
[54] Above 80 years of age data are not available for all countries and periods of time.

8. By giving a value of life years lost to each avoidable death when comparing their age of death with the average 14 HFS life expectancy in each year and sex, we could also estimate the burden of global health inequity measured in life years lost/year.

9. The above data were represented in interactive bar charts, survival pyramids and world maps.

- **Number of avoidable deaths due to global health inequity**

Following the above methodology, the total number of avoidable deaths in the world (adding all avoidable -excess- deaths) by annual average of five-year periods 1950-2010 is as the following table, graph and maps show.

TABLE 4: TOTAL NUMBER OF ANNUAL AVERAGE AVOIDABLE DEATHS BY 5 YEAR PERIODS, 1950-2010

Period	Global avoid deaths
1950-1955	22.378.571
1955-1960	22.359.125
1960-1965	23.681.287
1965-1970	17.540.402
1970-1975	15.953.937
1975-1980	16.333.040
1980-1985	16.360.286
1985-1990	16.561.451
1990-1995	17.603.116
1995-2000	18.591.914
2000-2005	17.428.328
2005-2010	16.821.851

Geographical distribution

Annex 2 lists all countries and their estimates of avoidable deaths each tenth year from 1950 till 2010.

The following graphs show the trend of the main countries hosting avoidable deaths and their share in 2005-2010.

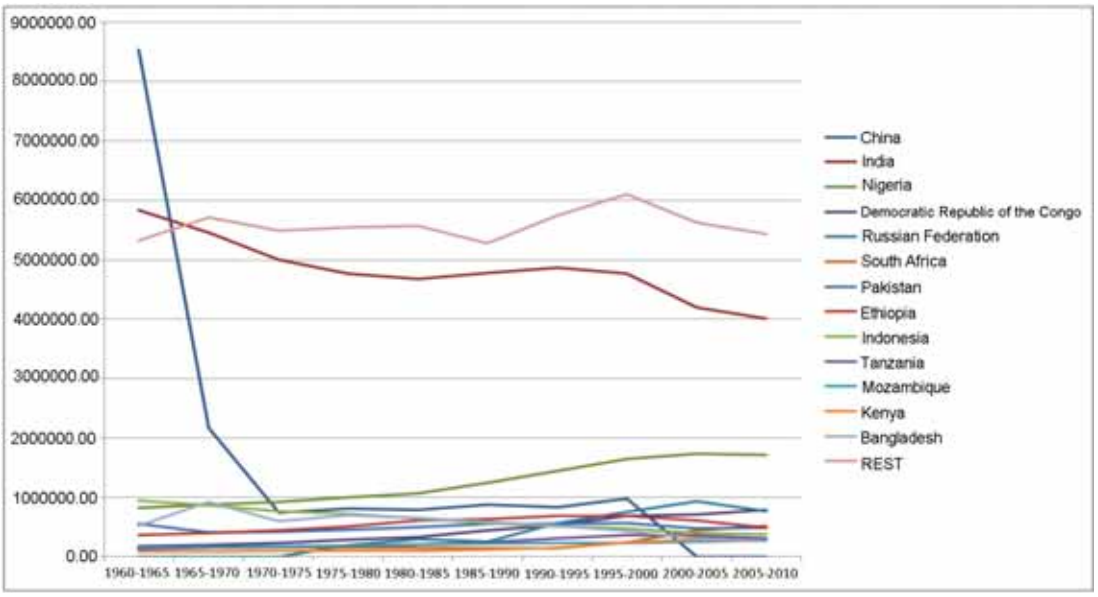

FIGURE 40: EVOLUTION OF AVOIDABLE DEATHS IN THE COUNTRIES WITH HIGHER NUMBERS, 1950-2010.

As the table above shows, the annual number of avoidable deaths decreased from 22.3 million in the 50s and mid-60s, to some 16 million thereafter, with an increase by the turn of the century to 18.5 million and further drop thereafter to return to the level of around 17 million. As the graph shows, China had an abrupt decrease from the 60s till the mid-70s and another drop after 1995, which meant that by the turn of the century China had no more avoidable deaths due to GHiE, even before China surpassed the GDP pc of the 14c HFS models. The drops in the global number in the 60 and after the turn of the century can be largely attributed to China´s decrease, while the increase in the 90s and around the turn of the century may be attributed mainly to the increase of Nigeria and South Africa (largely due to the AIDS pandemic) and of Russia (especially middle aged men´s mortality after the collapse of the Soviet Union).

The pie chart below shows the present distribution of avoidable deaths in the countries with higher number, showing one quarter of them in India, and another quarter in Nigeria, DRC, Russia and South Africa together.

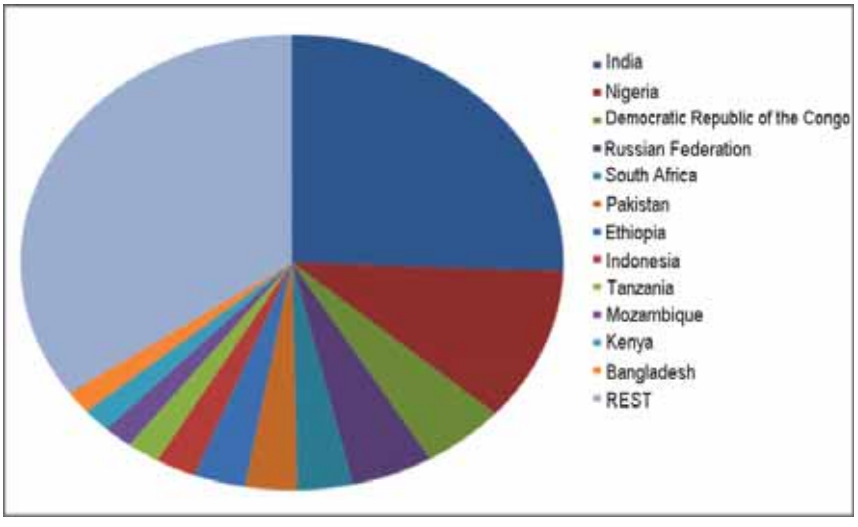

FIGURE 41: DISTRIBUTION OF AVOIDABLE DEATHS BY GHIE BY THE COUNTRIES WITH HIGHER NUMBERS, 2005-2010.

Distribution of avoidable deaths by age groups, sex and time

The distribution and evolution by age groups shows how the number of avoidable deaths in under-5s increased in the 50s and mid 60s and since then has steadily decreased, so the number in 2005-2010 was half the level of 1950-1955. That decrease of some 5 million avoidable under-5 deaths is the main difference in the overall number of avoidable deaths above mentioned. Regarding the other age groups, after a slight decrease in the number of avoidable deaths in middle and third age groups from 1950 to 1970, those figures kept rising since 1980, particularly in the age groups over 50.

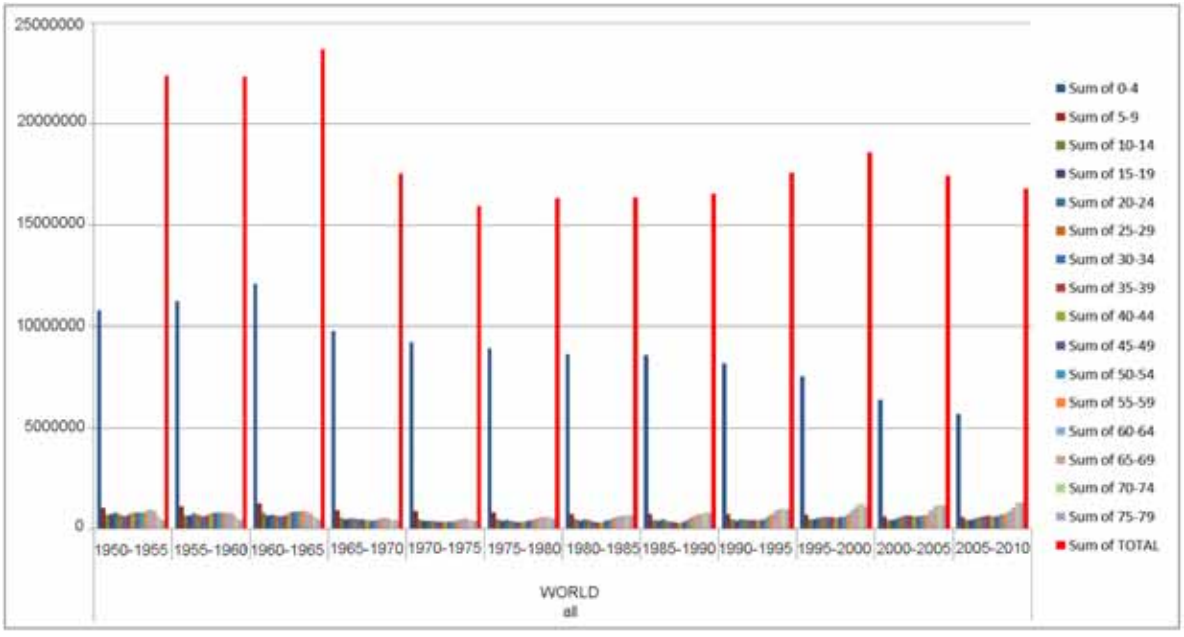

FIGURE 42: DISTRIBUTION BY AGE GROUP AND EVOLUTION IN TIME OF TOTAL NUMBER OF AVOIDABLE DEATHS BY TOTAL HEALTH INEQUITY.

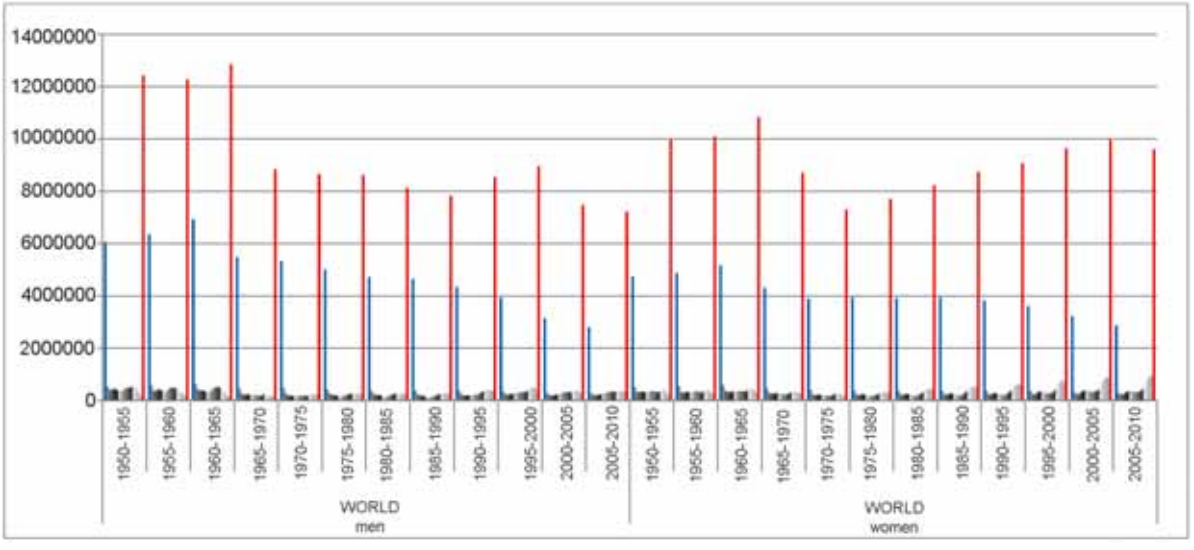

FIGURE 43: DISTRIBUTION BY AGE GROUP AND SEX AND EVOLUTION IN TIME OF TOTAL NUMBER OF AVOIDABLE DEATHS DUE TO GLOBAL HEALTH INEQUITY.

The difference of the distribution and trend of avoidable deaths amongst age groups, between sexes, reflects a higher number overall in men until the turn of the century, when women's avoidable deaths overcame those of men, which decreased in the last decade. Such difference is mainly due to the increase of avoidable deaths in middle aged and elderly women, which compensates for the decrease of avoidable deaths in under-5 girls.

PROPORTION OF DEATHS WHICH ARE AVOIDABLE

The number of avoidable deaths is misleading as it does not relate to the overall number of deaths in each sex, age group and year. The following table, maps and graphs shows the distribution of those proportions.

TABLE 5: PROPORTION OF DEATHS WORLD WIDE WHICH ARE AVOIDABLE BY GHE

Period	Proportion of deaths which are avoidable by GHE
1950-1955	46.88%
1955-1960	47.58%
1960-1965	49.27%
1965-1970	42.37%
1970-1975	39.32%
1975-1980	40.87%
1980-1985	40.61%
1985-1990	40.67%
1990-1995	42.09%
1995-2000	43.49%
2000-2005	40.64%
2005-2010	39.38%

As the table shows, the proportion of deaths worldwide which are avoidable reduced from 1950 till 1970 and thereafter stabilized around 40%.

Geographical distribution of the proportion of deaths which are avoidable by GHE

Annex 3 shows a table of all countries with the proportion of deaths which are avoidable by 5 year periods from 1950 to 2010.

The following maps also show the geographical distribution of the proportion of deaths which are avoidable by global health equity and disaggregated in 0-15, 15-60 and > 60 year old age groups.

They show how such proportion in the under-15 year age group has evolved from 1950 with a high proportion (over 30%) in Mesoamerica and the Andean Region, the whole of Africa, Middle East and almost all of Asia, except Russia and Japan, to 2010, where those high proportions are limited to parts of Central America and the Andean Region, Africa, Middle-East, India, South Asia, with a lower proportion in many Arab countries, and in China and Mongolia.

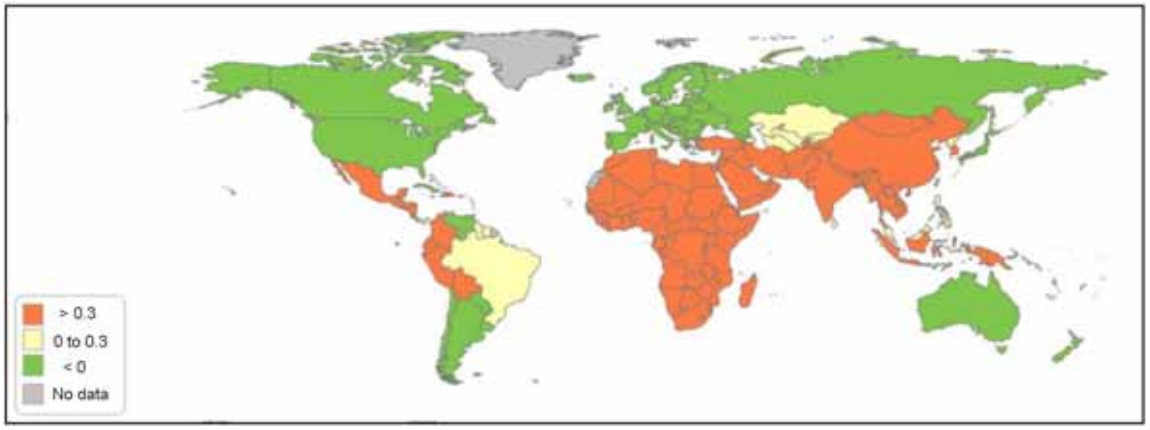

FIGURE 44: PROPORTION OF DEATHS WHICH ARE AVOIDABLE IN <15 YEAR OLD, 1950-1955.

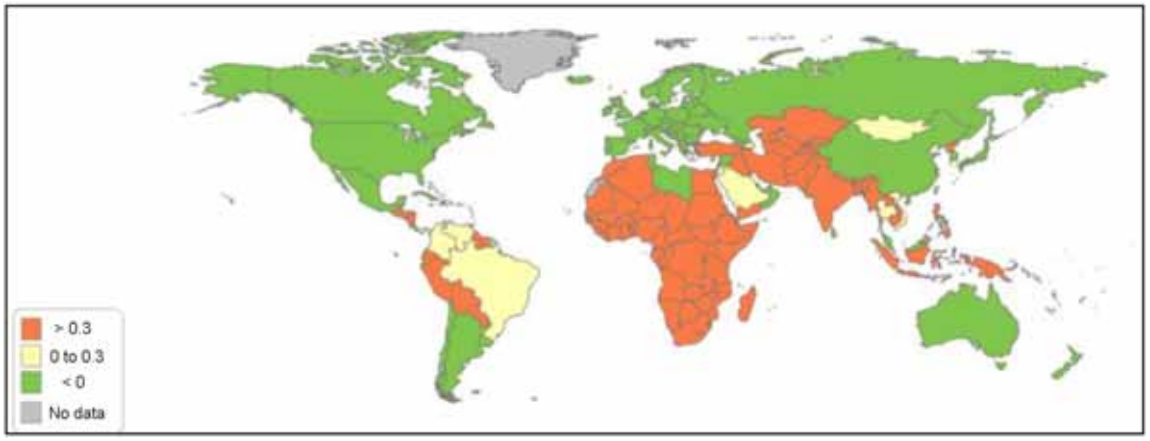

FIGURE 45: PROPORTION OF DEATHS WHICH ARE AVOIDABLE IN <15 YEAR OLDS, 2005-2010

As the following maps show, the proportion of deaths which could be avoidable by global health equity in the 15-65 year old group has evolved from 1950-1955, where parts of Central America and the Andean Region, most of Africa (exceptions of Zimbabwe and Egypt) and Middle East and Asia had proportions >40%, to 2005-2010 where such proportion shrunk in Latin America to Bolivia and Guyana, to sub-Saharan Africa and India and South Asia (except Indonesia) and Russia (mainly due to men´s high avoidable mortality).

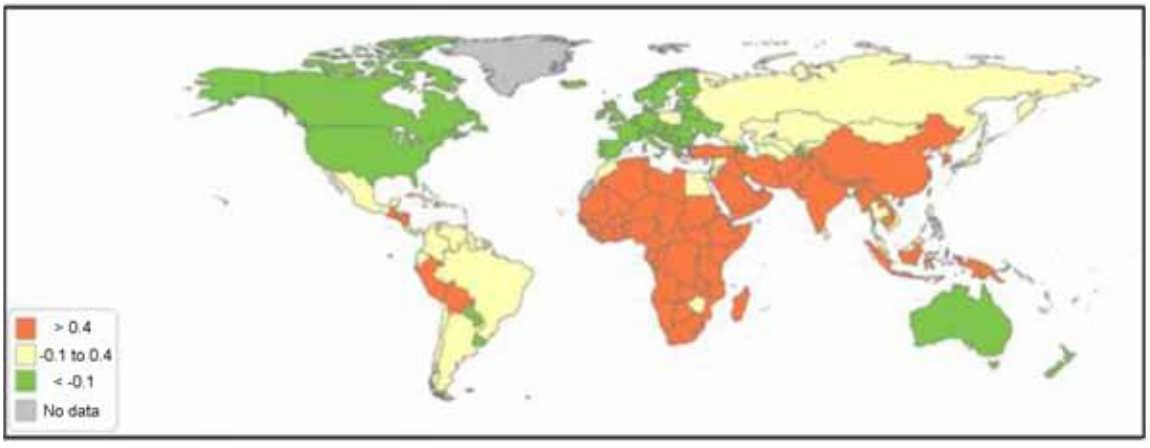

FIGURE 46: PROPORTION OF DEATHS WHICH ARE AVOIDABLE IN 15-65 YEAR OLDS, 1950-1955.

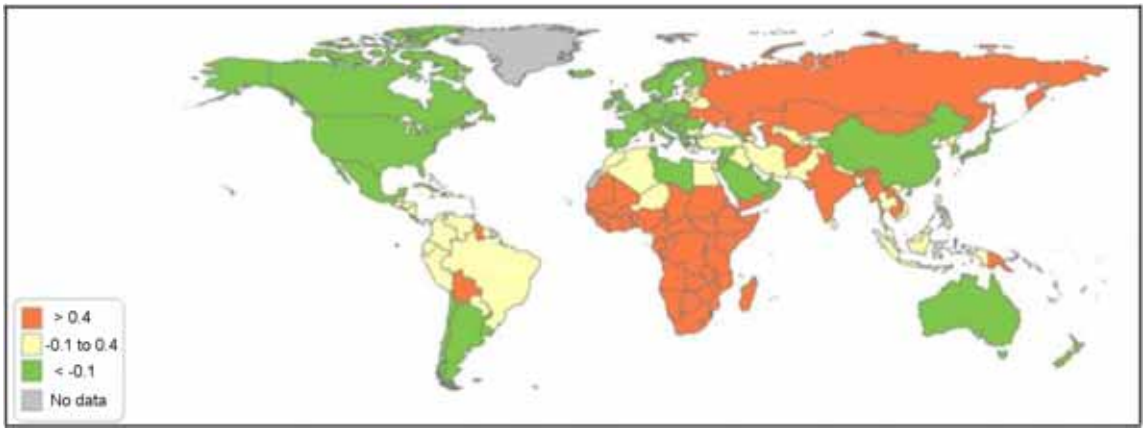

FIGURE 47: PROPORTION OF DEATHS WHICH ARE AVOIDABLE IN 15-65 YEAR OLDS, 2005-2010.

In the over-65 year old group the proportion of avoidable deaths due to global health equity was over 30% in less countries than in younger age groups: Bolivia, parts of sub-Saharan Africa, Middle East and India, China and Mongolia; whereas in 2005-2010 such proportion affected only to Guyana in Latin America, but expanded to most of Africa, Russia, the "Stans" and Indonesia. China was lowering such proportion.

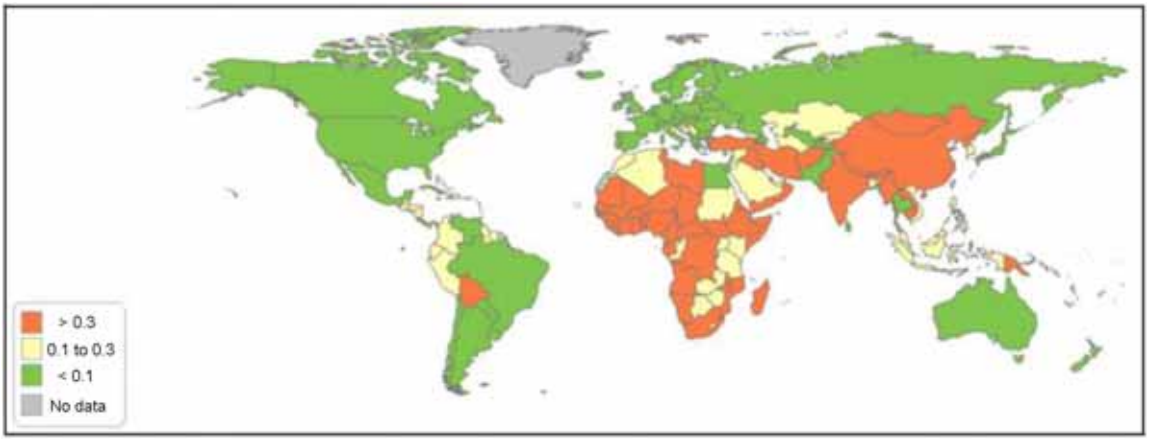

FIGURE 48: PROPORTION OF DEATHS WHICH ARE AVOIDABLE IN <65 YEAR OLDS, 1950-1955.

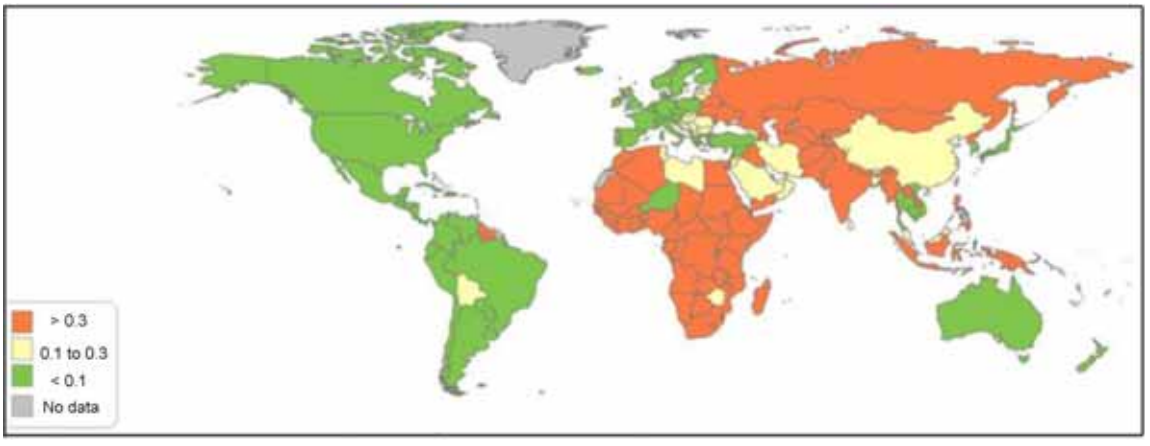

FIGURE 49: PROPORTION OF DEATHS WHICH ARE AVOIDABLE IN >65 YEAR OLDS, 2005-2010.

In summary, and as the maps below show for all age groups, the proportion of all deaths which would be avoidable by global health equity reflects that in 1950-1955 more than one third of all deaths would have been avoidable in Central America and South America, except their southern countries in both cases, all of Africa, Middle East and Asia except Russia and Japan. Such distribution evolved progressively till 2005-2010, when only Bolivia, Guatemala and Guyana in Latin America had that proportion, as did sub-Saharan Africa while North Africa, most of the Middle East and China left that situation, while Russia and other ex-USSR countries increased their burden of inequity to that level.

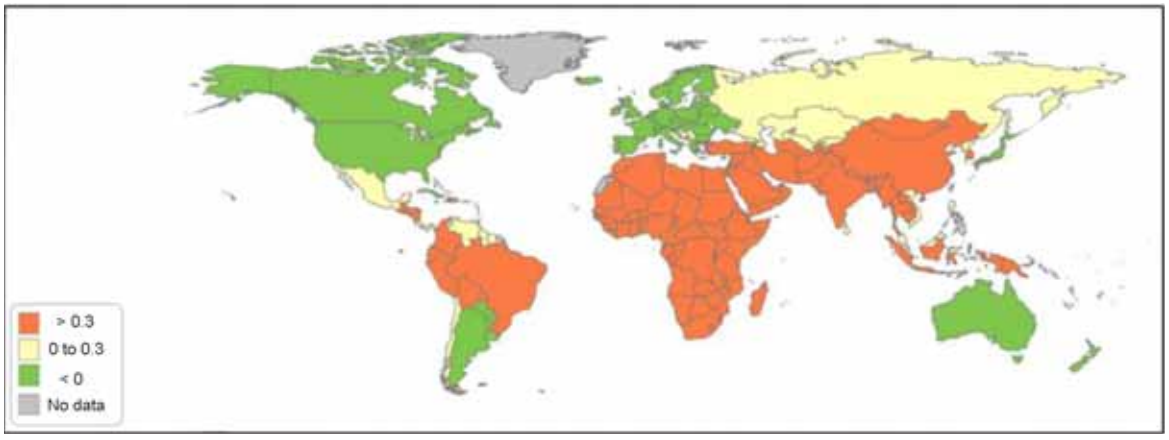

FIGURE 50: PROPORTION OF ALL DEATHS WHICH ARE AVOIDABLE BY GHE, 1950-1955.

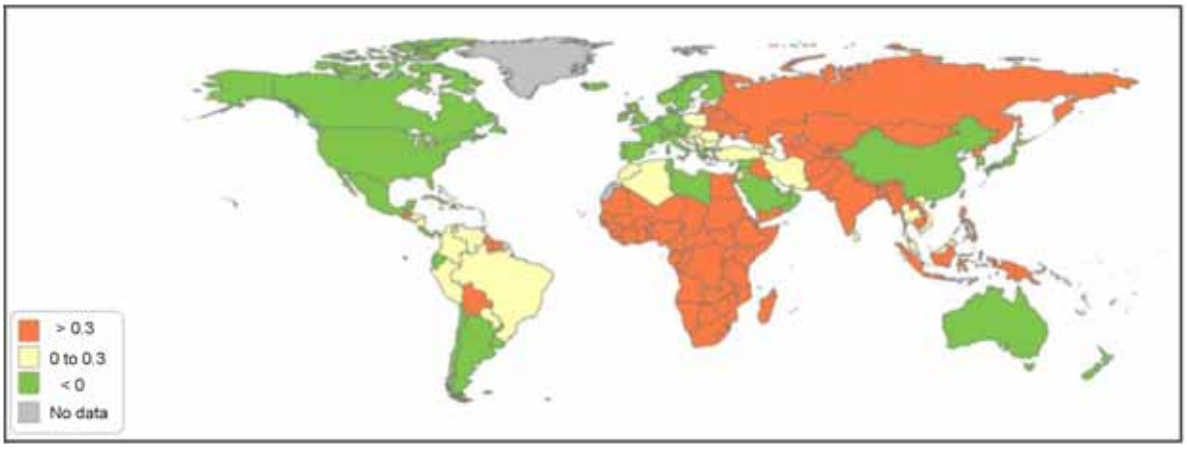

FIGURE 51: PROPORTION OF ALL DEATHS WHICH ARE AVOIDABLE BY GHE, 2005-2010.

Distribution of the proportion of deaths which are avoidable, by age groups, sex and time

The evolution and distribution of the proportion of avoidable deaths by age groups shows an increasing proportion in under-15s except in the 60s-70s, decreasing in older than 15 years until the mid-80s, when it starts increasing again. In fact, the overall pattern is an increase since the 50s, with a turning point to an increasing trend which starts earliest, according to age groups (<15 in the 60s, 15-50 in the 70s and > 50 in the late 80s).

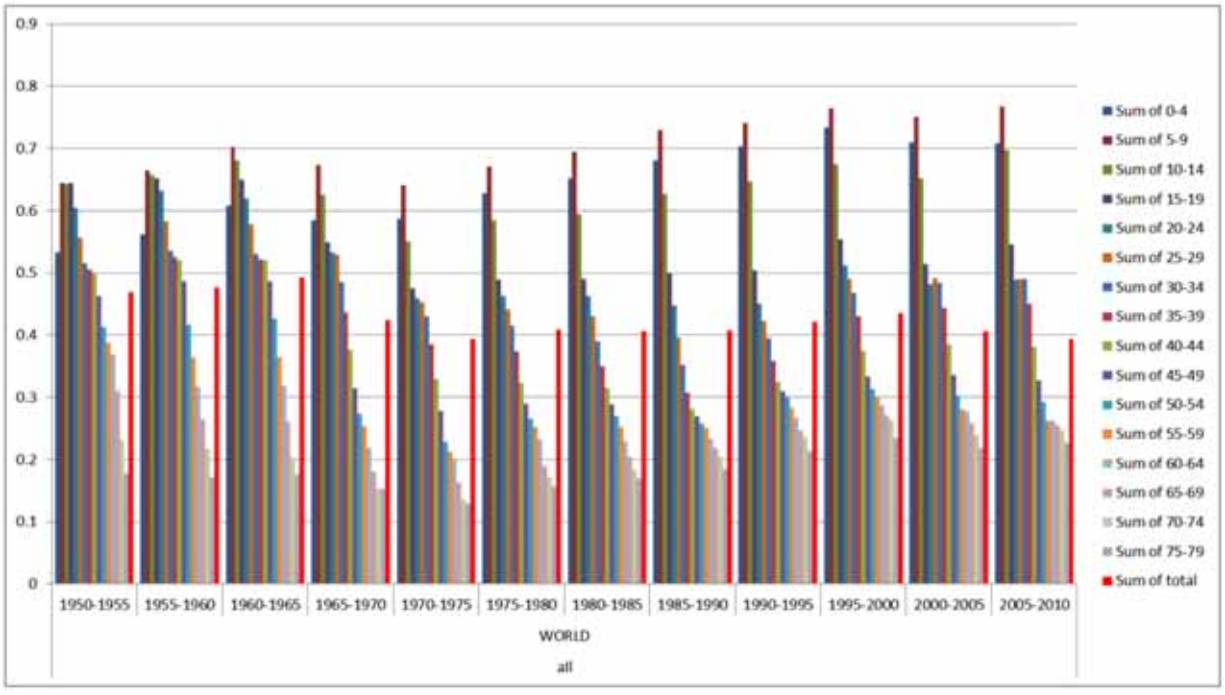

FIGURE 52: EVOLUTION AND AGE DISTRIBUTION OF THE PROPORTION OF AVOIDABLE DEATHS.

The disaggregation of the proportion of avoidable deaths by sex and age group shows, in the first and the last recorded period, a trend from a higher proportion of avoidable deaths in men in 1950-1955 to a higher in women in 2005-2010 (over 50% versus 30% in men) and for all age groups, with especially high difference in the reproductive age groups (15-40 years) and also in ages above 50 years, where men's proportion of avoidable deaths gradually decreases while it remains high in women. The evolution of age distribution has shifted from a more even distribution, but with higher proportions in the 50s, to a greater concentration of the proportion of avoidable deaths in younger groups in 2005-2010, principally in males.

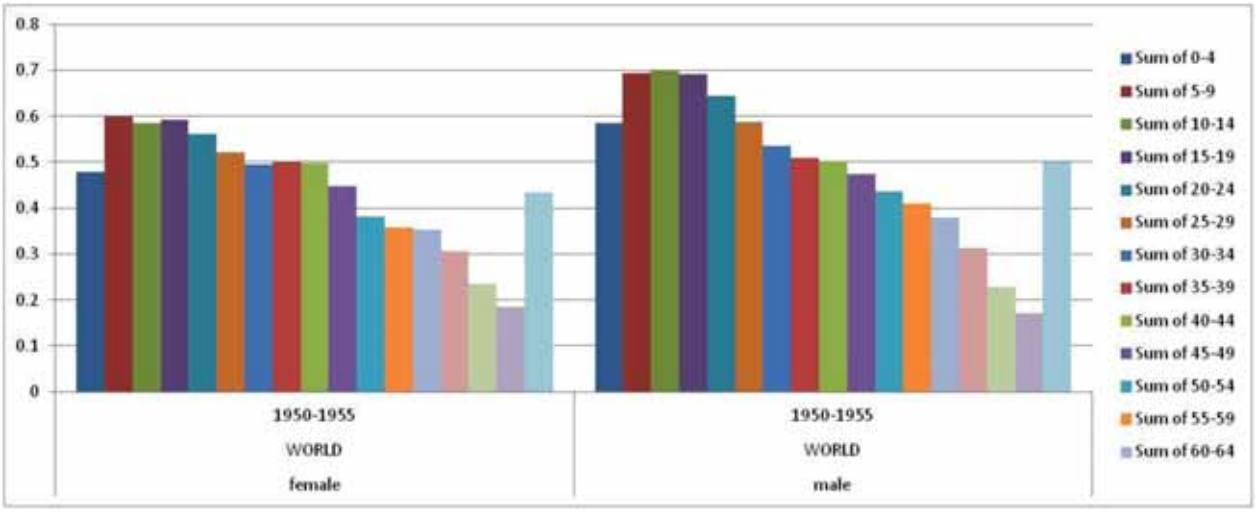

FIGURE 53: SEX AND AGE DISTRIBUTION OF THE PROPORTION OF AVOIDABLE DEATHS, 1950-1955.

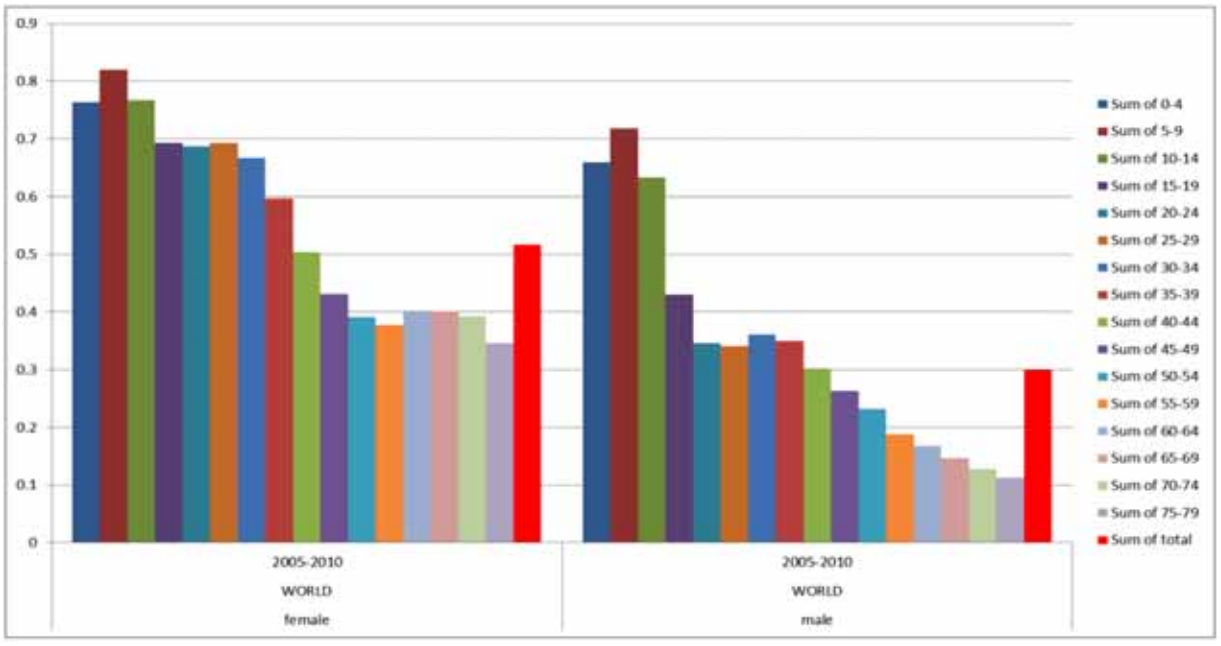

FIGURE 54: SEX AND AGE DISTRIBUTION OF THE PROPORTION OF AVOIDABLE DEATHS, 2005-2010.

BURDEN OF GLOBAL HEALTH INEQUITY BY LIFE YEARS LOST

As the proportion of deaths which are avoidable by GHE qualifies the net number of avoidable deaths in each age, sex and country situation and gives a better estimate of the burden of health inequity, the estimate of life years lost due to premature death in turn due to global health inequity, gives an even more accurate measure of the burden of health inequity.

TABLE 6: BURDEN OF GLOBAL HEALTH INEQUITY IN LIFE YEARS LOST DUE TO PREMATURE DEATH, 1950-2010

Period	Est total LYL (GBD 2000-2012)	LYLs x ineq GI	% of LYL due to GHiE	Population	LYL pc-y due to GHiE (in days)
1950-1955		523.061.410		2.812.128.132	67.89
1955-1960		634.511.137		3.199.903.317	72.38
1960-1965		771.676.573		3.542.162.207	79.52
1965-1970		678.823.240		3.921.030.792	63.19
1970-1975		670.783.737		4.292.543.844	57.04
1975-1980		677.787.215		4.684.568.499	52.81
1980-1985		677.720.360		5.111.098.313	48.40
1985-1990		688.617.471		5.551.862.639	45.27
1990-1995		690.111.246		5.965.482.560	42.22
1995-2000		690.555.496		6.360.035.459	39.63
2000-2005	2.185.575.930	637.973.314	29.19%	6.752.392.208	34.49
2005-2010	2.064.067.256	606.818.689	29.40%	7.155.578.115	30.95

As the table above shows, the overall burden of life years lost due to global health inequity has increased from over 500 million in 1950-1955 to over 600 million in 2005-2010. The proportion of those life years lost in relation to the life years lost estimated in the Global Burden of Disease (calculated against best life expectancy and also lowest share of disability -Japan for 1990- and a combination of lowest death rates for the GDB 2010[55]) has been around 30% in the last decade. Such loss of life must be related to the overall population: while in 1950-1955 the loss was in the range of 70 days loss of life per person and year (some 15% of all the life potential), that loss of life per capita and year was gradually reduced to some 30 days in the period 2005-2010.

- **DISTRIBUTION OF AVOIDABLE LIFE YEARS LOST BY AGE GROUPS, SEX AND TIME**

As seen in the graph below, the age distribution of LYLs due to GHiE has evolved between 1950 and 2010, so that while the LYLs in under-5s still hold the greater proportion, this share has been decreasing since the 90s and increasing in older age groups, however the net effect is a 15% decrease in life years lost since the 90s.

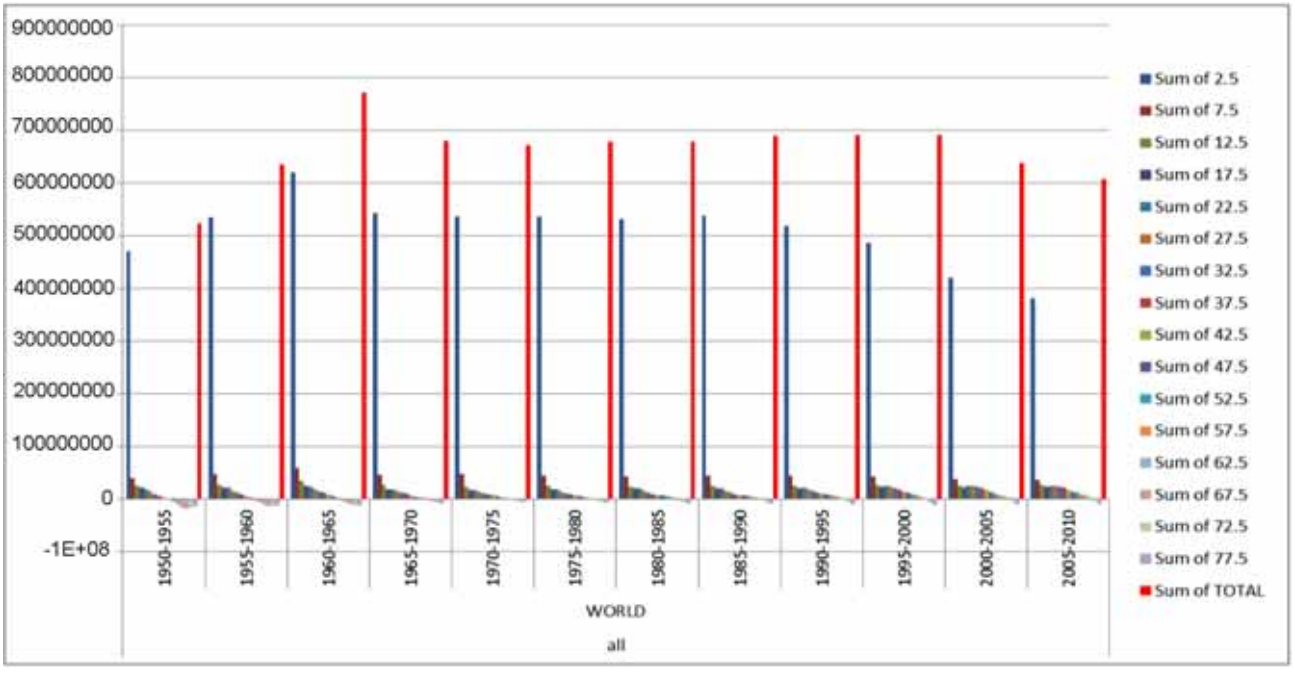

FIGURE 55: EVOLUTION 1950-2010 AND AGE DISTRIBUTION OF THE LIFE YEARS LOST DUE TO GLOBAL HEALTH INEQUITY.

The burden of LYL due to GHiE and its age distribution when disaggregated by sex shows that the overall burden is much higher in women (some 40% higher) and such burden difference increases with age.

[55] http://www.who.int/healthinfo/statistics/GlobalDALYmethods_2000_2011.pdf

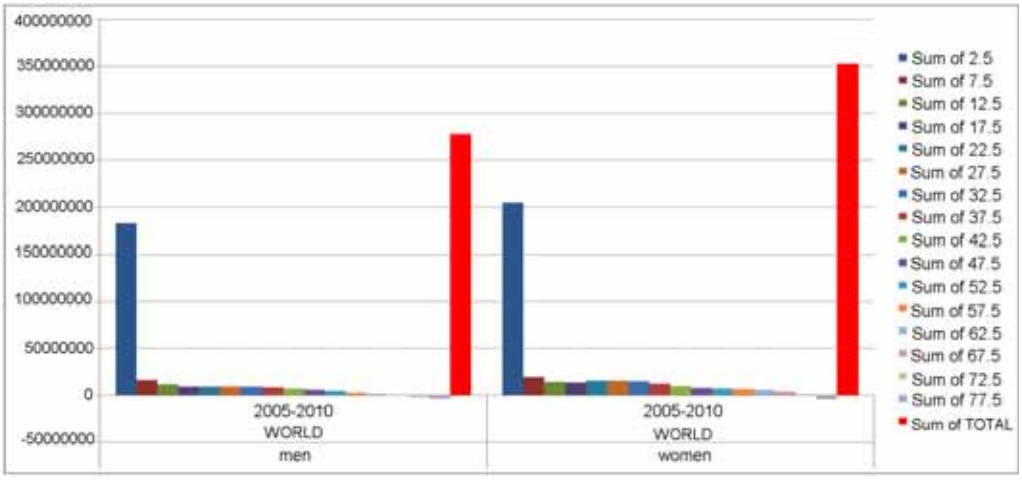

FIGURE 56: DISTRIBUTION OF LYL DUE TO GLOBAL HEALTH INEQUITY, BY SEX, IN 2005-2010.

DEMOGRAPHIC PYRAMID DEVIATIONS DUE TO GLOBAL HEALTH INEQUITY

The estimates above may also be represented in the demographic pyramid. When we compare the structure of the demographic pyramids of the GHE 14 HFS models with the world´s demographic pyramid for the period 2005-2010, we see that in women almost 10% less reach their 80th birthday due to GHiE. Such loss along the way is gradually spread through each age period with half of the loss, in fact after the 60th birthday. The same comparison in men shows that the difference between the 14 HFS models and the world´s demographic pyramid is more subtle, with only 3% more of men surviving the 80th birthday in the standards than the world´s average and most of that loss taking place before the 50th birthday.

In analyzing these differential demographic pyramids we need to take into account that the comparison between the HFS models and the world´s overall population is misleading ads the latter contains both, countries with higher survival rates than the SES models and countries with lower. The individual comparisons are far more telling.

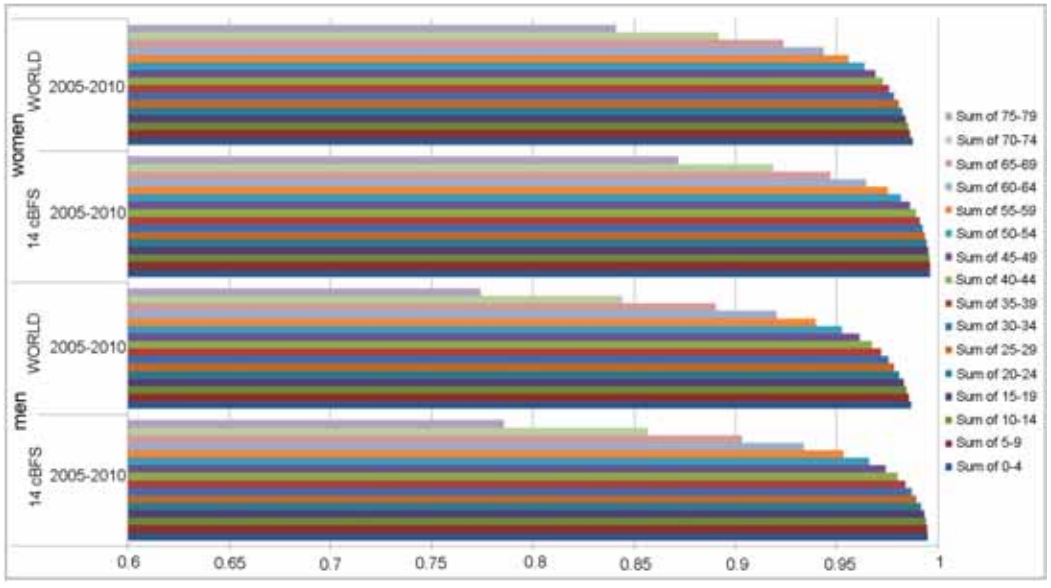

FIGURE 57: HFS MODELS AND WORLD´S DEMOGRAPHIC PYRAMIDS, 2005-2010.

VI. ECONOMIC EQUITY TO ENABLE GLOBAL HEALTH EQUITY AND THE UNIVERSAL RIGHT TO HEALTH

WORLD´S NATIONAL AVERAGE GDP PC DISTRIBUTION

The world´s GDP pc by countries is distributed in a very uneven way, as the graph below shows. When distributed from lowest to highest GDP pc, it reflects an exponential curve, rather than a linear one[56].

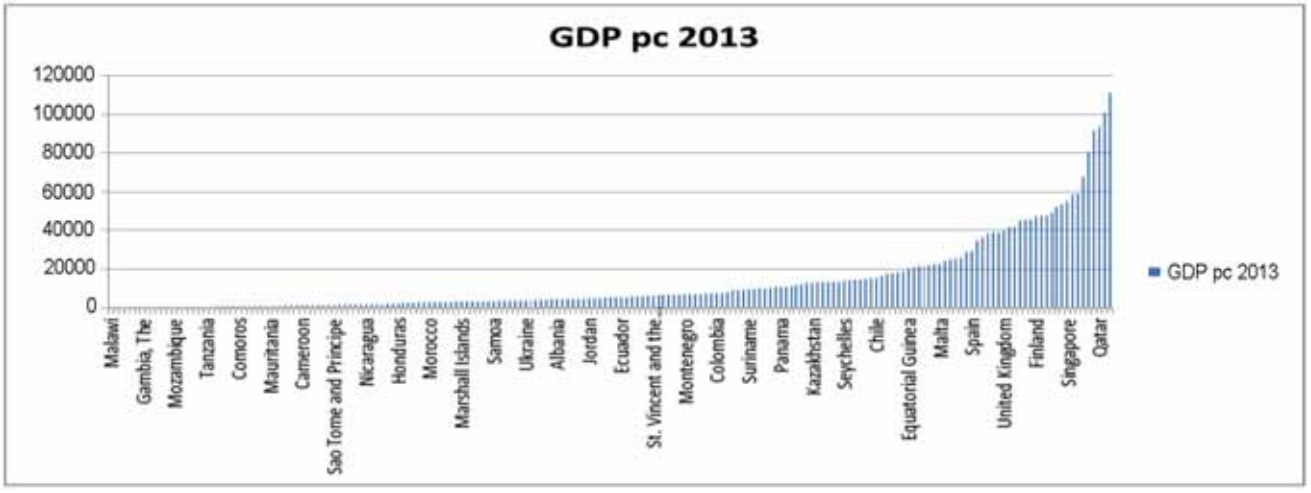

FIGURE 58: DISTRIBUTION OF GDP PC BY COUNTRY AVERAGES, 2013.

The mean and coefficient of variation (standard deviation/mean) of the GDP pc according to the population weights are represented in the following graphs.

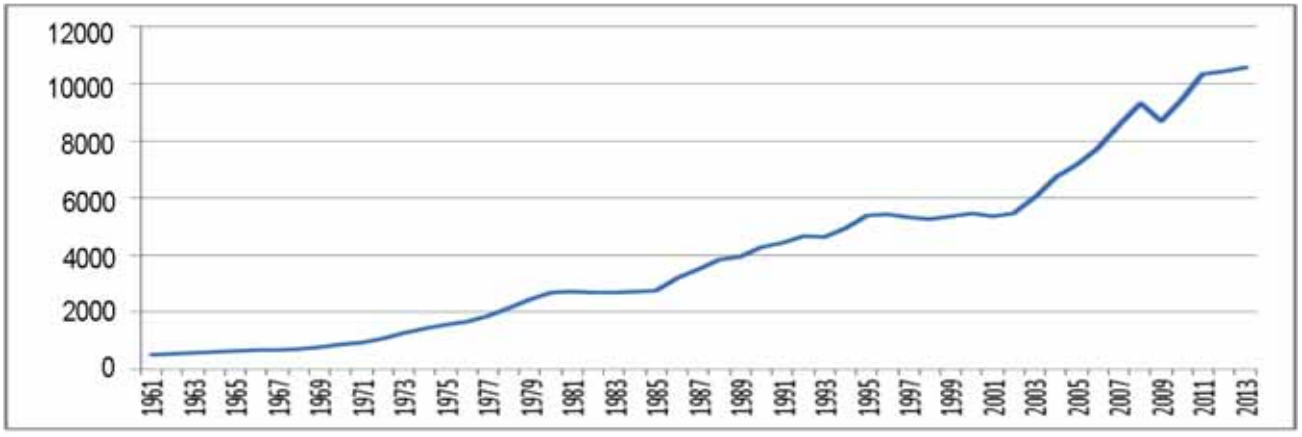

FIGURE 59: WORLD´S GDP PC BY POPULATION FREQUENCY OF NATIONAL GDP PC.

The above graph reflects how the world´s average GDP pc has been increasing with a growing increase rate which seems to have reached plateaus in the 70s and in the 90s, possibly reaching now another plateau in the second decade of the XXIst Century, with the latest world economic crisis due to unregulated speculation.

[56] http://data.worldbank.org/

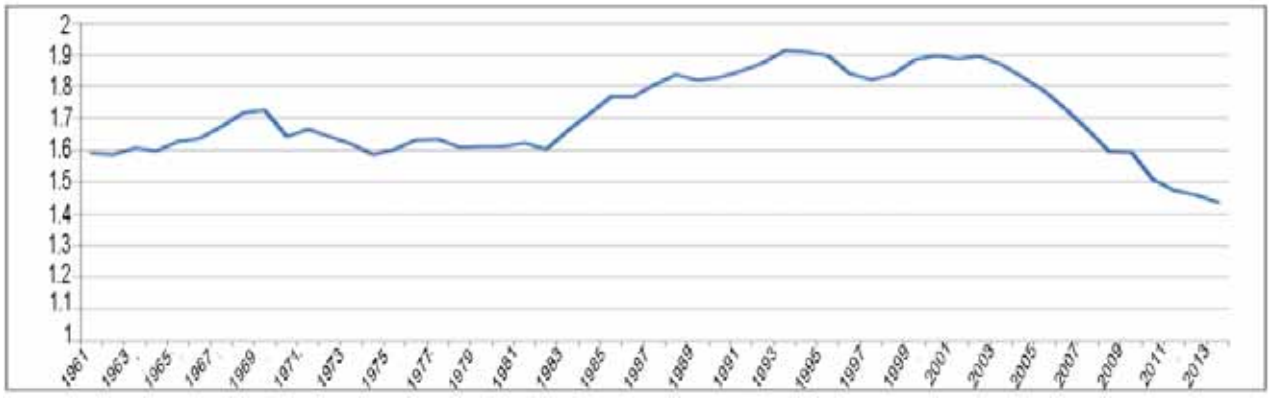

FIGURE 60: VARIATION COEFFICIENT OF POPULATION-WEIGHTED NATIONAL AVERAGE GDP PC, 1961-2013.

The former graph shows how the dispersion of the population distribution of national average GDP pc values was stable from the 60s to the 80s, then increased till the turn of the century and has since then decreased. The effect of China´s increased GDP pc may have had a strong influence in the described trend.

Population by GDP pc levels

When we attribute to each GDP pc interval its countries´ total population, the distribution of the world´s population according to GDP pc is shown in the following graph. The larger population in the intervals $1000-2000 and $6000-7000 pc is due to the average GDP pc values of India and China, with high population numbers. A breakdown by states and regions would smooth the curve.

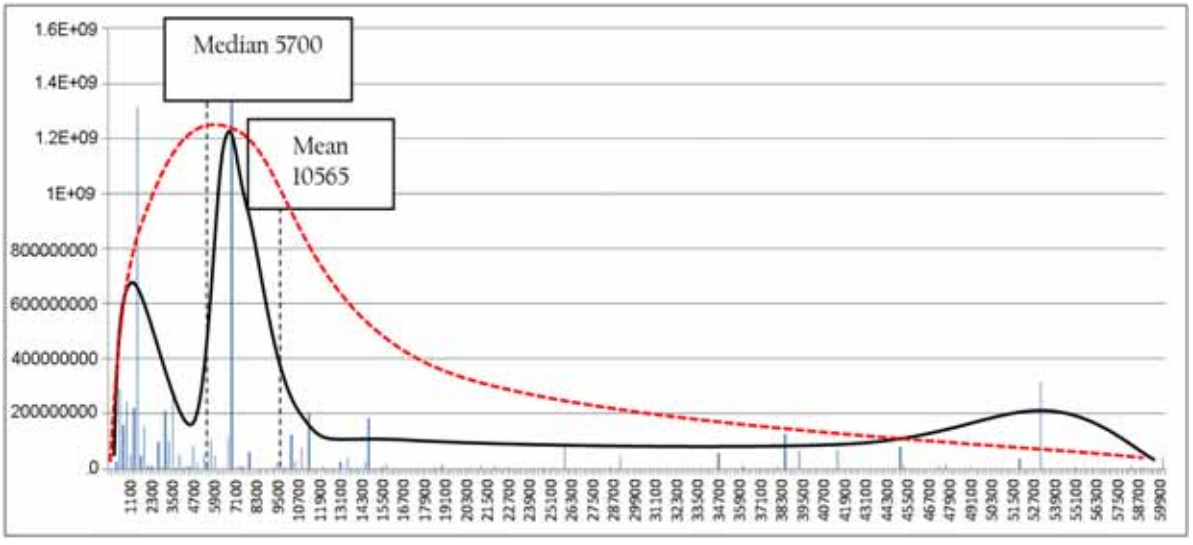

FIGURE 61: DISTRIBUTION OF COUNTRIES POPULATIONS BY GDP PC, 2013.

Even if smoothed, this distribution shows a normal skewed distribution towards values far below the average GDP pc (10565$ pc), reflected in the difference between that mean value and the median (5700$ pc): the GDP pc of the mid-point of the world´s population.

Total GDP by GDP pc levels

When we attribute to each GDP pc interval its countries´ total GDP, the distribution of the world´s GDP according to GDP pc intervals is shown in the following graph. The larger GDP amounts in the intervals $ are due to the average GDP pc value of the US.

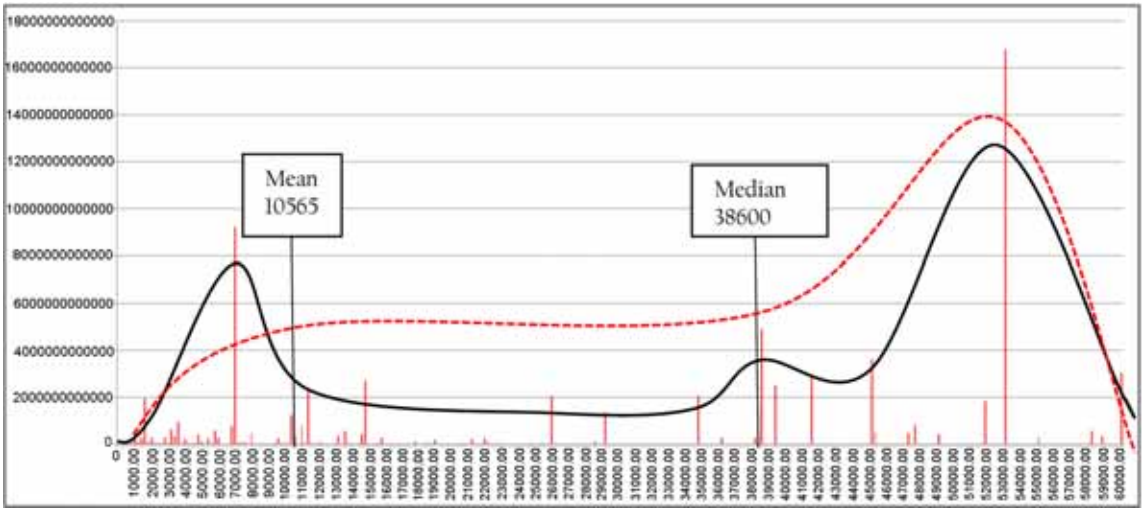

FIGURE 62: DISTRIBUTION OF COUNTRIES´ TOTAL GDP ACCORDING TO GDP PC INTERVALS, 2013.

Even if smoothed, this distribution shows a skewed normal distribution towards values far above the average GDP pc (10565$ pc), reflected in the difference between that mean value and the median (38600$ pc): the GDP pc of the mid-point of the total world´s GDP.

World´s GDP Gini index

The following graphs show the Gini graphs (comparing cumulative GDP -Y axis- in cumulative population -X axis- by countries from lower to upper GDP pc levels) and the divergence from an egalitarian distribution line[57].

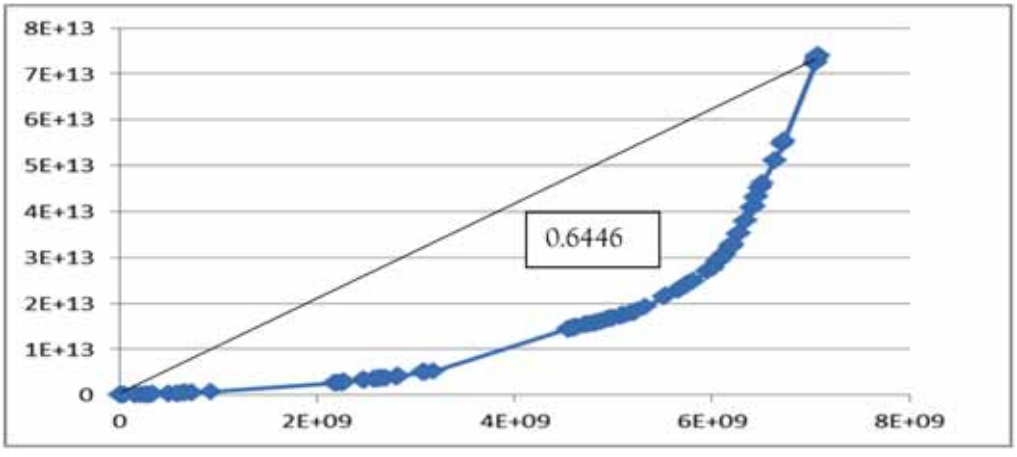

FIGURE 63: GINI INDEX OF GLOBAL GDP, 2012.

[57] Gini C. Italian: Variabilità e mutabilità (Variability and Mutability). 1912.

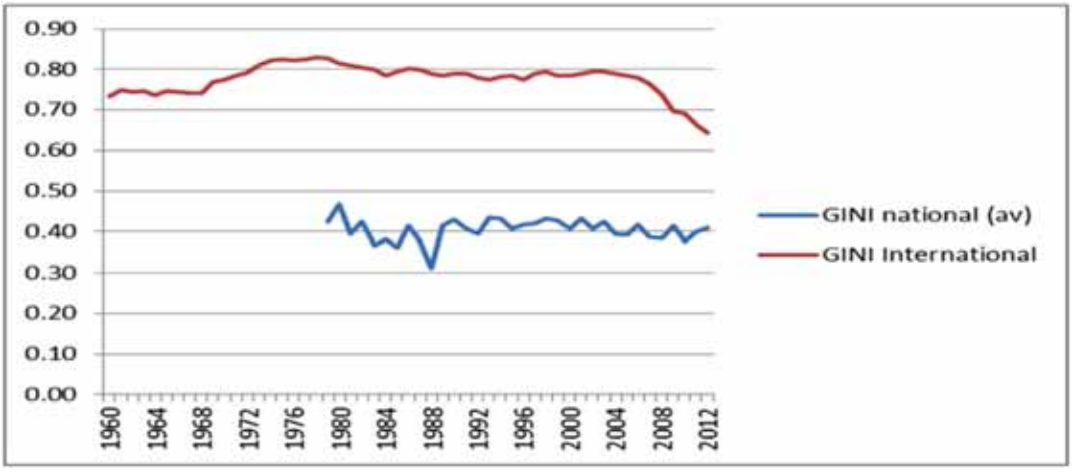

FIGURE 64: TREND OF GINI COEFFICIENT INDEXES: AVERAGE NATIONAL VALUES AND INTERNATIONAL DISTRIBUTION.

The distribution of cumulative wealth in 2012 shows a very high Gini index (0.64: 64% deviation from egalitarian distribution). Such value, and in fact all since 1960, are much higher than the average of national Gini coefficients, in the region of 0.4, as shown in the previous graph. The trend over time shows that there has been some decline in that distribution, which in contrast with the stable standard deviation may mean that the effect of China´s growth in the last decade smoothed the distribution.

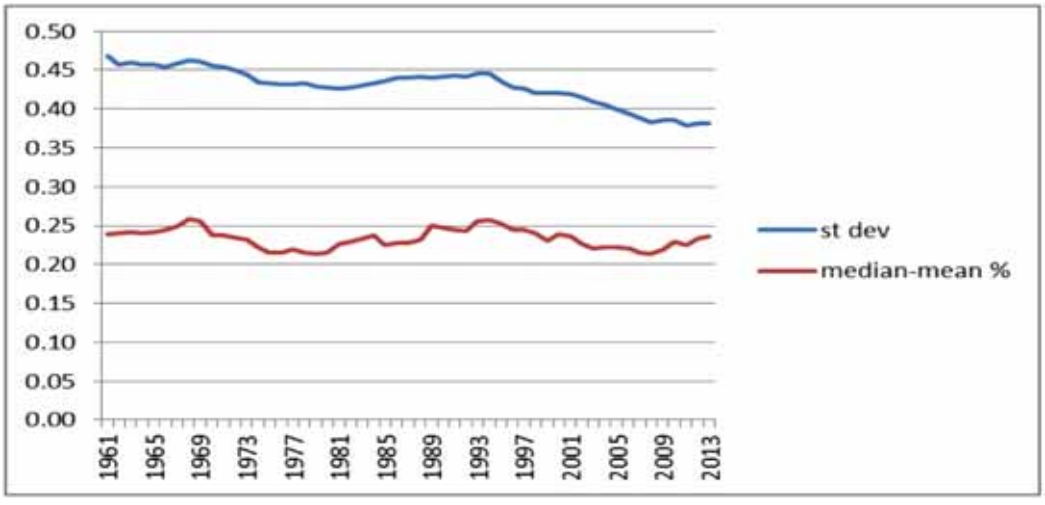

FIGURE 65: INEQUALITY OF INTERNATIONAL GINI COEFFICIENTS AND SKEWED RATE, 1961-2012.

The last graph shows the "inequality of inequality" measured by the standard deviation of the differences of cumulative GDP from cumulative egalitarian mode, as measured in Gini. It shows that the inequality has decreased, probably due to the China effect above mentioned and that it is skewed to a higher median-than-mean distribution, that is, more unequal in cumulative populations under the world´s average GDP pc.

The analysis of both, the normal and the cumulative distribution, and the dispersion and symmetry rates shows that the distribution of national average GDP pc across world's countries reflects high levels of inequality and with skewed concentration of population in lower levels of GDP pc and wealth in the upper levels.

MINIMUM DIGNITY THRESHOLD

The following analysis aims at estimating the minimum level of income -measured in GDP pc- required to enjoy the standard levels of health (14c HFS models). It is based on the following methodology:

1. Minimum dignity threshold -mDTh- (to enable best feasible-sustainable health): average GDP pc[58] of the 14 constant healthy-feasible-sustainable (HFS) models selected in chapter II.

2. Hoarding threshold -HoTh- (above which the hoarding effect prevents to those under the mDTh to increase their levels and enable best feasible health standards/right to health): world´s weighted average GDP pc + 1.96 ($p<0.05$) deviation standard (estimated from the difference mDTh-average GDP pc/1.96).

3. Estimation of population and their GDP deficit of countries living below the mDTh, population and excess GDP of countries living above the HoTh and those in between both thresholds ("equity zone").

4. Redistribution required enabling global health equity from countries above HoTh to countries below mDTh.

5. Comparison of the above analysis with the one which uses the lower limit of the 14 HFS models ("the Asian efficient HFS").

6. Comparison of the required redistribution for GHE, with ODA.

EQUITY (FAIR INEQUALITY) THRESHOLDS AND ETHICAL REDISTRIBUTION OF GDP

All quantitative variables in nature follow a normal distribution. Besides, an egalitarian world would not be socially and politically feasible (so history reveals). This is why the difference of equality and equity is important. Why do we measure inequality if we do not aim at equality? On the contrary, if we measure inequity (unfair difference rending many under the minimum dignity threshold disabling them from best feasible-sustainable health), we can aim at equity by redistribution which limits both ends: the lower below the dignity threshold, and the maximum above the *hoarding* threshold.

If we would aim at having <2.5% of the world´s population with GDP pc lower than the mDTh (and mechanisms to detect and rescue them from that situation), we can estimate which proportion of the income above the hoarding level should be redistributed to those under the mDTh and later progress to the ideal ethical society where both ends are limited.

[58] http://data.worldbank.org/

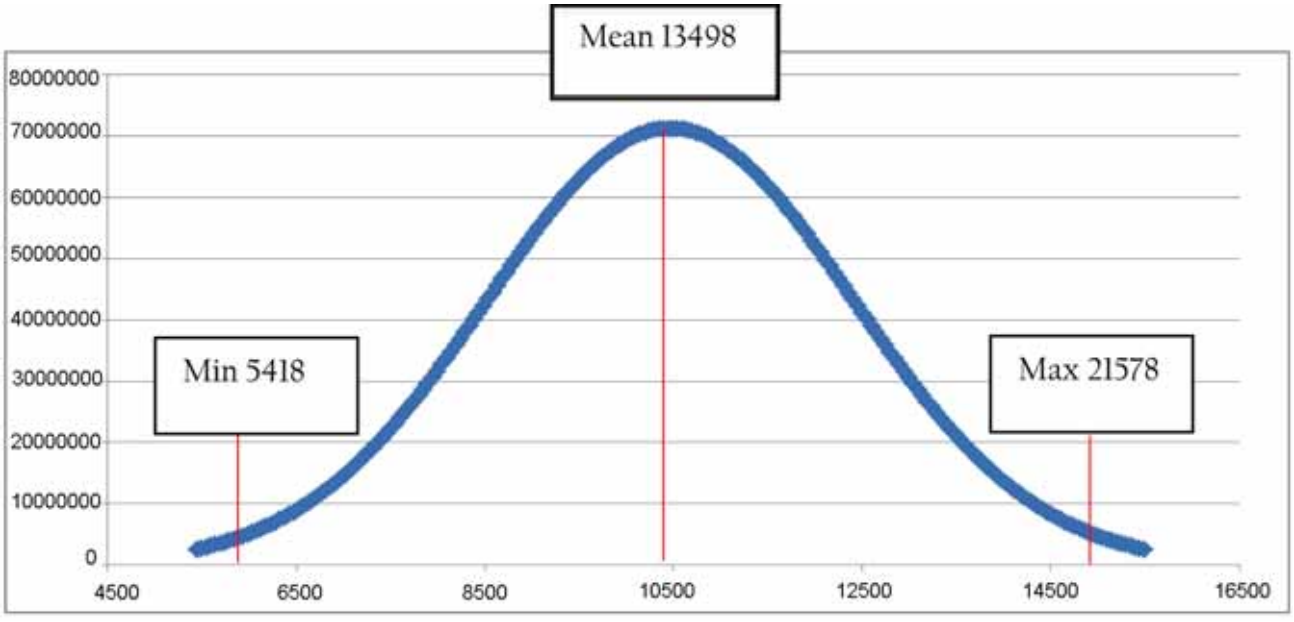

FIGURE 66: NORMAL EQUITY DISTRIBUTION TO ENABLE BEST FEASIBLE AND SUSTAINABLE HEALTH FOR ALL, REF AVERAGE HFS STANDARDS, 2012.

As the figure above shows, the minimum threshold in 2012 would be $5415 and the maximum $21,578.

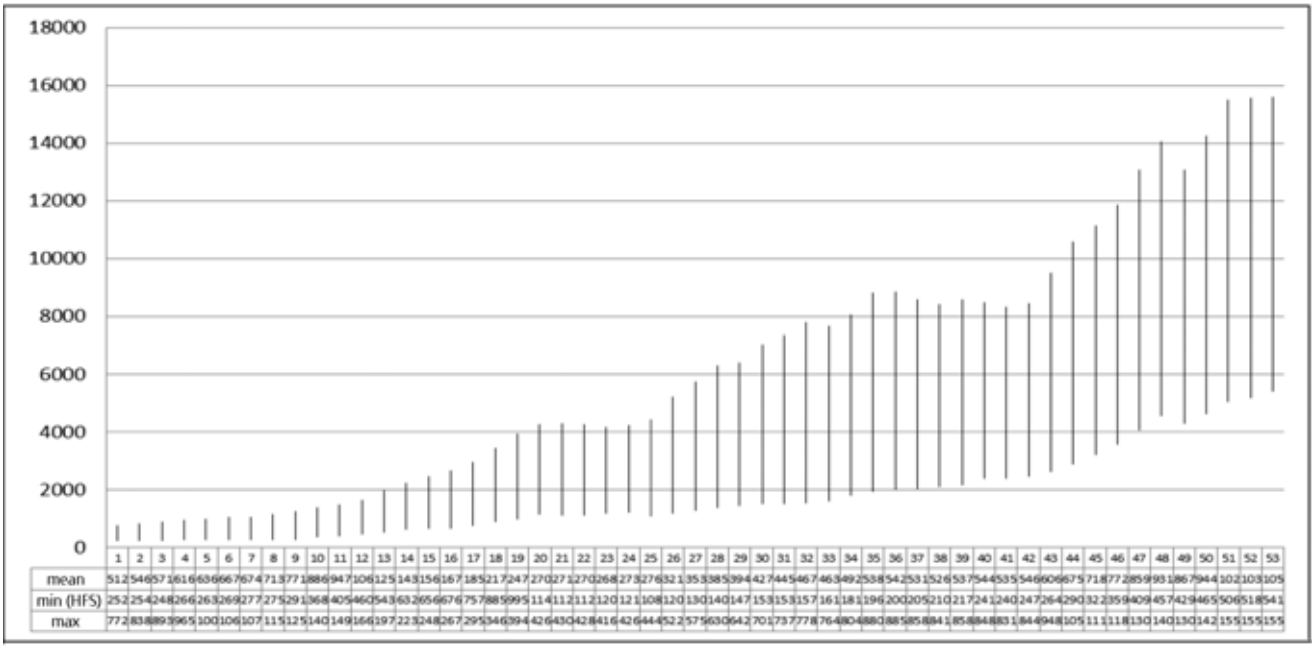

FIGURE 67: TIME EVOLUTION OF MINIMUM, MEAN AND MAXIMUM THRESHOLDS OF EQUITY DISTRIBUTION OF RESOURCES TO ENABLE GLOBAL HEALTH EQUITY AND THE UNIVERSAL RIGHT TO HEALTH, 1961-2012 (YEARS 1-53).

The time evolution of the interval between both equity income thresholds has increased in magnitude (but much higher in the HoTh) and scope both, especially during the last decade.

- **Distribution of the world´s population in relation to the equity thresholds**

The following maps show the evolution of countries with GDP pc below the minimum dignity threshold -mDTh-, which would enable the best feasible and sustainable health standards. The maps show that in 1950-1955 only four countries in Latin America (Bolivia, Ecuador, Nicaragua, Honduras), most in sub-Saharan Africa (insufficient data) and in Asia Afghanistan, Pakistan, India, China, some South East Asia and Papua New Guinea, had income per capita below the average levels of the HFS models.

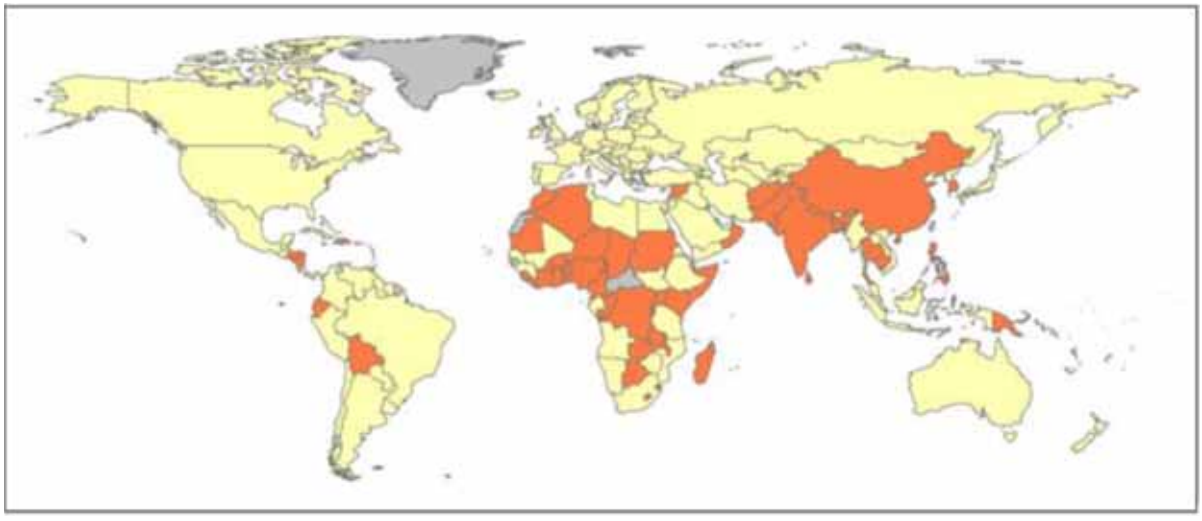

FIGURE 68: COUNTRIES WITH GDP PC BELOW THE MDTH, 1950-1955.

In 2005-2010 the map of countries below the mDTh changed with three in Central America (Guatemala, Nicaragua and Honduras), three in South America (Bolivia, Guyana and Paraguay -yet the latter in the HFS list-), most of Africa, except Libya and the south-western countries and Gabon, Ukraine, Iran, most "Stans", India, Bangladesh, Mongolia, some in South East Asia (including Vietnam, the lowest GDP pc from the 14c HFS models), Indonesia and Papua New Guinea.

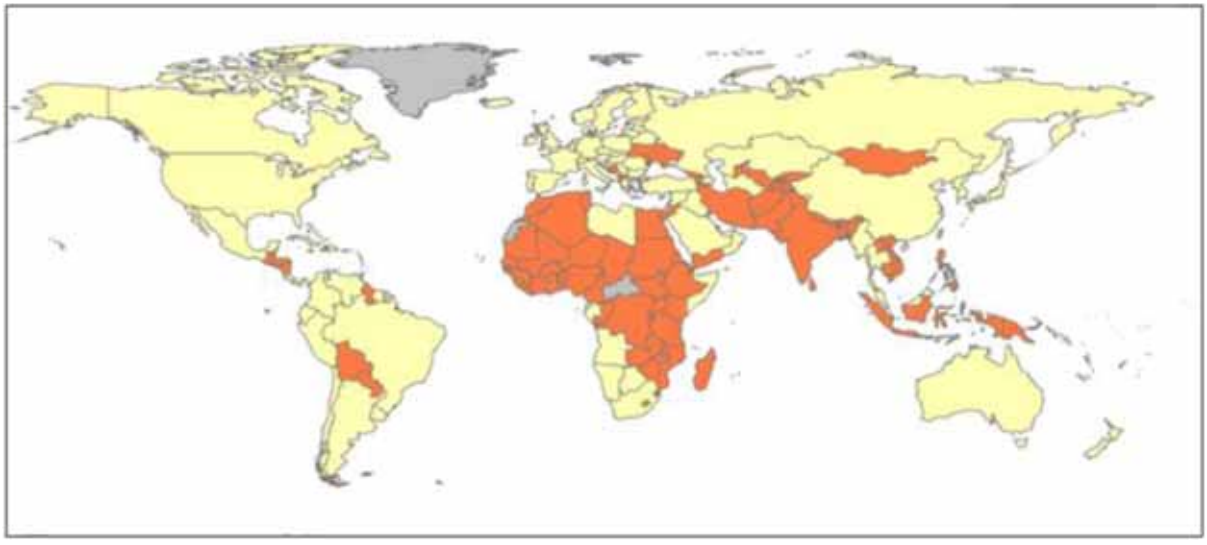

FIGURE 69: COUNTRIES WITH GDP PC BELOW THE MDTH, 2005-2010.

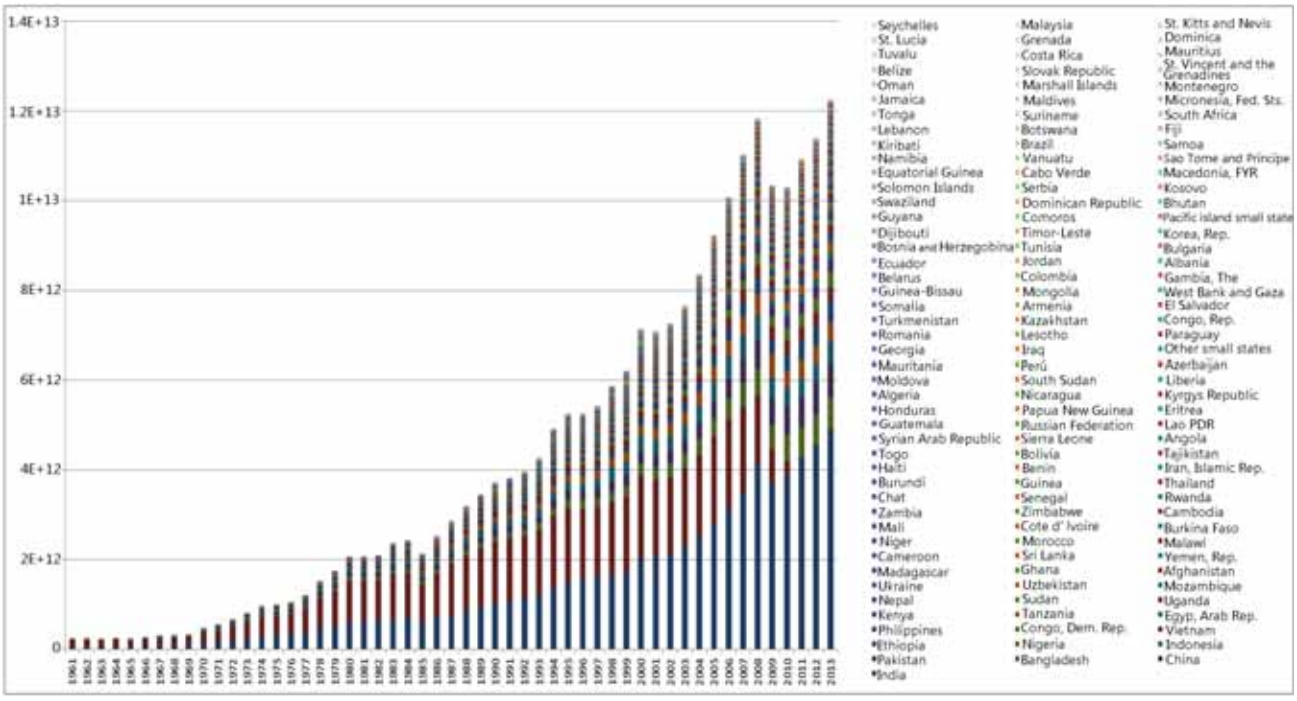

FIGURE 70: DISTRIBUTION OF GDP REQUIRED TO ENABLE GLOBAL HEALTH EQUITY, BY COUNTRIES AND YEAR, 1960-2013.

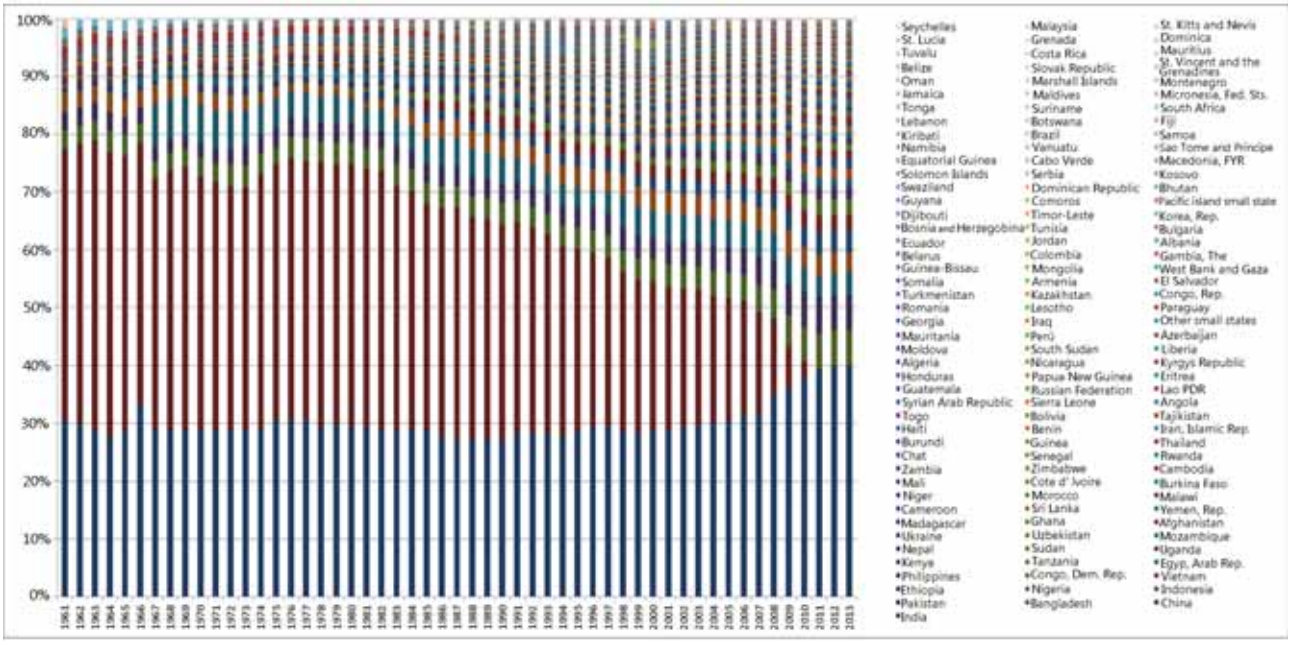

FIGURE 71: DISTRIBUTION OF GDP REQUIRED TO ENABLE GLOBAL HEALTH EQUITY, BY SHARE OF COUNTRIES AND BY YEARS, 1961-2013.

The graphs above show the totals and share of GDP deficit under the mDTh. It shows how China held the highest gap until the mid-90s, when it surpassed by India; China was disappearing from the list by the end of the last decade.

The total number of people living in those countries under the mDTh increased from over 1.5 Bn in 1960 to just under 3.5 Bn in 2012.

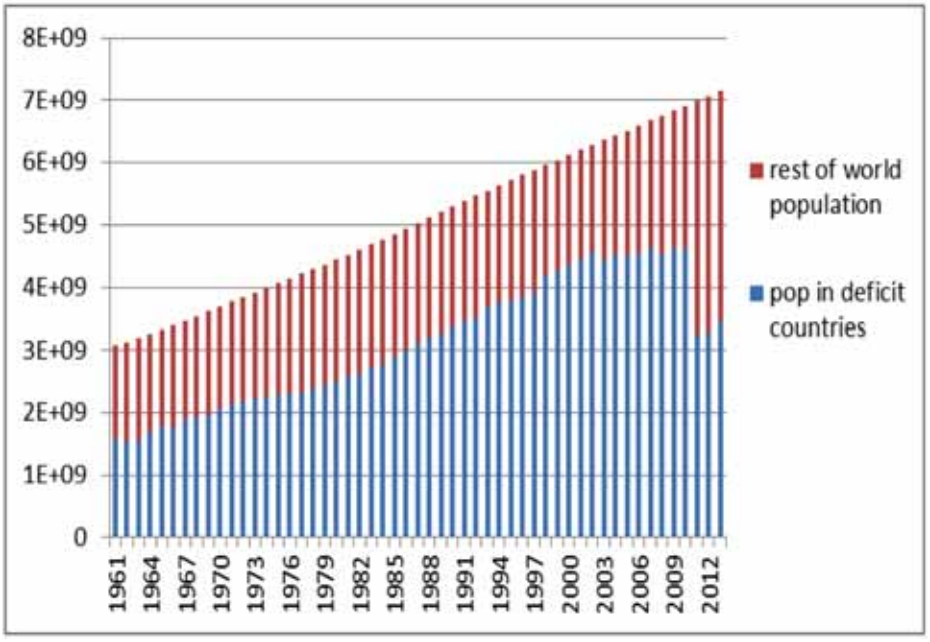

FIGURE 72: POPULATION LIVING IN COUNTRIES UNDER THE MDTH.

The proportion of the world´s population living under the mDThH and unable to aim at best feasible health standards evolved from some 50% in the 60s, gradually increased to 70% from the mid-90s till 2009, when it dropped to again some 50% in the last years, due to the "graduation" of China from that group.

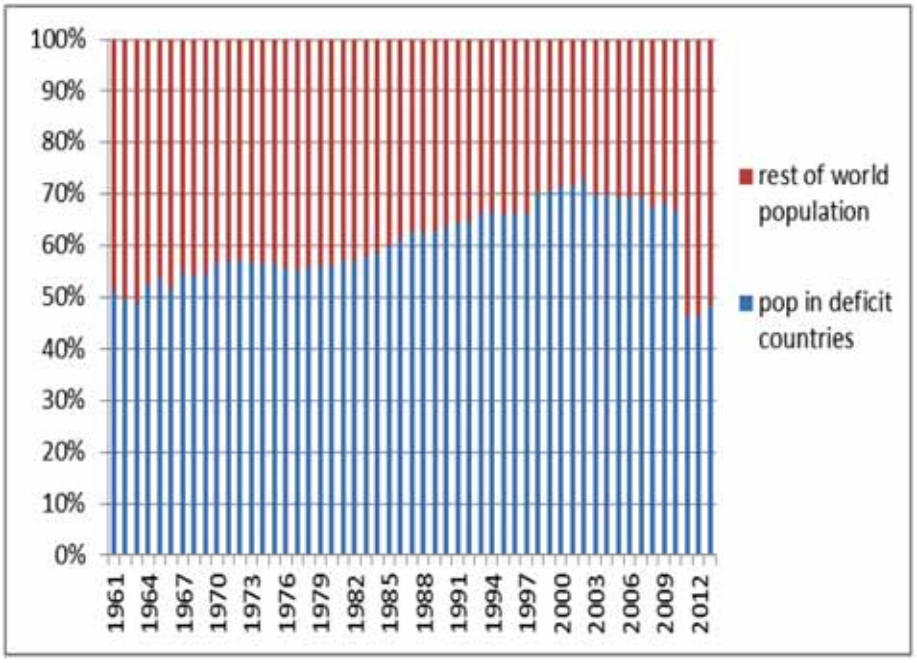

FIGURE 73: PROPORTION OF THE POPULATION LIVING IN COUNTRIES UNDER THE MDTH, 1961-2012.

The following graph shows in greater detail how China surpassed the level of GDP pc of the HFS models in relation to the trends of the world average and India. (China and India added some 40% of all the world´s population living under the mDThH until 2009; thereafter India hosts 25% of all).

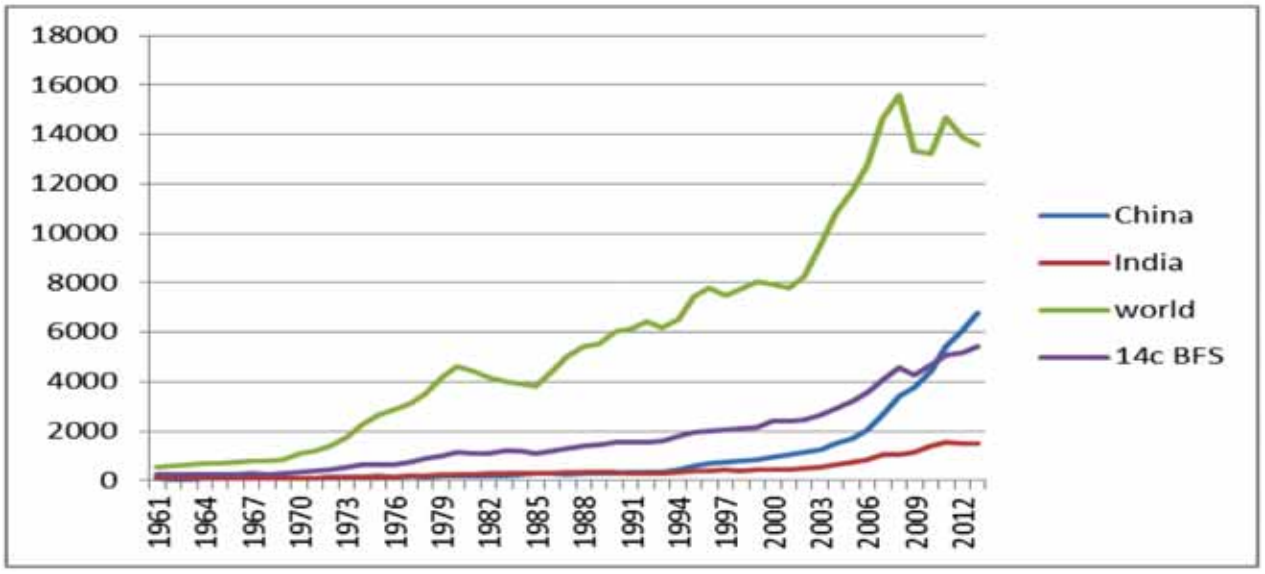

FIGURE 74: TREND OF HFS COUNTRIES, THE WORLD´S AVERAGE, INDIA AND CHINA GDP PC.

The following graphs show the number and proportion of avoidable deaths due to GHiE over time. Between 80 and 90% of all avoidable deaths have taken place in countries below the mDTh.

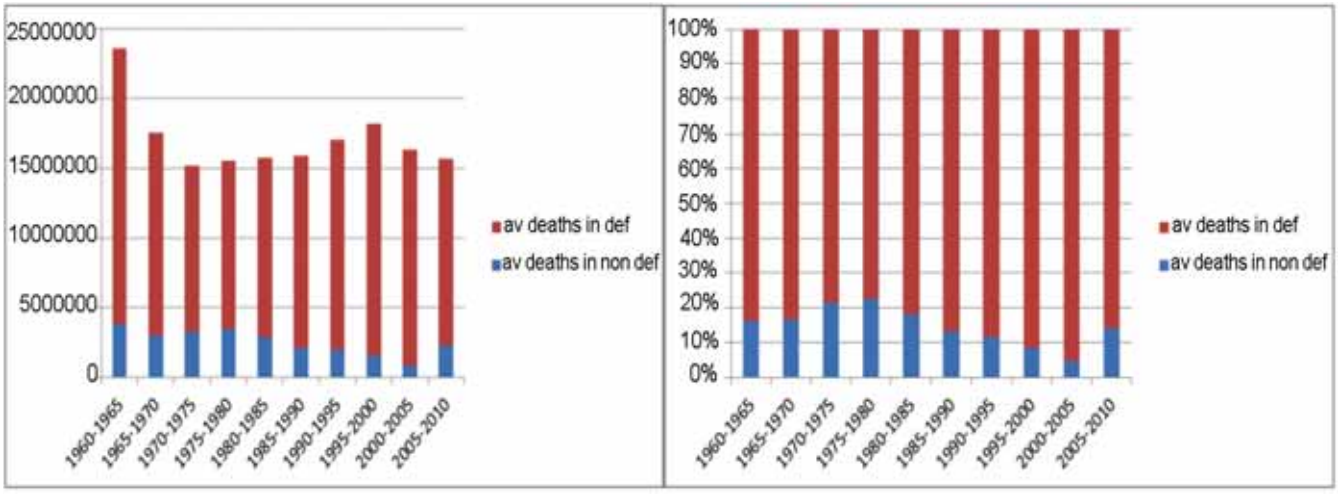

FIGURE 75: AVOIDABLE DEATHS VS MDTHH.

DISTRIBUTION OF THE WORLD´S GDP IN RELATION TO THE EQUITY THRESHOLDS

The following graphs show how the proportion of the world´s GDP enjoyed by the population living in countries with GDP pc below the mDTh has been in the range of 10% since 1960. The increase (10 to 15%) during 2000-2009 and fall after 2009 reflects the gradual increase of GDP of China and its further passage to the group of countries above the mDTh.

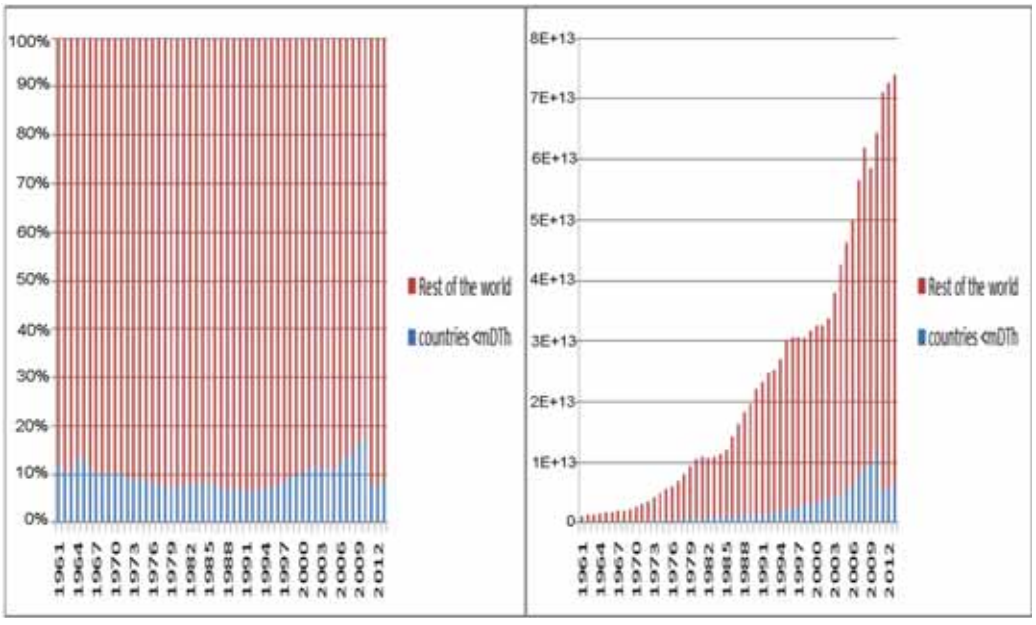

FIGURE 76: WORLD´S GDP BY COUNTRIES BY GDP VS MDTH.

The charts below show the relation between the proportion of the world´s population living under the minimum dignity threshold and the GDP they share: 50-70% of the world´s population has been sharing 10-15% of the GDP, with the price in avoidable deaths (some 14.3 million in 2012, some 85% of all) due to global health inequity.

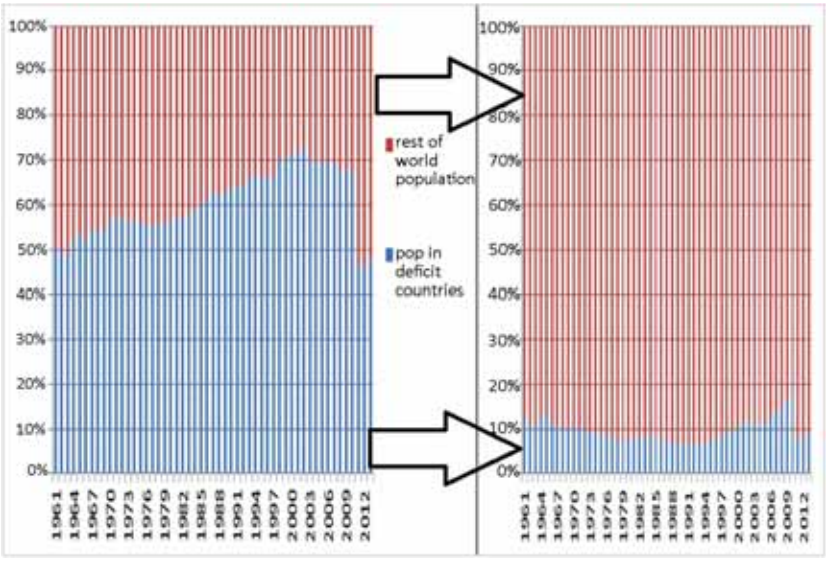

FIGURE 77: RELATION OF POPULATION AND GDP VS MDT.

As there is enough food and water for three times the present world´s population, there are also enough resources to enable universal conditions for best feasible and sustainable health levels. The chart below shows the time distribution of what would be the basic income if the entire world had the 14cHFS average GDP pc, and the excess GDP according to that basic need. As we will also in coming chapters, such excess GDP is concentrated in a small proportion of the population, prevents the ethical redistribution that is required, is correlated with natural exhaustion and does not translate in improved wellbeing nor in better health.

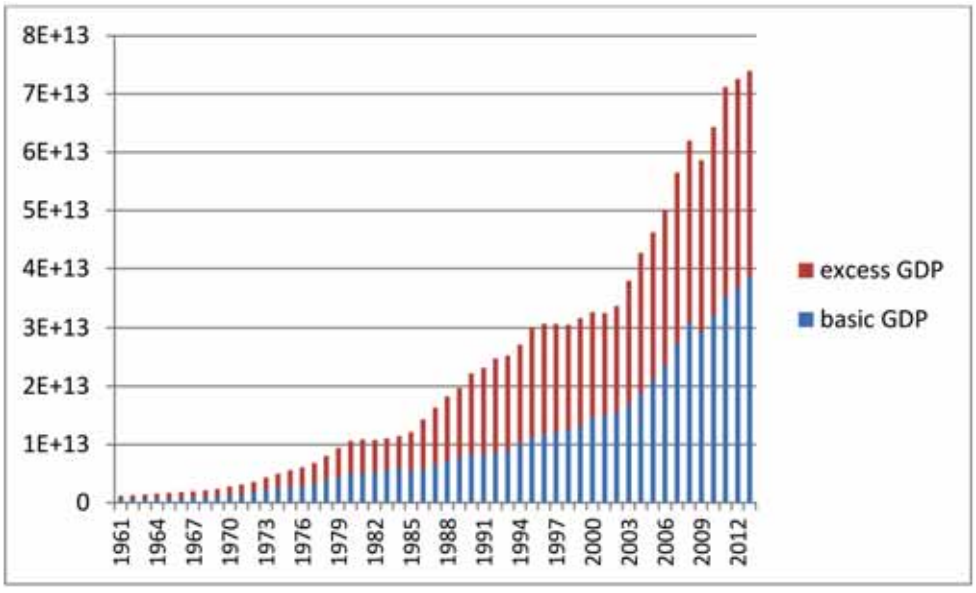

FIGURE 78: TIME DISTRIBUTION -1960-2013- OF WORLD´S GDP ACCORDING TO BASIC MDT AND EXCESS.

The trend of the share of the above mentioned world´s GDP required to enable best feasible and sustainable health for all has been in the range of 40-60% in the last 50 years.

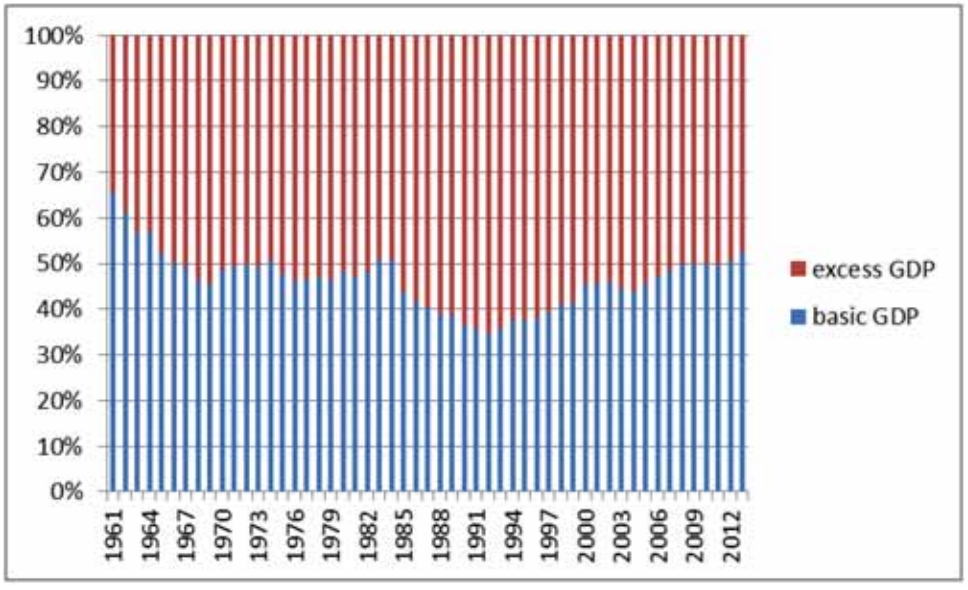

FIGURE 79: PROPORTION OF WORLD´S GDP AS BASIC FOR HFS HEALTH STANDARDS AND EXCESS.

The graphs below show how the hoarding group of countries accumulated a large share of the world´s wealth, although that share has been decreasing (from 70 to 55%) since the mid-90s. Again, the China effect may explain much of this change due to its GDP growth, yet under the maximum threshold.

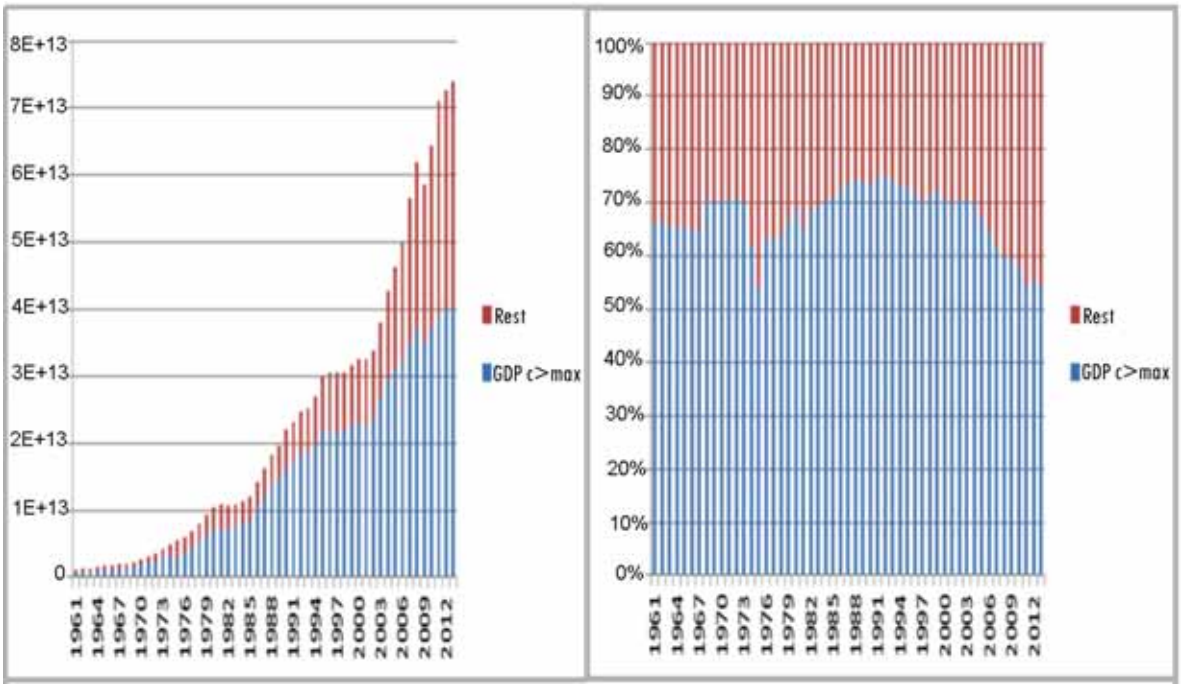

FIGURE 80: TREND AND SHARE OF HOARDING GDP.

The population living in hoarding countries has remained quite stable, around 1 Bn, while its share decreased from close to 40% in 1960, to some 15% in 2012, showing a progressive concentration of wealth and power in a shrinking part of the world, despite the decreasing GDP share before described.

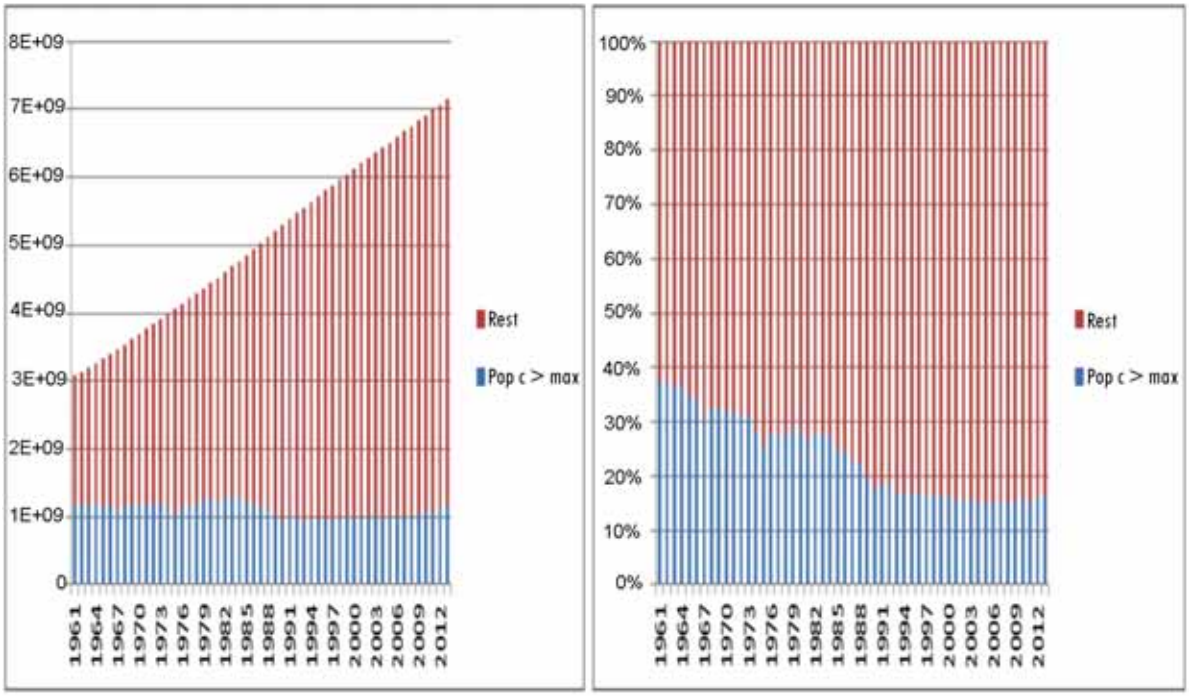

FIGURE 81: POPULATION FROM HOARDING COUNTRIES.

WORLD´S POPULATION AND GDP IN THE "EQUITY ZONE"

The distribution of the population and its GDP can be further disaggregated into those under the minimum (dignity) threshold -mDth-, those over the maximum (hoarding) threshold and those in between, in what we call, "the equity zone". The ethical redistribution should be from the hoarding excess to the one under the minimum threshold, so as to expand the equity zone. The graphs below show those distributions.

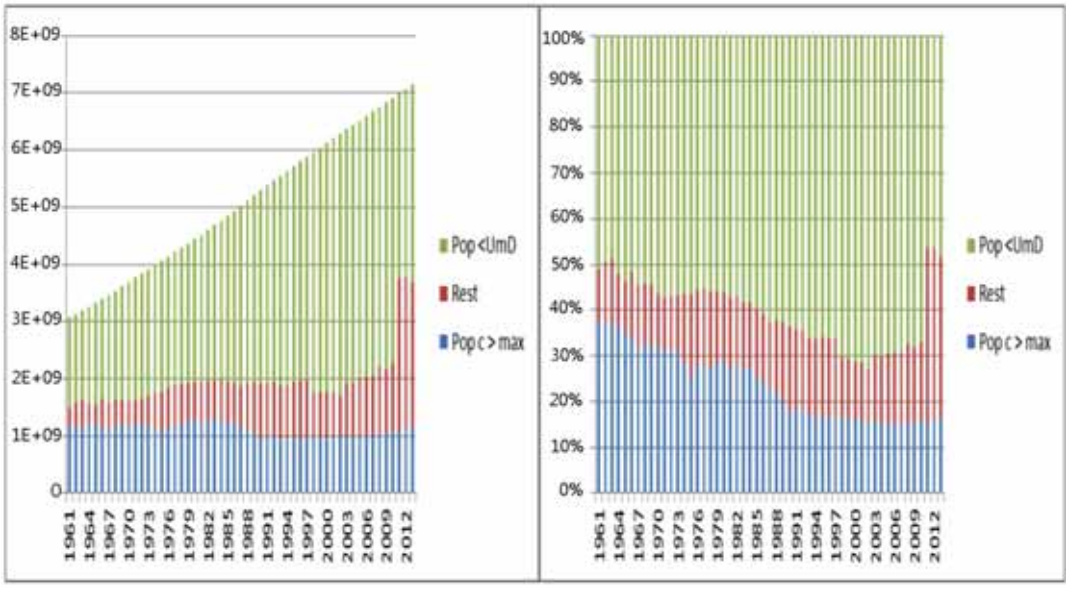

FIGURE 82: POPULATION BY GHE ECONOMIC THRESHOLDS.

The above graphs show how most of the world´s population has been living in the extremes of hoarding (from 35 to 15%) or under-dignity levels (from 50 to 70%) with only some 10-15% in the middle ("equity zone") until 2009, when China and others joined that area and the proportion went up to almost 35%.

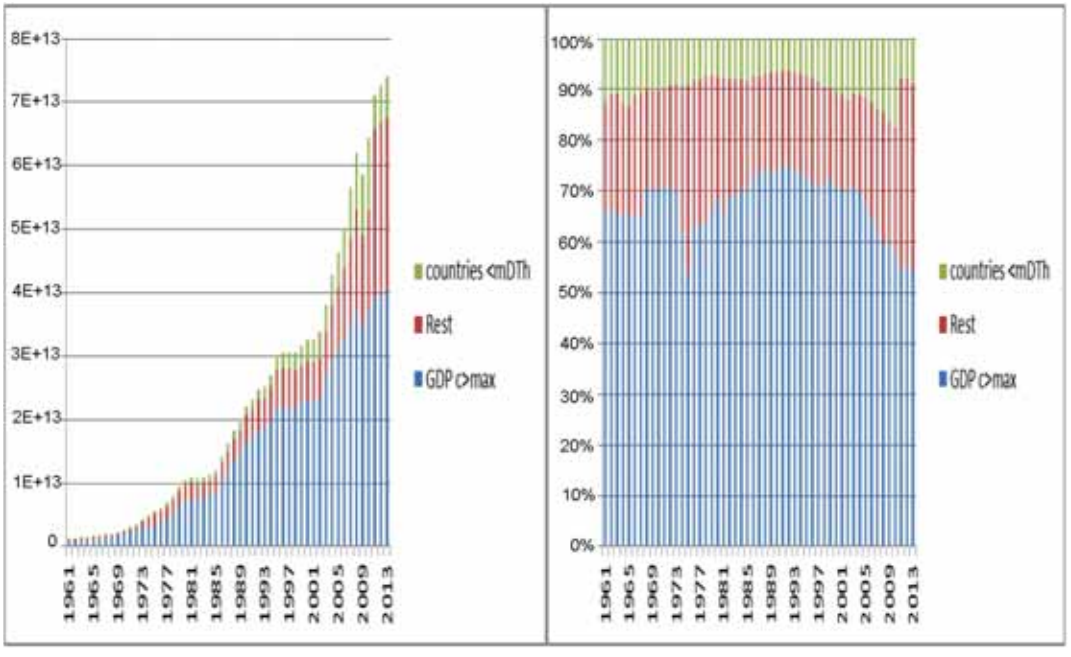

FIGURE 83: WORLD´S GDP BY GHE ECONOMIC THRESHOLDS.

The graphs above show how the world´s GDP has been concentrated in the excess above hoarding threshold (now 15% of the world´s population), which has kept on average two thirds of the world´s economic wealth. On the other extreme, the population living under the minimum level of dignity (over half the world´s population) enjoys only 10% of the world´s wealth. In between, only 20% of the world´s GDP was in the "equity zone", while it increased to one third after 2009, due to China joining that region.

The graph below shows the ratio between minimum and maximum thresholds in the last 50 years. It reflects that the ratio (as explained above) was in the range of 6-7 from the mid-80s until China joined the equity zone in 2009 and such ration dropped to the levels of the early 60s.

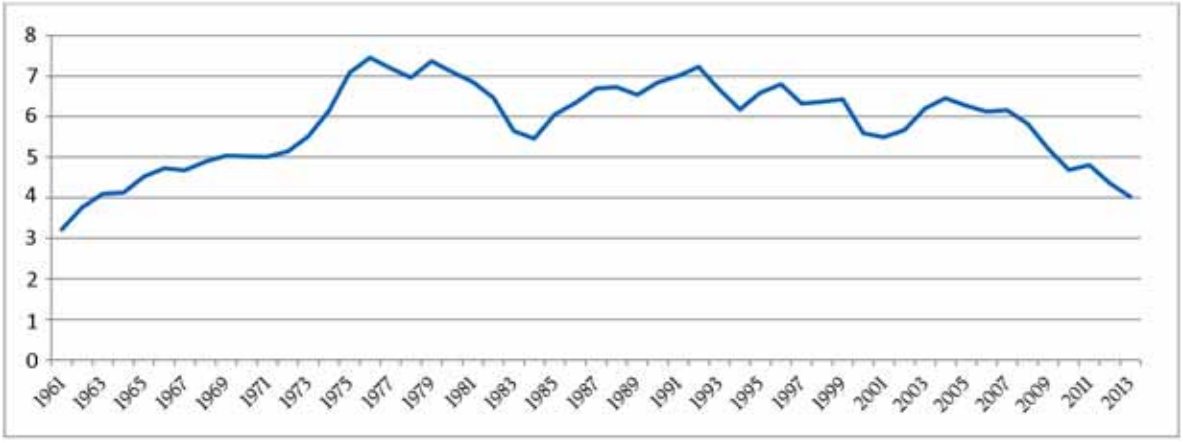

FIGURE 84: RATIO OF MAX/MIN GDP PC THRESHOLDS FOR GHE, 1961-2013.

ETHICAL GDP REDISTRIBUTION REQUIRED TO ENABLE GLOBAL HEALTH EQUITY

The following graphs show the ethical redistribution required to shift from the present skewed distribution of population according to GDP pc to a normal distribution -as most variables show in nature-, with over 95% of the population living in the "equity zone" and limiting both extremes under the minimum (dignity) and maximum (hoarding) thresholds.

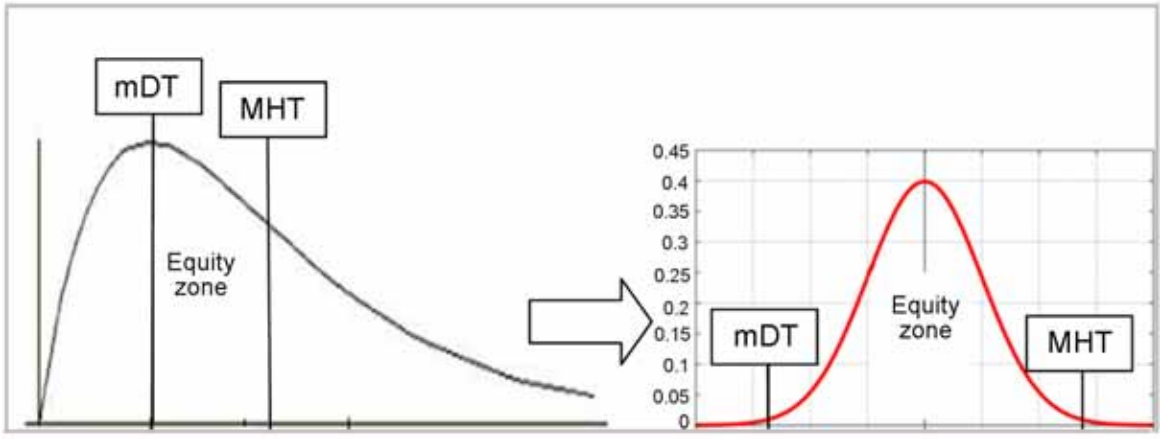

FIGURE 85: ETHICAL SHIFT FROM PRESENT INEQUITY MODEL (16M AVOIDABLE DEATHS), TO EQUITY MODEL ENABLING THE UNIVERSAL RIGHT TO HEALTH.

Such shift would require the transfer of GDP, presently skewed towards the countries with GDP pc above the hoarding threshold, to the lower end.

The graph below shows the combination of both the world´s skewed distributions (population and resources), largely outside the equity zone, and transition (through social and fiscal policies mainly) the normal (ethical and compatible with global health equity) distribution of population and GDP in the "equity zone" and the moderate difference between both, allowing for "fair inequality": equity.

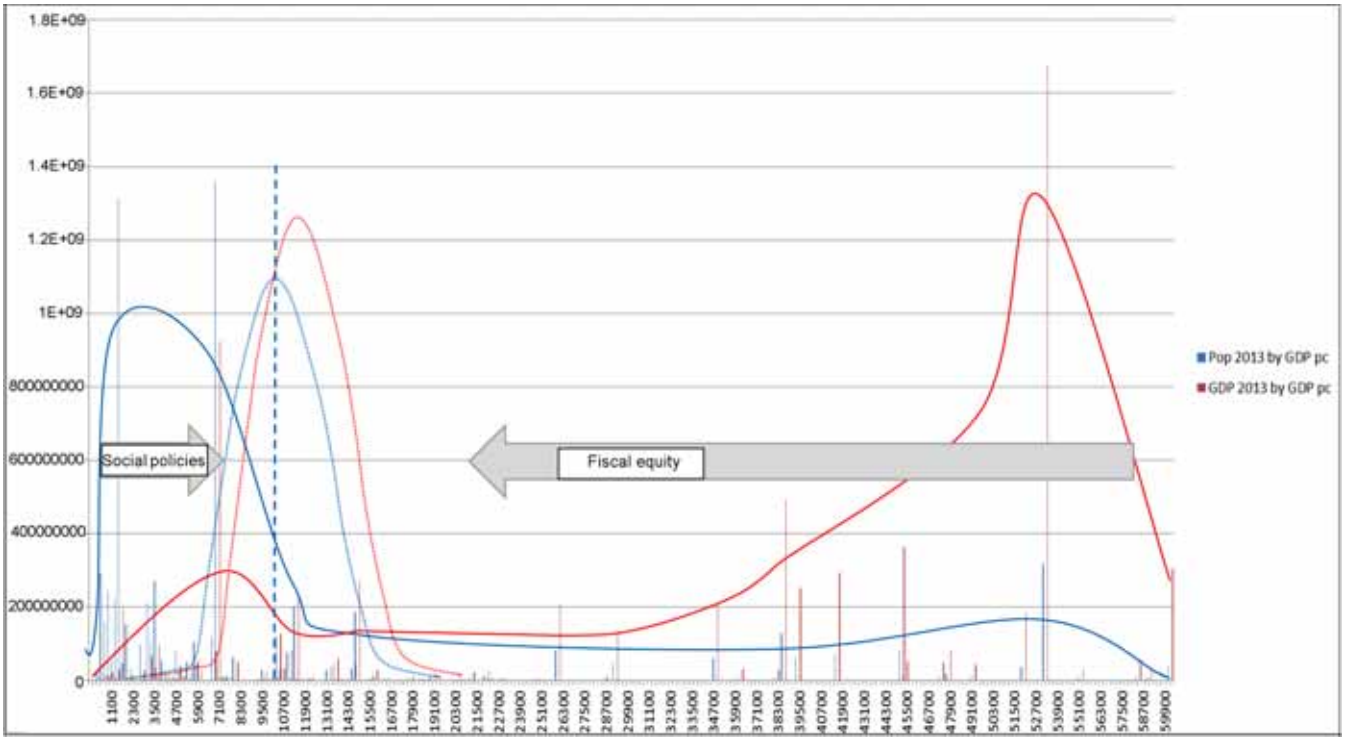

FIGURE 86: SHIFT FROM PRESENT INEQUITY POPULATION AND RESOURCE DISTRIBUTIONS TO ETHICAL EQUITABLE DISTRIBUTION TO ENABLE GLOBAL HEALTH EQUITY, 2013.

The following graph reflects how, if conditions (economic equity as described above, among others) would allow, life expectancy would shift to the (fair) limits of global health equity, based on the standard healthy-feasible-sustainable (HFS) models (lower -Tonga- and upper -**Costa Rica**- limits for 2012), which would already translate in preventing over 14 million avoidable deaths under the mDTh, and further progress towards the best feasible health (lower threshold $p<0.05$ of HFS standards, upper threshold: present top 2.5% LE), if the countries in the upper end would gradually abolish their hoarding/exhausting effects. This would be the pertinent direction of science.

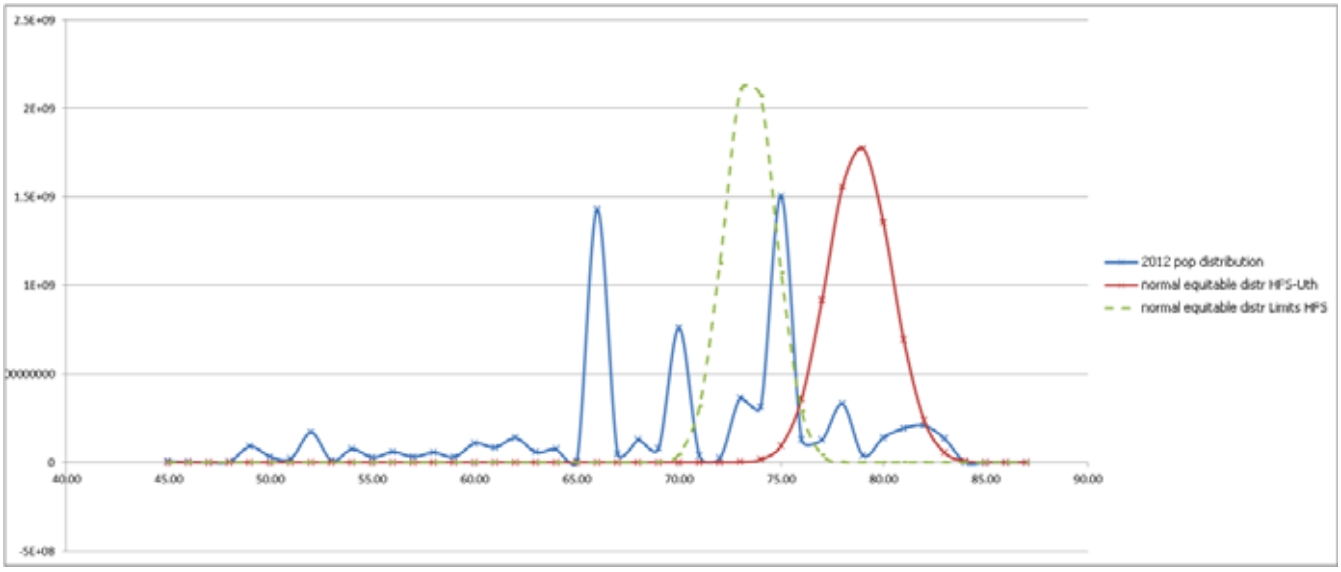

FIGURE 87: SHIFT FORM PRESENT GLOBAL HEALTH INEQUITY TO GLOBAL HEALTH EQUITY, REF. LIFE EXPECTANCY, 2012.

The following graph shows the redistribution required of carbon emissions so as to allow intergenerational (sustainable) health equity.

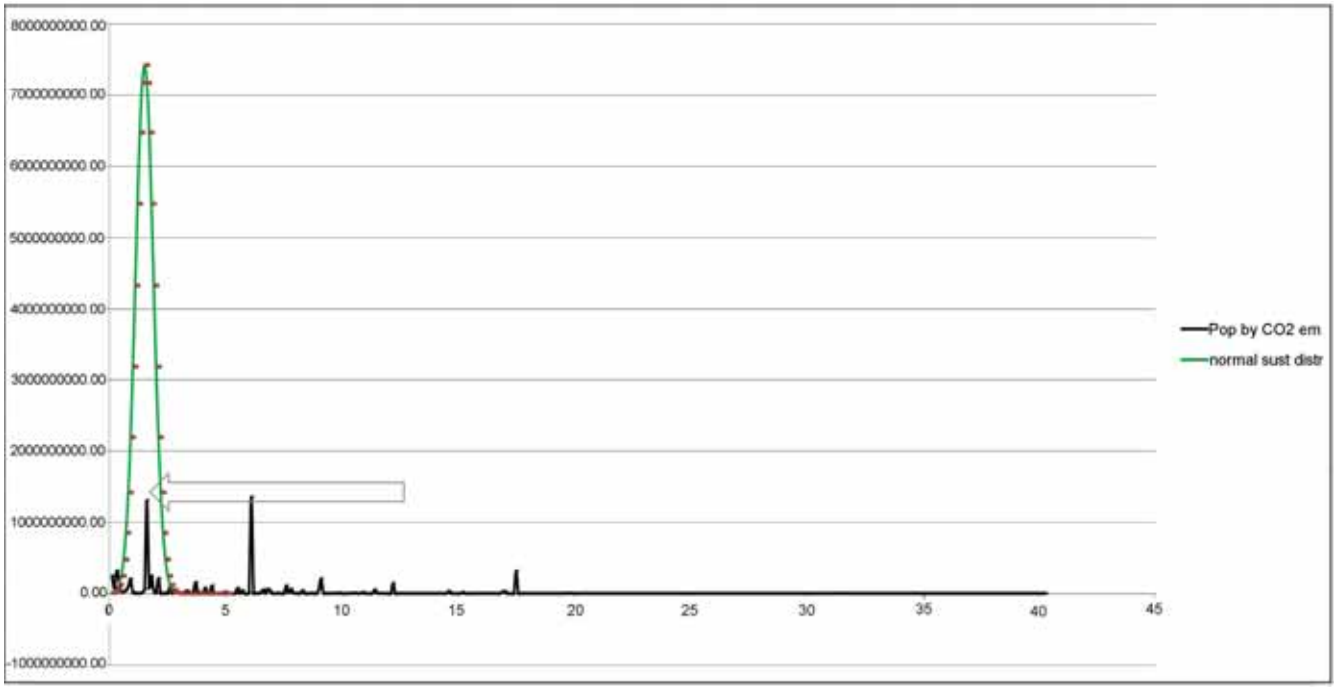

FIGURE 88: REQUIRED SHIFT FROM PRESENT WORLD´S POPULATION DISTRIBUTION, ACCORDING TO NATIONAL AVERAGE CARBON EMISSIONS TO A NORMAL AND SUSTAINABLE DISTRIBUTION, 2012.

REDISTRIBUTION FROM EXCESS (HOARDING) COUNTRIES TO DEFICIT (BELOW MDTH THRESHOLD) COUNTRIES

The maps below show how that GDP pc according to hoarding levels have been distributed in the world: they show those countries with deficit (below the mDTh), with excess GDP (above the MHoTh) and those in the equity zone (light green) in 1960, 1990 and 2010.

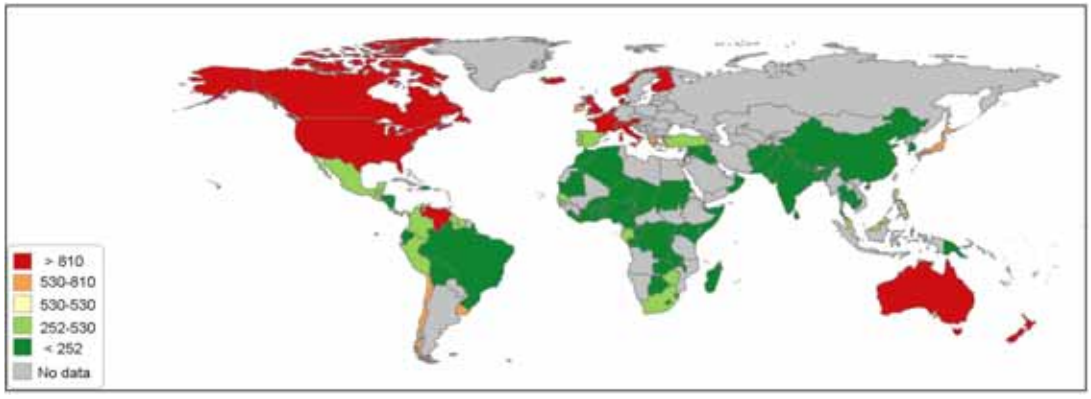

FIGURE 89: COUNTRIES BY HOARDING, EQUITY ZONE WORLD GDP AVERAGE AND < MINIMUM DIGNITY THRESHOLD, 1960.

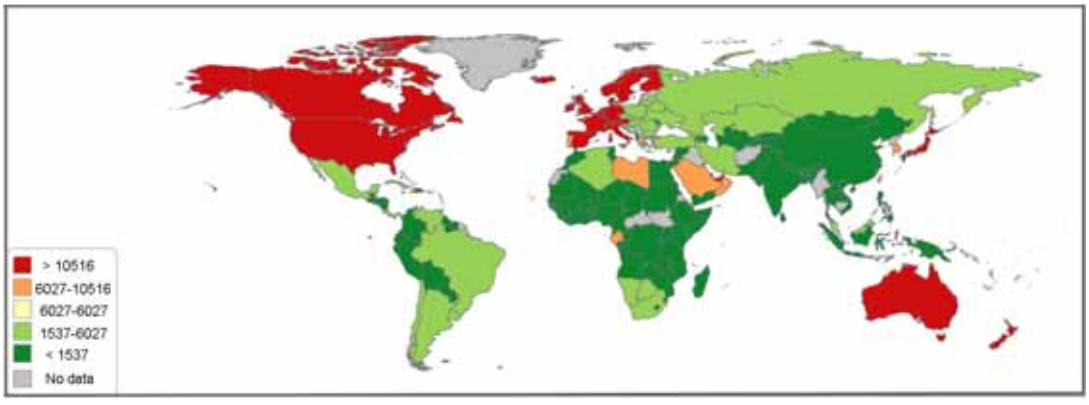

FIGURE 90: COUNTRIES BY HOARDING, EQUITY ZONE WORLD GDP AVERAGE AND MINIMUM THRESHOLD, 1990.

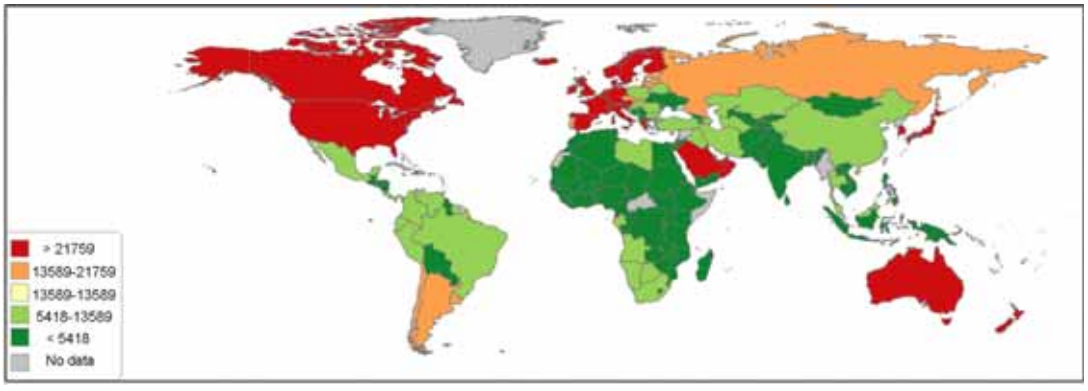

FIGURE 91: COUNTRIES BY HOARDING, EQUITY ZONE WORLD GDP AVERAGE AND MINIMUM THRESHOLD 2012.

These maps reflect that in 1960 (yet with many countries missing comparable data) the countries under MDTh were Brazil, Bolivia, Ecuador, Honduras, Nicaragua and El Salvador in Latin America, most of Africa, the Middle-East and Asia, except Japan; those in the equity zone were in Mexico, Andean countries and Southern cone of South America, South Africa and Zimbabwe, the Iberian Peninsula, Turkey and Japan, while the hoarding countries were US and Canada, Central Europe and Scandinavia, Australia and New Zealand.

Towards 1990 that distribution gradually changed, so that the countries under mDTh were in Central America and the Andean region, sub-Saharan Africa and Egypt, parts of the Middle East and still all Asia, except Japan and South Korea, the equity zone included the rest of Latin America, parts of Northern Africa, Gabon, Saudi Arabia, the ex-soviet republics and South Korea with the hoarding countries expanding to US, Canada, all Western Europe, Japan, Australia and New Zealand. In the last registers of 2012, the countries under the mDTh are Honduras, Guatemala, Salvador, Bolivia, Paraguay and Guyana in Latin America, all of Africa, except the south-west region and Lybia, some countries in the Balkans and Eastern Europe, some "Stans", India, Mongolia and South Asia; the equity zone includes the rest of Latin America, the <mDTh exceptions mentioned in Africa, most of the Middle East, the northern "Stans" and China, with the hoarding region as in 1990, but including now South Arabia, Arab emirates and South Korea.

The net and proportional distribution and trend of hoarding countries´ GDP required for ethical redistribution enabling GHE is represented in the following graphs.

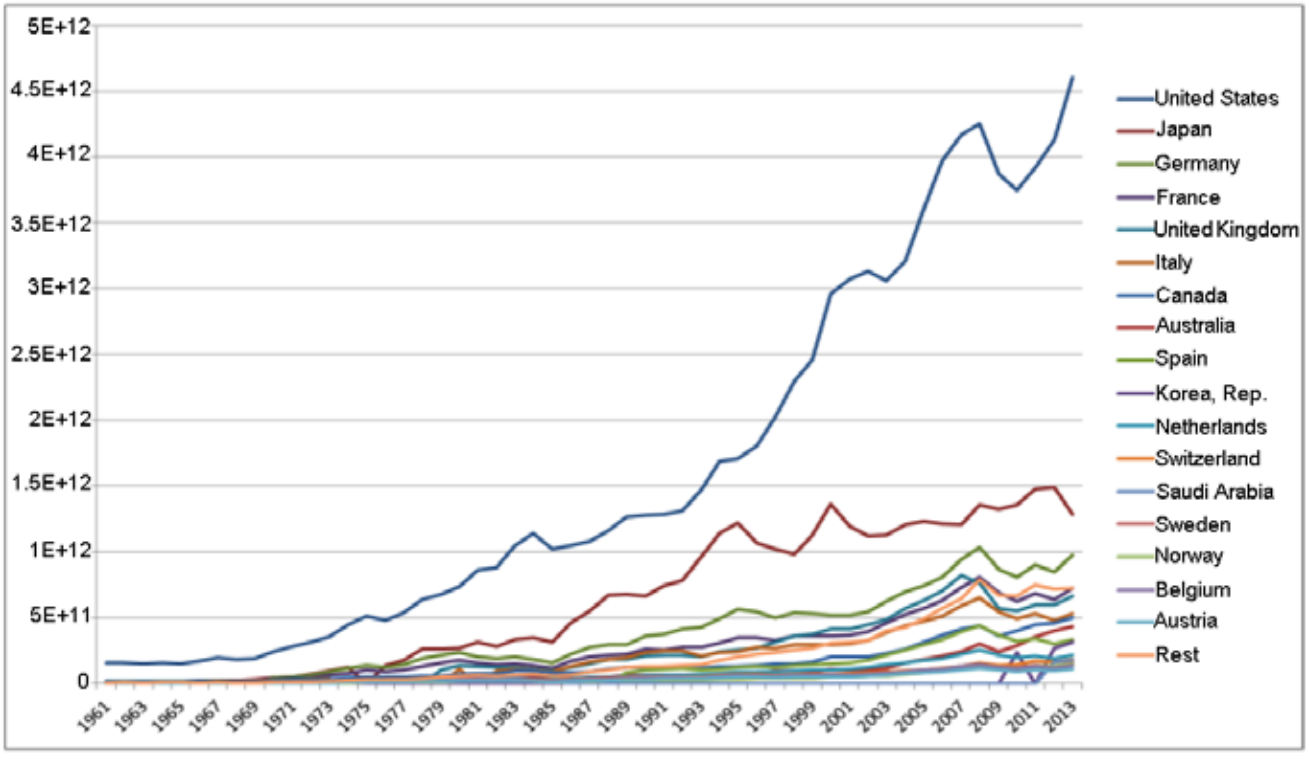

FIGURE 92: TREND OF GDP REQUIRED FOR ETHICAL REDISTRIBUTION BY HOARDING COUNTRIES, 1961- 2012.

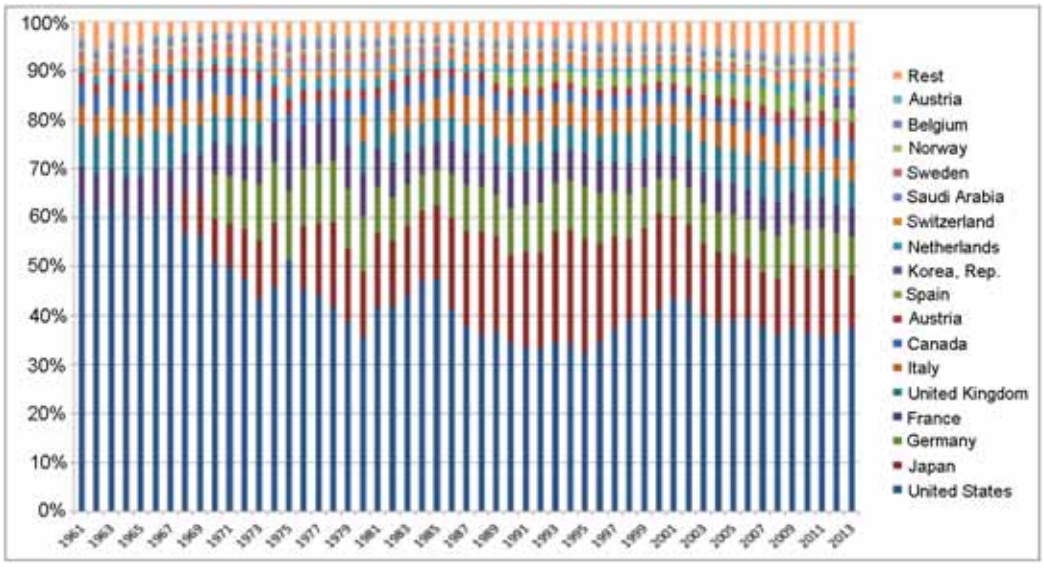

FIGURE 93: TREND OF THE SHARE OF EACH HOARDING COUNTRY OF THE TOTAL REDISTRIBUTION REQUIRED, 1961-2012.

The graphs show how one third of the redistribution would come from the US, one third from Western Europe (mainly Germany, France, UK, Italy, Spain, the Netherlands, and Sweden) and the rest among Japan, Canada, Korea, Saudi Arabia, Switzerland, Norway and others. The trend of this distribution over the years shows an irregular increase by the US, with Japan and the western EU countries with more stable levels since the turn of the century, when the Arab rich states joined and gradually increased their share. The share of the total redistribution shows a gradual decrease by the US (from 60 to less than 40%), increase and decrease by Japan over the period, and more stable by others.

REDISTRIBUTION LEVELS IF LOWER LIMITS OF HFS MODELS ARE TAKEN AS MINIMUM DIGNITY THRESHOLD

The distribution required to limit to <2.5% of the world´s population to live with GDP pc lower than the lower limits (average of Vietnam and Sri Lanka), would be as follows:

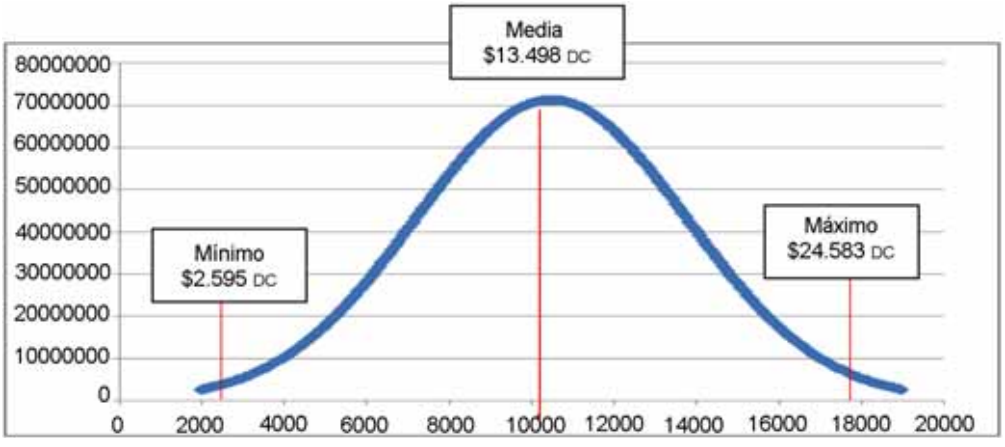

FIGURE 94: NORMAL EQUITY DISTRIBUTION TO ENABLE BEST FEASIBLE AND SUSTAINABLE HEALTH FOR ALL, REFERRED TO LOWER LIMIT OF BEST-FEASIBLE-SUSTAINABLE STANDARDS.

The table below summarizes the main differences between the thresholds and redistribution required when we take either the average GDP pc level of the healthy-feasible-sustainable (HFS) models or their lower limits[59].

TABLE 7: DIFFERENCES OF FEATURES BETWEEN AVERAGE AND LOWER LIMITS OF BEST-FEASIBLE-SUSTAINABLE STANDARDS FOR GLOBAL HEALTH EQUITY

Features	Lower equity threshold from average HFS	Lower equity threshold from lower limit HFS
Lower thr	$5.418	$2.595
Upper thr	$21.579	$24.583
% Pop <Lthr	48,33% (93 countries)	35,32% (56 countries)
%Pop >Uthr	14,33% (36 countries)	16,07% (32 countries)
%Pop EZ	47,34% (57 countries)	51,39% (98 countries)
% GDP <Lthr	8,81%	4,32%
%GDP >Uthr	61,75%	61,24%
%GDP EZ	29,44%	34,44%
Deficit	$12,23 Tn	$3,36 Tn
Excess	$23,34 Tn	$45,36 Tn
Deficit as % global GDP	16,54%	4,55%
Deficit as % excess GDP	52,40%	7,43%
Avoidable deaths in countries < LTh	12.822.141	9.908.061
Life years lost in countries < LTh	513.945.202	408.956.711
Cost per prevented avoid death	$953.813	$339.599
Cost per prevented LYL	$23.796	$8.228
ODA as % of deficit	1,099%	3,99%

The table below shows the percentage of GDP (and GDP pc) which would be required from the "hoarding countries" as ethical redistribution to prevent the global health inequity avoidable deaths. In **bold letters** those not yet members of OECD-DAC.

[59] The average of Vietnam and Sri Lanka, in the lower end of the GDP pc distribution of the 14 HFS models: Asian efficient HFS models.

TABLE 8: PERCENTAGE OF GDP FOR ETHICAL REDISTRIBUTION FOR GLOBAL HEALTH EQUITY

Donor country	% GDP	
	Lower limit HFS threshold	Average HFS threshold
Luxembourg	11,59%	42,14%
Norway	11,31%	41,09%
Qatar	11,06%	40,19%
Macao SAR, China	10,98%	39,92%
Switzerland	10,52%	38,23%
Australia	9,77%	35,50%
Denmark	9,09%	33,04%
Sweden	9,03%	32,83%
Singapore	8,73%	31,74%
United States	8,51%	30,95%
Canada	8,38%	30,46%
Austria	8,02%	29,16%
Netherlands	7,83%	28,46%
Ireland	7,80%	28,35%
Finland	7,77%	28,25%
Belgium	7,51%	27,28%
Iceland	7,49%	27,21%
Germany	7,46%	27,11%
New Zealand	6,87%	24,96%
France	6,84%	24,87%
United Kingdom	6,44%	23,42%
Brunei Darussalam	6,28%	22,83%
Japan	6,27%	22,78%
Hong Kong SAR, China	6,19%	22,49%
Israel	5,74%	20,86%
Italy	5,36%	19,47%
Spain	3,64%	13,24%
Puerto Rico	3,42%	12,43%
Korea, Rep.	2,34%	8,51%
Saudi Arabia	2,28%	8,29%
Cyprus	1,99%	7,24%
Bahrain	1,67%	6,07%
Malta	0,65%	2,35%
Slovenia	0,62%	2,24%
Oman	0,00%	0,99%
Greece	0,00%	0,36%

In **bold letters** those not yet members of OECD-DAC.

COMPARATIVE ANALYSIS OF ODA WITH REDISTRIBUTION REQUIRED FOR GLOBAL HEALTH EQUITY

In relation to the percentage of ethical redistribution required for GHE, analyzed in the previous chapter, the level of ODA[60] is represented in the following graphs.

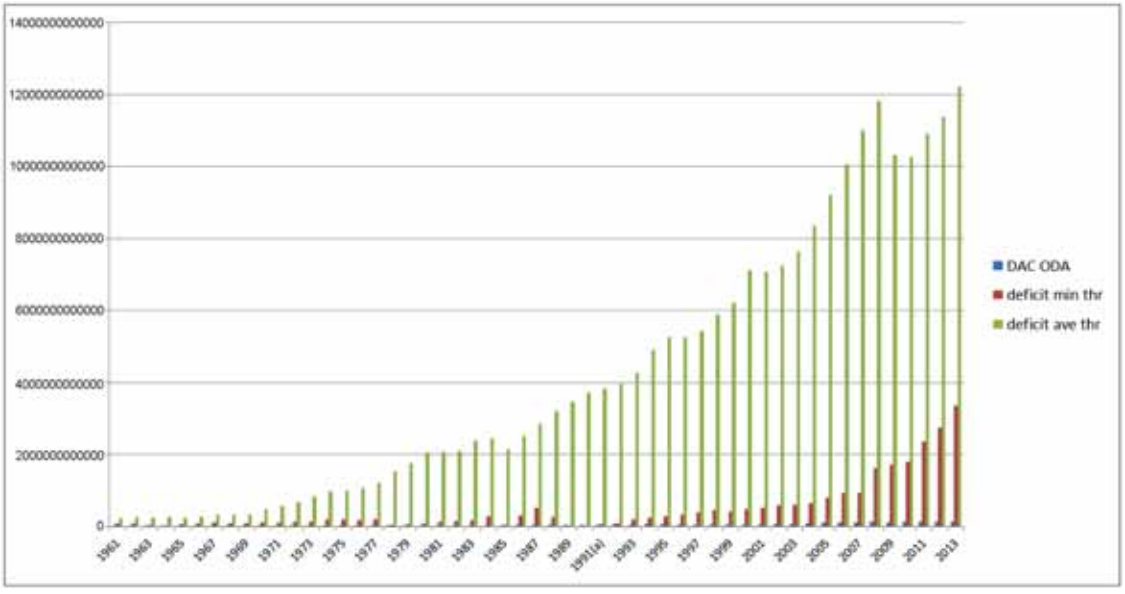

FIGURE 95: TREND OF GDP DEFICIT (MIN AND AV SCENARIOS) FOR GHE AND ODA LEVELS (OECD/DAC), 1961-2013.

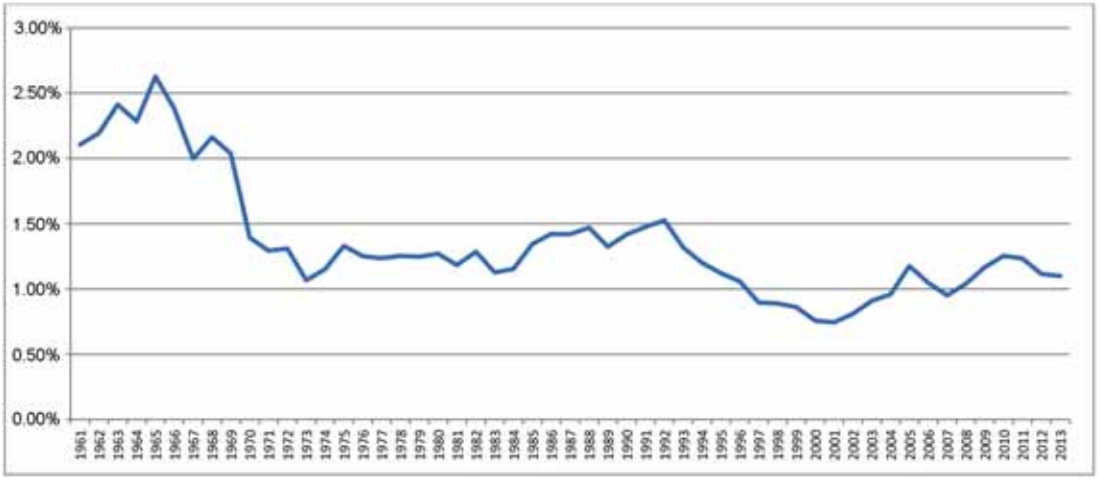

FIGURE 96: PERCENTAGE OF DAC ODA OF DEFICIT (AVERAGE HFS THRESHOLD) FOR GLOBAL HEALTH EQUITY, 1961-2013.

The above graphs reflect the fact that the levels of ODA are only a small (and decreasing) proportion of the redistribution required to enable global health equity and the universal right to health.

Even if the levels of ODA were more adequate to the challenge of health equity, the distribution of ODA per recipient country does not correlate with their needs.

[60] http://www.oecd.org/dac/stats/

The following graph represents for 2013 the distribution of ODA pc in relation to the GDP deficit pc to enable global health equity.

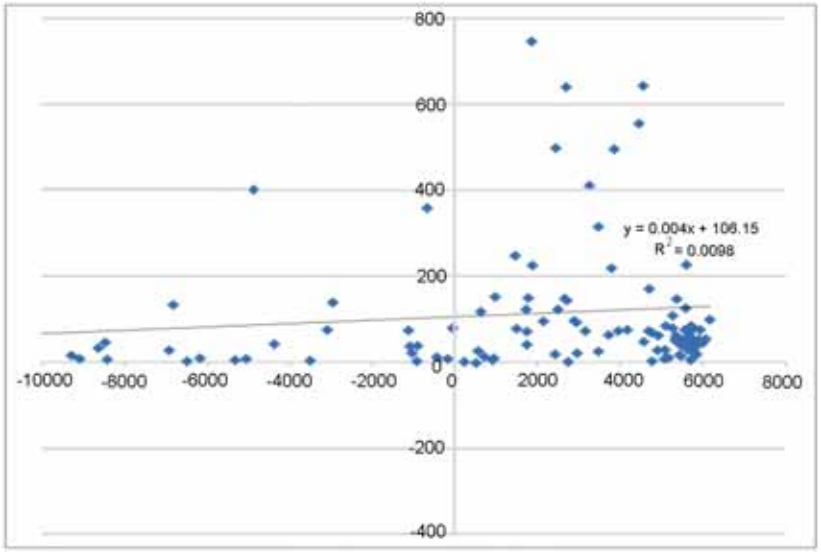

FIGURE 97: CORRELATION BETWEEN ODA PER CAPITA RECEIVED (OECD/DAC) (X AXIS) AND GDP PC DEFICIT FOR GHE (Y AXIS).

Specifically, the above graph shows that there is no correlation between ODA and GDP deficit (or levels of GDP). The table below shows the major "deflactors" of such correlation, on both ends, "donor darlings" and "donor orphans", with mainly political reasons and a tendency to reduce ODA per capita in the countries with larger population and viceversa.

TABLE 9: DONOR DARLINGS AND DONOR ORPHANS IN ODA, 2012

"Donor orphans "	2012 ODA % deficit	"Donor darlings"	2012 ODA % deficit
Indonesia	0.01%	Fiji	7.10%
India	0.03%	Bosnia	8.35%
Korea, Dem. Rep.	0.07%	Kosovo	9.01%
Myanmar	0.18%	Jordan	11.88%
Bangladesh	0.25%	Solomon Islands	12.43%
Madagascar	0.29%	Vanuatu	12.58%
Eritrea	0.38%	West Bank and Gaza	12.78%
Algeria	0.41%	Kiribati	14.08%
Nepal	0.50%	Serbia	15.35%
Guinea	0.51%	Timor-Leste	16.81%
Sudan	0.54%	Namibia	18.53%
Cameroon	0.54%	Cabo Verde	20.31%
Ethiopia	0.61%	Samoa	23.72%
Togo	0.64%	Tonga	39.85%
Guatemala	0.67%	Marshall Islands	57.21%

Such almost absent correlation between needs according to GDP deficit and levels of ODA per capita has remained quite stable during the last 40 years, as the graph below shows.

FIGURE 98: CORRELATION OF ODA WITH GHE NEEDS, 1970-2012.

Considering also the Paris aid effectiveness commitments and the level of compliance by ODA "donors", the following table shows the main differences of the present framework of redistribution (ODA) and the required one for effective global health equity and the universal right to health.

TABLE 10: FEATURES OF ODA AND OF REDISTRIBUTION REQUIRED FOR GLOBAL HEALTH EQUITY

Feature	ODA	Redistribution x GHE
Donors	OECD /DAC.	Excess threshold (2012: > $21750 pc).
Recipients	Developing countries (World Bank).	Minimum dignity threshold (2012: $5418 AvTh $2595).
Magnitude	0,29% of GDP (2013) (target 0.7%).	16.54 % (av thr 2013) and 4.55% (min threshold) of global GDP, and 52.40% (average thr 2013) and 7.53% (min threshold) of excess GDP.
Distribution	Non-correlated with GDP deficit.	Correlated with GDP deficit for mDTh.
Predictability	Low (1-2 years).	Stable and adjusted to GDP evolution.
Binding nature	Voluntary (volatile).	Binding global mechanism.
Ownership	Weak.	Strong + global monitoring system.

VII. NATIONAL HEALTH EQUITY

AVOIDABLE DEATHS BY GLOBAL HEALTH EQUITY, DUE TO NATIONAL INEFFICIENCY/ INEQUITY

While most avoidable deaths take place in countries with national average GDP pc below the threshold of income of the healthy-feasible-sustainable (HFS) models, a significant number take place in countries with higher income than those standards.

The following pie chart details the number of avoidable deaths in 2005-2010 in countries with GDP pc above the mDTh (that is, avoidable deaths due to national inefficiency or other specific health challenges in those countries). It shows how Russia hosts over one third of those deaths, with South Africa and Brazil together another third and the rest distributed in the remaining countries of this group.

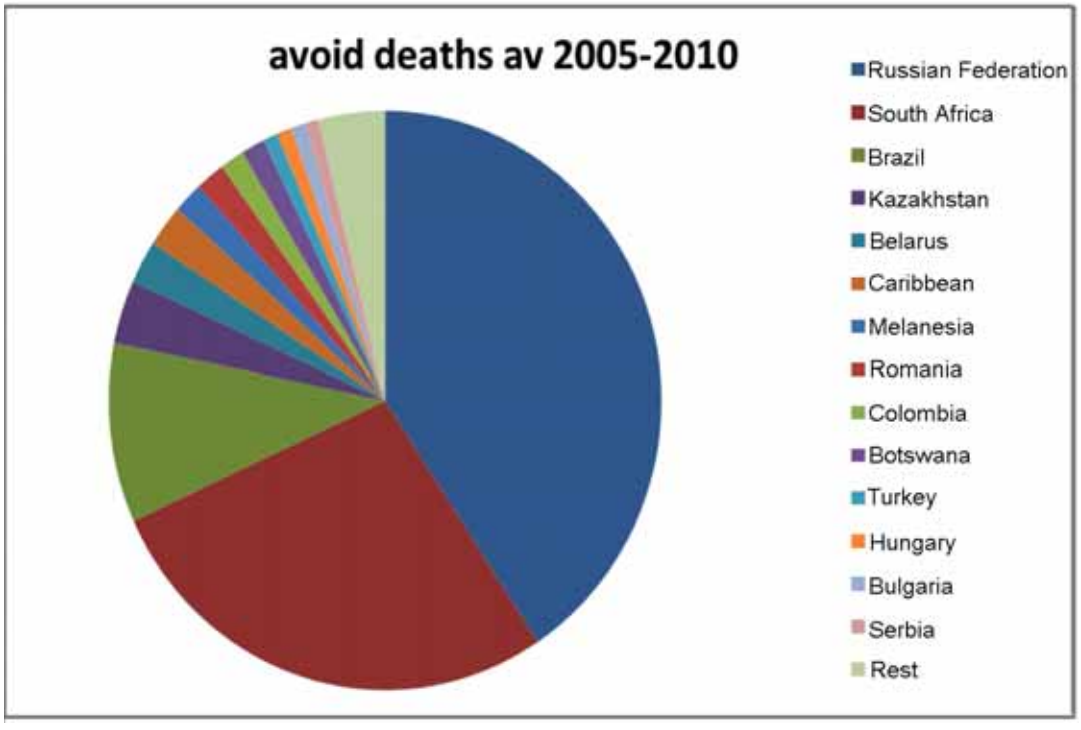

FIGURE 99: DISTRIBUTION OF AVOIDABLE DEATHS AMONG COUNTRIES WITH GDP PC ABOVE THE MDT.

The following graph represents the evolution of the number of avoidable deaths in the three countries with GDP pc above mDTh and higher number of avoidable deaths (two thirds of all avoidable deaths in this group of countries live in those three countries). The dotted line represents the periods when those countries had GDP pc lower than the mDTh. It shows an increase in Russia since the mid-80s, before the collapse of the Soviet Union, with a decrease after the turn of the century, when the GDP pc increased and surpassed the mDTh. It also shows an increase in South Africa since the 90s, due to the AIDS pandemic, and slowly reaching a plateau by the end of the first decade of the XXIst Century. Brazil has had a more stable number of avoidable deaths, slowly decreasing since year 2000, possibly in relation to the reduction of poverty levels during Lula´s government.

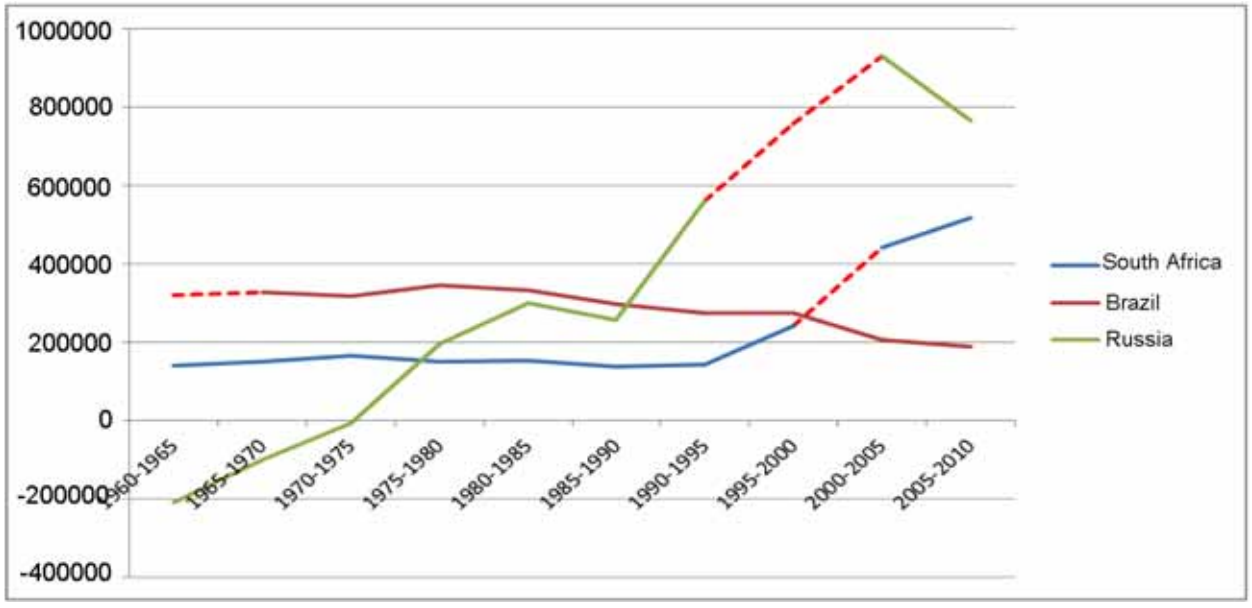

FIGURE 100: TREND OF AVOIDABLE DEATHS BY GHE IN MAIN COUNTRIES WITH GDP PC ABOVE THE MDT, 1960-2010.

But even if countries on average may not reveal burden of global health inequity in avoidable deaths or life years lost, their internal distribution of health may host national inequities which if added -as done in the overall burden of global health inequity- indicate the burden of national health inequity, a critical gauge of national and sub-national social cohesion and justice.

Despite the WHO founding objective since 1945 and the call (and commitment) by all countries to report on national health equity, there are no international data or registers that do so.

Below we mention the partial (in scope and coverage) attempts to measure national health inequalities through UNDP and WHO.

LIFE EXPECTANCY ADJUSTED TO INEQUALITY

The Human Development Report has introduced since 2011 the adjustment of the human development index to the inequality within countries[61]. For life expectancy this is done by comparing the arithmetic mean with the geometric mean and deducting the difference.

For 2013, the graph below shows the correlation between HDI life expectancy at birth (Y axis) and HDI life expectancy at birth adjusted to inequality. It shows a linear strong correlation with minor variations on the proportional reduction of life expectancy, adjusted to inequality by the method above mentioned.

[61] http://hdr.undp.org/en/faq-page/inequality-adjusted-human-development-index-ihdi

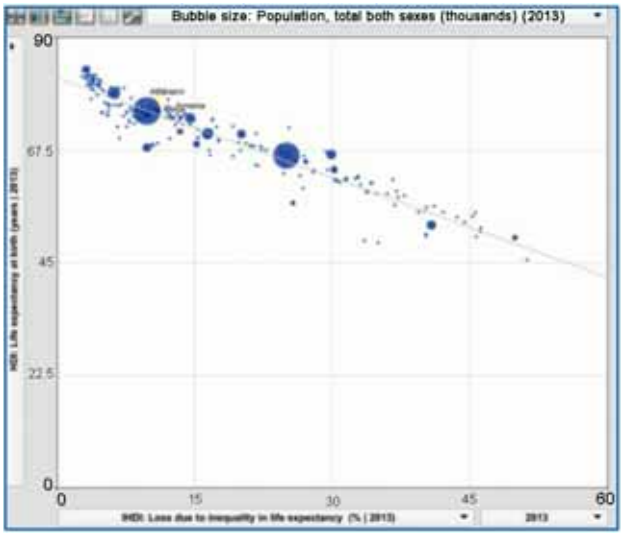

FIGURE 101: CORRELATION BETWEEN LIFE EXPECTANCY AND INEQUALITY ADJUSTED LIFE EXPECTANCY.

Surprisingly the loss of life expectancy at birth, as the graph below shows, is not correlated with the Gini coefficient.

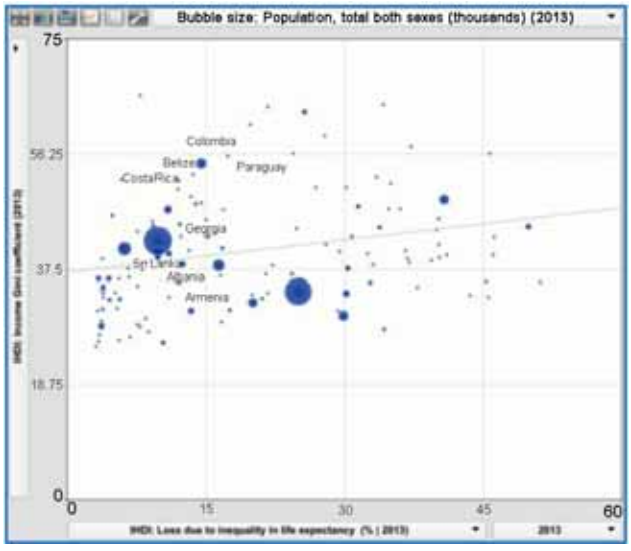

FIGURE 102: CORRELATION BETWEEN LIFE EXPECTANCY LOSS AND GINI COEFFICIENT, 2013.

HEALTH EQUITY MONITOR -WHO-

Since the call by the World Health Assembly in 2010 to countries to report on national health equity, WHO established the health equity monitor[62]. Such database measures differences or ratios between sub-groups by variables influencing health (rural/urban, level of education of the mother, income quintile) in some of their health indicators related to coverage of health services (immunization, skilled attended deliveries) or outcomes (under-five mortality).

[62] http://www.who.int/gho/health_equity/en/

Only one third of countries have reported national health equity data to this framework. In fact, rather than official reporting, all data come from DHS and MICS surveys. The majority of data is incomplete, of questionable reliability and come from low income countries with only a few low-middle income countries. If in these countries we were to set as standard the health of those in the upper quintile, we may estimate the burden of health inequity for the only health outcome reported under-five mortality. For 2012 we could only estimate the burden of national health inequity in 7 countries and compare with the burden of global health inequity in avoidable deaths in under-5s. The graph below shows the net and relative share of the global vs national burden of health inequity.

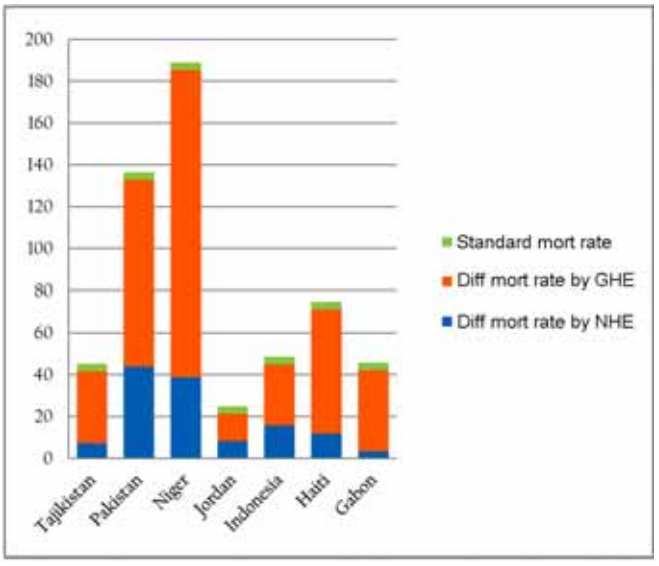

FIGURE 103: GLOBAL VS NATIONAL NET (EXCESS <5 MORTALITY RATE) HEALTH INEQUITIES, 2012.

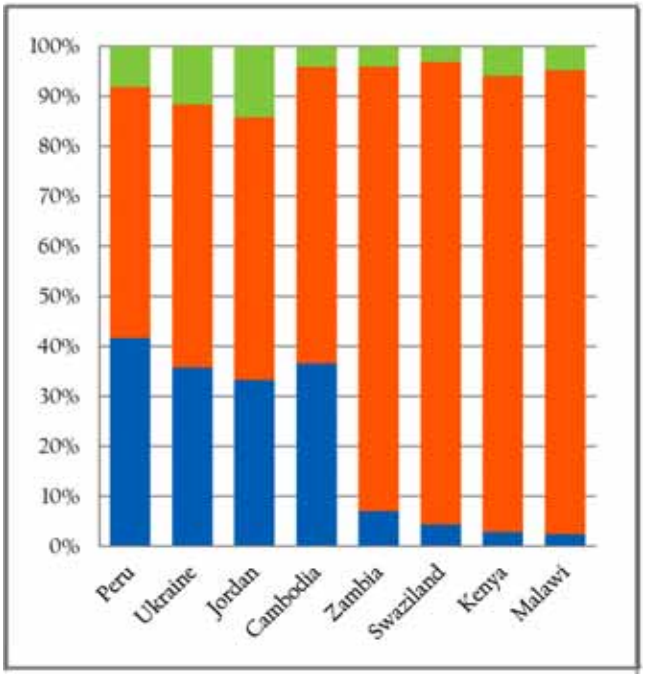

FIGURE 104: GLOBAL VS NATIONAL SHARE OF HEALTH INEQUITY, 2007-2012.

The graphs above show that, with the very limited data and assuming upper quintile as healthy-feasible-sustainable (HFS) models, the burden of national health inequity measured in avoidable deaths under 5 shows a share of the overall inequity (compared to global healthy-feasible-sustainable (HFS) models), which varies from countries where the intranational vector of inequity is close to half of the overall burden, especially middle income countries (Peru, Ukraine, Jordan), to countries where over 90% of the burden of inequity can be attributed to global inequity (mainly low income countries like Zambia, Swaziland, Kenya and Malawi), in which, even with perfect national health equity, a large share of deaths would be avoidable if there was an ethical redistribution of global resources.

FRAMEWORK FOR INTERNATIONAL REPORTING ON NATIONAL HEALTH EQUITY

As the following table shows, when we compare the present system of health equity surveillance with the features national and international systems that should have to really measure and act on health inequities, we identify many weaknesses and a clear challenge for the international community.

TABLE 11: DIFFERENCES BETWEEN THE PRESENT AND LOGICAL FRAMEWORK TO INFORM ON NATIONAL AND INTERNATIONAL HEALTH INEQUITY.

Features	Present international frameworks for national health equity	Standards of national health equity monitoring systems
Countries reporting	70 (low and low-middle income) to health-equity monitor (incomplete reports).	All.
Measures	Inequality (ratios by stratifying variables-income, education, rural/urban) of health services (immunization, skilled delivery attendance) and outcomes (under-5 mortality).	Inequity: best national health-feasible-sustainable standards. Burden of inequity by avoidable deaths and life and healthy life years lost.
Source of data	Demographic Health Surveys.	National regular monitoring system based on national registers at municipal level (<5000 pop size) (income, carbon footprint, life expectancy, mortality by age groups and sex, risk factors and diseases.
Utility	Arbitrary and mitigating measures to buffer the situation of access to services in the less-healthy groups.	Minimum dignity conditions to enable national health equity through NHE as social inclusion barometer and link to transformational policies (e.g. fiscal redistribution, territorial cohesion, access to services based on universal right to health).
Impact	Mitigation.	Transformation.
Rationale	Charity.	Justice.

VIII. HOLISTIC HEALTH INDEX

The previous sections prove the major global challenge of health equity, from what we know of international average data and from what we don´t of national equity analysis.

The analysis confirms the ethical principle described in chapter I, based on individual and collective commitment to the universal right to health.

The following holistic health index aims at including the individual dimensions of our health and the effects we have on others through the hoarding and exhausting of economic and natural resources. It goes beyond, therefore, the individual (ego) and human (anthropo) centric approach to health.

METHODOLOGY

The estimate of the holistic health index includes five dimensions:

1. Estimate of the life expectancy at birth. Data of World Health Statistics.

2. Estimate of how much of the life expectancy at birth is enjoyed without disability (healthy life expectancy). Data of Global Burden of Disease[63].

3. Estimate of how many of the life year's expectancy at birth, is lived with happiness/self-satisfaction/sense of fullness of our physical and psychosocial (and spiritual) potential. Data of the World Happiness Report[64].

4. Estimate of the negative impact on others through the hoarding effect. Here we calculate how much of the national average GDP pc in excess of the maximum (hoarding) threshold is related to the loss of healthy life years of countries with national average GDP pc below the minimum dignity threshold.

5. Estimate of the negative impact on others through the exhausting effect. Here we calculate how much of the carbon footprint (CO_2 emissions) in excess of the planetary boundary is related to the loss of healthy life years in coming generations (models of health loss by 2015 with 3-5 ºC increase).

ESTIMATES OF HOARDING AND EXHAUSTING NEGATIVE IMPACT ON OTHERS HEALTH

The following table explains the method of estimating of the effects of hoarding and exhausting per capita on life years lost of others.

[63] http://www.who.int/topics/global_burden_of_disease/en/
[64] http://unsdsn.org/resources/publications/world-happiness-report-2013/

TABLE 12: EFFECTS OF HOARDING AND EXHAUSTING PC ON LIFE YEARS LOST

Negative dimension	Threshold	Population	Hoarding and exhausting estimated excess levels 2012	LLY lost	Impact per hoarding and exhausting unit
Hoarding	> 21.750$ pc (average + standard deviation of mDTh enabling GHE).	1162 million from 36 countries.	2.33 Tn above max: 1.254 Tn of unmet deficit: 52% of excess.	729 million LYLost due to GHiE in countries < mDTh.	0.67 LYLost/year for each 1000 US $ above max. threshold. Multiplied by each national life expectancy to estimate to life-hoarding negative impact.
Exhausting	> 2.5 mTns pc on average 2000-2010 (Planetary boundary).	3425 million from 97 countries.	14 Bn CO_2 mTons above planetary limit.	10 million DALYs and 0.25 million climate-change-related (WHO 2050 scenario of 3 ºC above 1990 levels[65]).	0.05 Life year lost per each CO_2 mT pc emission above 2.5/year. Multiplied by each national life expectancy to estimate to life-hoarding negative impact.

It shows that for each 1000 $ GDP pc above the maximum threshold (in 2012 was $21,750), 0.67 life years (250 days) in the population living below the minimum dignity threshold and in vital (and ethical) need of redistribution of (part of) the excess, are lost. The same estimate for the exhausting effect is based on a projection by WHO whereby 10 millions life years would be lost annually in a scenario of 3 ºC above the 1990 levels. This modeling may under-estimate the real impact of climate change, which may also be -at the present trend- higher than 3º C warming.

RELATION BETWEEN HOARDING AND EXHAUSTING AND THE QUESTIONING OF ECONOMIC GROWTH BEYOND THE HOARDING THRESHOLD

The two main root causes of global health inequity and loss of human life are (as the following analysis will show) hoarding and exhausting of resources from our Mother Earth (direct as using nature's means and indirect through the power to do so: money).

Both dynamics are interconnected by the fact that when we more produce and consume (and generate income, defined as the flow of money through transactions of goods and growingly: speculation-money), we spread more the income distribution curve and feed both extremes and we exhaust more the nature. The following graph shows that relation.

[65] http://www.who.int/globalchange/summary/en/index6.html

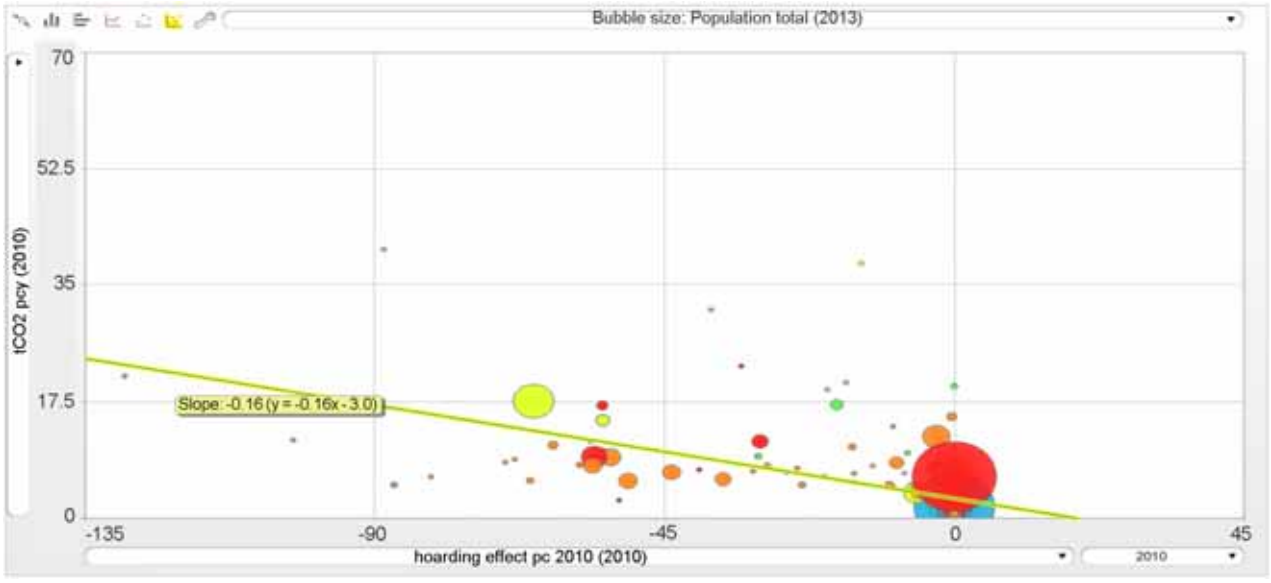

FIGURE 105: CORRELATION BETWEEN HOARDING EFFECT ON LIFE YEARS AND CARBON EMISSIONS PER CAPITA, 2010.

The graph shows how the more negative (on life years) is the impact of the hoarding, more higher are rates of carbon emissions. The outliers are mainly the green bubbles for Arab oil producers, with higher exhausting than hoarding (less speculative) effects, and the orange bubbles for more speculative economies (OECD). The major red (China) and blue (India) bubbles are ready to increase and join this dangerous line of hoarding and exhaustion (China already starting that path), which dramatically seem to be for now the only political and economic understanding of human progress (self-destructive).

Most interestingly, as seen in previous sections, there is no correlation between hoarding and life expectancy, as the graph below shows.

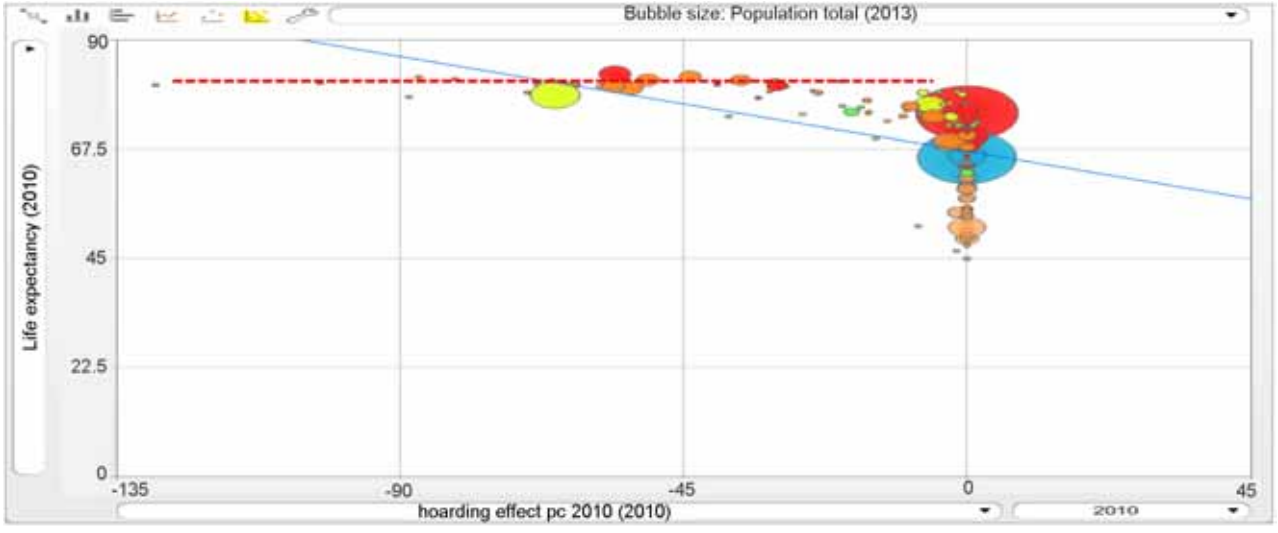

FIGURE 106: CORRELATION BETWEEN HOARDING AND LIFE EXPECTANCY, 2010.

It reveals that while the non hoarding countries have as a group a lower average life expectancy than the hoarding ones (see blue line), there are many no hoarding models with life expectancy in the average range of the hoarding countries, and the correlation of only the hoarding countries' GDP (hoarding effect) excess levels (above $21,000 pc) with life expectancy shows a flat line.

This analysis proves that hoarding (accumulating income beyond a maximum level, some $ 21,000 pc for 2012) is NOT GOOD FOR OTHERS (causes indirectly over 14 million avoidable deaths), NOT GOOD FOR THE COMING GENERATIONS (correlated with nature's exhaustion as the previous graph showed) AND NOT GOOD FOR OURSELVES (does not increase our life expectancy and neither other social wellbeing indicators[66]).

The question is: why is economic growth (measured in income through money flows) the only political and economic strategy for human development?

On the other side, the limitation of income below the hoarding threshold would not only enable redistribution of resources and preventing the majority of avoidable deaths in countries below the mDTh, but also shift the average CO_2 emissions from present average 3,70 mT pc to 2,63 mT pc, very close to the planetary boundary of sustainability.

DIMENSIONS OF THE HOLISTIC HEALTH INDEX

The following maps show the geographical distribution, for 2012, of each of the dimensions of the holistic health index.

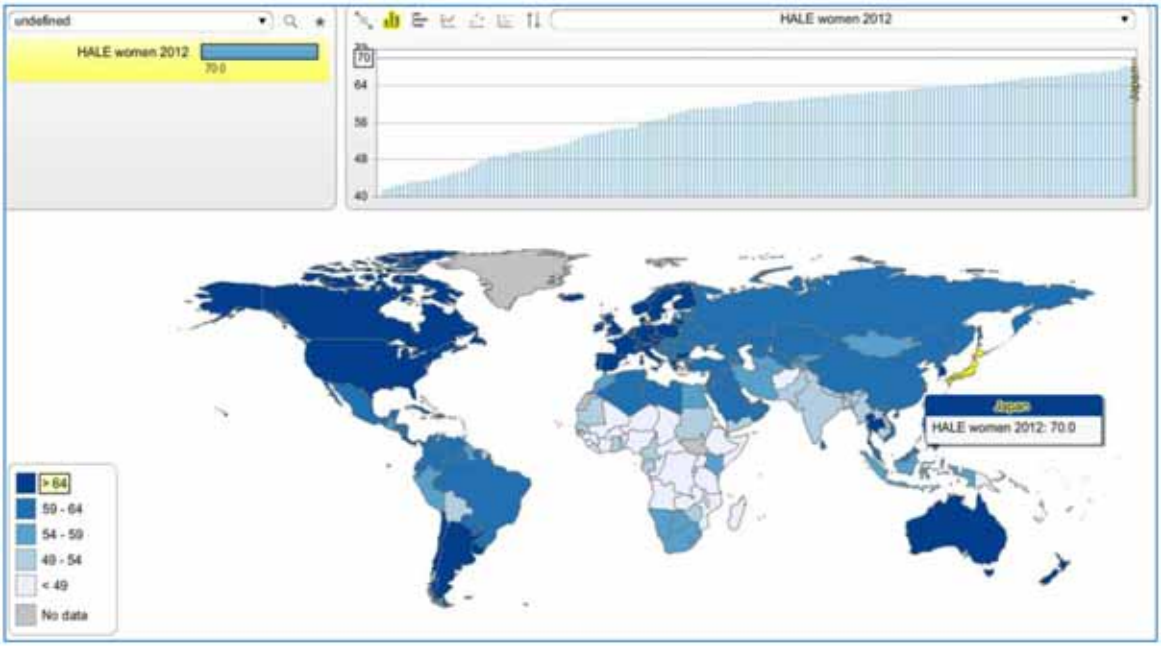

FIGURE 107: HEALTHY LIFE EXPECTANCY OF WOMEN, 2012.

The best levels of healthy life expectancy in women (over 64 years) are in US, Canada, Argentina, Chile, Western Europe, Thailand, Japan, South Korea, Australia and New Zealand. The country with best women's healthy life expectancy is Japan (70 years). The worst levels, under 50 years of healthy life expectancy include Bolivia, sub-Saharan Africa except Southwest Africa, and Afghanistan.

[66] http://www.equalitytrust.org.uk/resources/spirit-level-why-equality-better-everyone

FIGURE 108: HEALTHY LIFE EXPECTANCY OF MEN, 2012.

The best levels of healthy life expectancy in men (over 62 years) are in US, Canada, Western Europe, Japan, Australia and New Zealand. The country with best men's healthy life expectancy is Japan (66.6 years). The worst levels, under 50 years of healthy life expectancy include sub-Saharan Africa except Southwest Africa and Afghanistan.

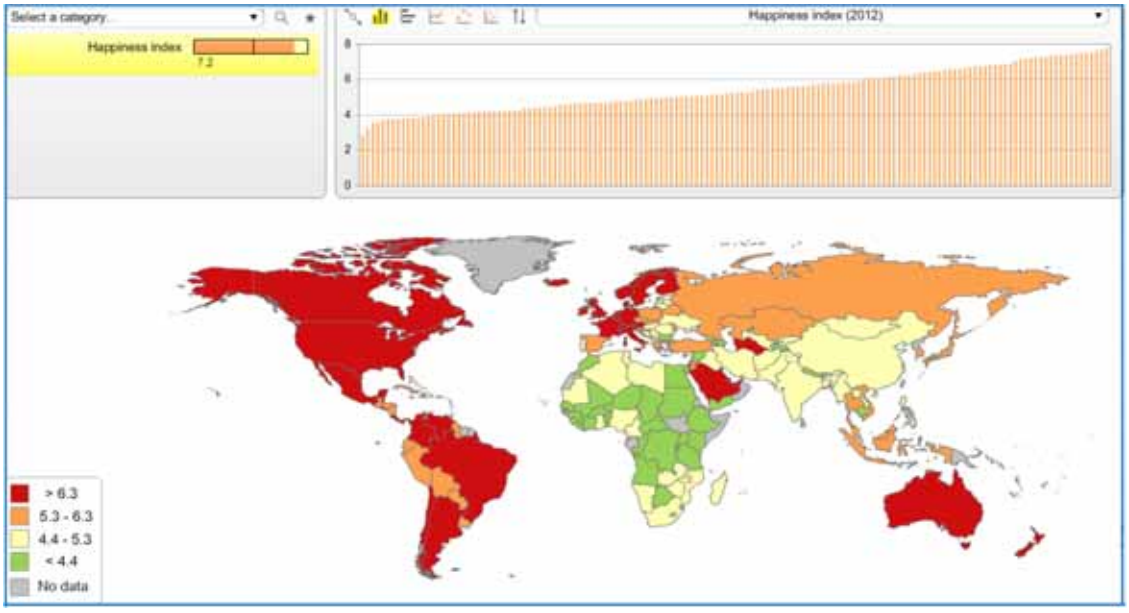

FIGURE 109: HAPPINESS INDEX.

The level of happiness, as assessed in the world happiness report[67], identifies higher levels of happiness in the Americas, mainly Canada, US, Mexico, **Costa Rica**, Panama, Venezuela, Colombia, Argentina Brazil and Chile, Central and Northern Europe, the rich Arab countries (Saudi Arabia, Qatar and United Arab Emirates), Turkmenistan, Japan and Australia. The highest level is in Denmark (7.7 out of 10).

[67] http://www.who.int/globalchange/summary/en/index6.html

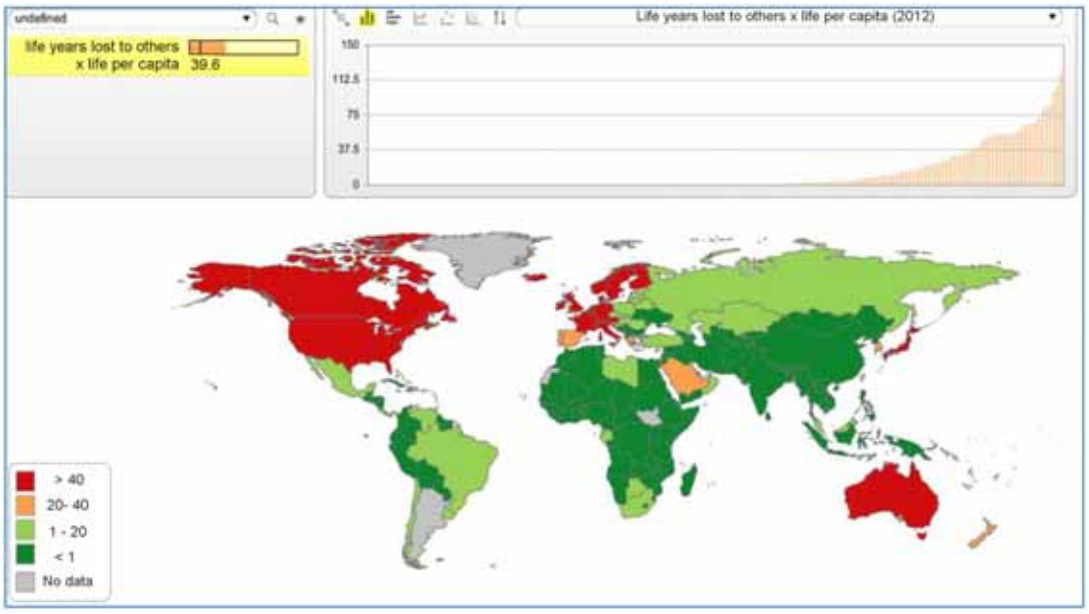

FIGURE 110: LIFE YEARS LOST OF OTHERS, PER CAPITA AND LIFE, DUE TO HOARDING EFFECT.

Following the methodology described above, the countries with GDP pc above the maximum threshold (hoarding) that indirectly decrease during lifetime over 40 years of LE in countries under the Minimum Dignity Threshold are Canada, US, Western Europe (except the Iberian Peninsula with slightly lower levels), Japan and Australia.

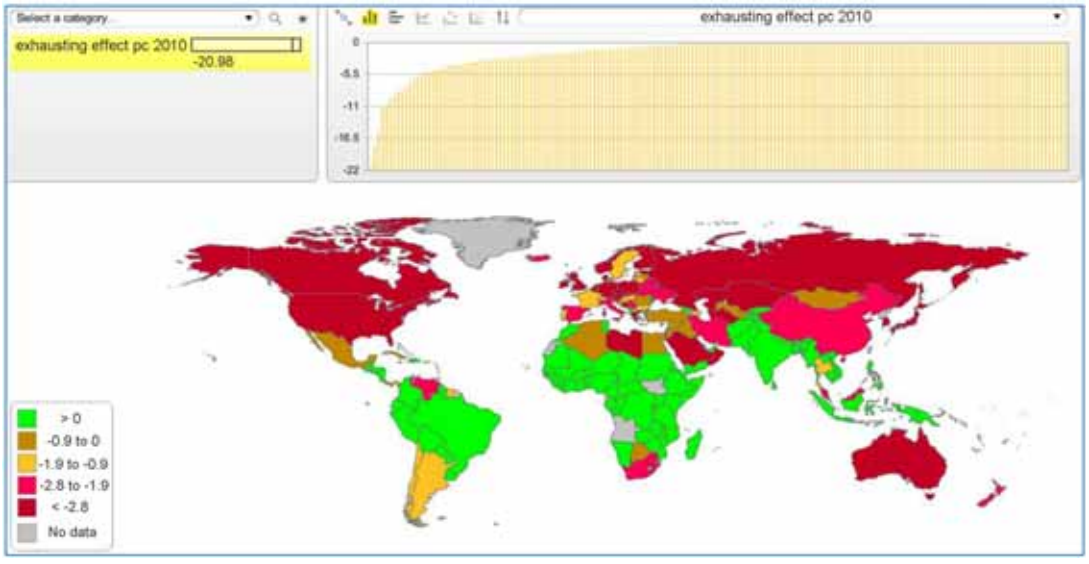

FIGURE 111: LIFE YEARS LOST OF OTHERS, PER CAPITA AND LIFE, DUE TO EXHAUSTING EFFECT.

The worst exhausting effects due to high levels of carbon emissions per capita are US, Canada, UK, Norway, Eastern Europe, Russia, Libya, Saudi Arabia, Japan and Australia.

HOLISTIC HEALTH INDEX

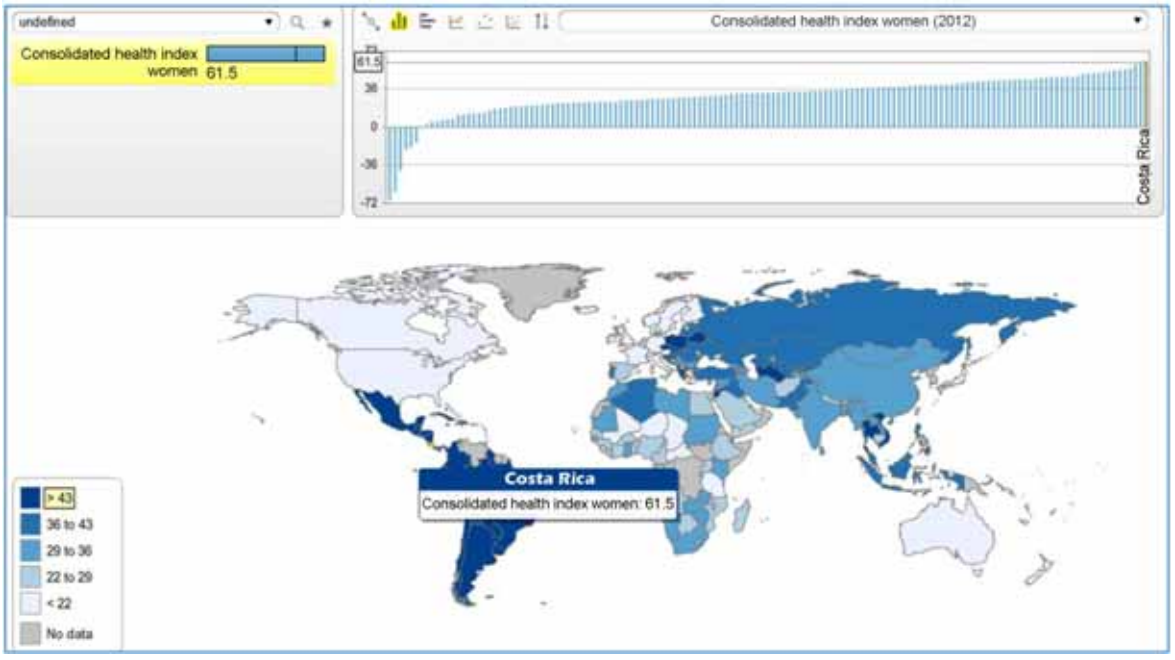

FIGURE 112: HOLISTIC HEALTH INDEX.

TABLE 13: COUNTRIES WITH HIGHER HOLISTIC HEALTH INDEX

Country	Healthy life expectancy	Happiness index	LYLs x exhausting	LYLs x hoarding	Consolidated health index
Costa Rica	64.65	7.27			61.48
Panama	62.77	7.32	-0.07		60.24
Venezuela	61.92	7.48	-2.34		58.88
Mexico	61.80	6.80	-0.69		55.24
Chile	62.63	6.64	-0.96		54.54
Brazil	58.70	6.84			53.94
El Salvador	58.36	6.74			53.32
Argentina	62.25	6.44	-1.06		52.44
Colombia	60.09	6.41			51.70
Belize	60.42	6.45			51.10

The map and table above show how the best consolidated health indexes are in Latin America, **with Costa Rica ranking first**. Only three out of the 14 feasible-sustainable models (Costa Rica, Colombia and Belize) feature among the top ten. The only non-Latin American country in the best 14 countries' holistic indexes is Thailand. Countries from southern (Greece, Malta) and Central Europe (Slovenia and Slovakia) follow.

The next graphs show how the different dimensions of the health index compare with the best potential healthy-happy and collective dimensions of life expectancy (at close to 70 years). **Costa Rica**, the best performer, with a minor loss due to premature death, disability and sadness and the world's average level with loss of two thirds of the human potential by mainly sadness (one third of the loss), and also premature death, disability and hoarding effect.

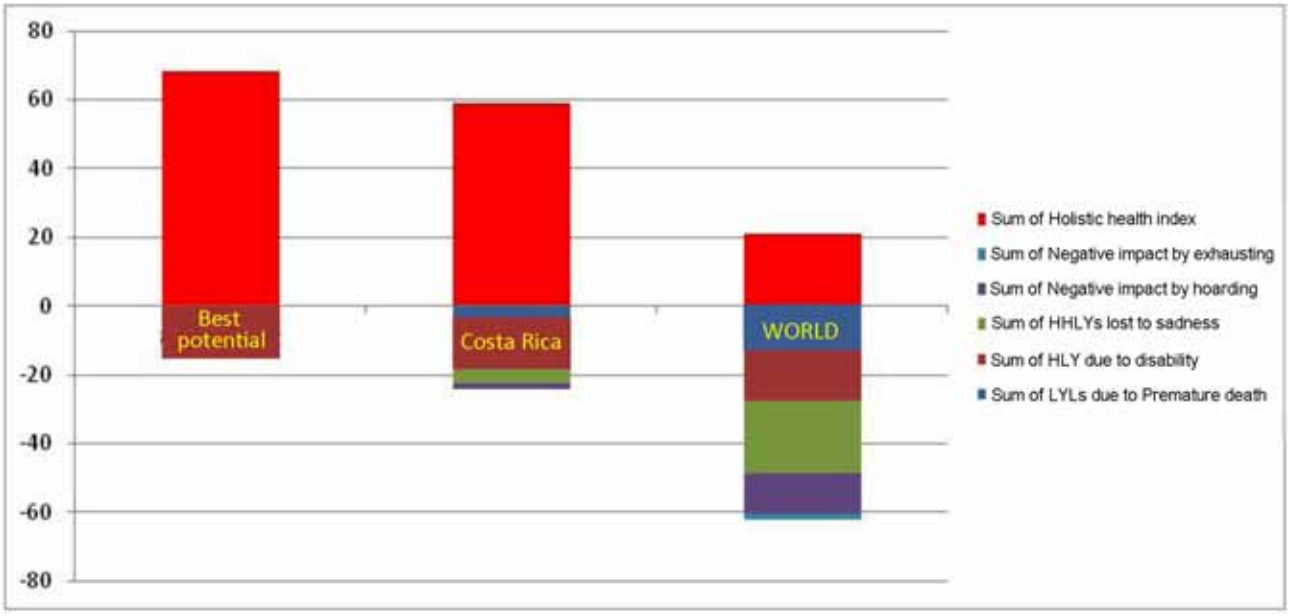

FIGURE 113: POTENTIAL HEALTHY HAPPY AND HOLISTIC (COLLECTIVE) LIFE VALUE VS BEST PERFORMER AND WORLD´S AVERAGE.

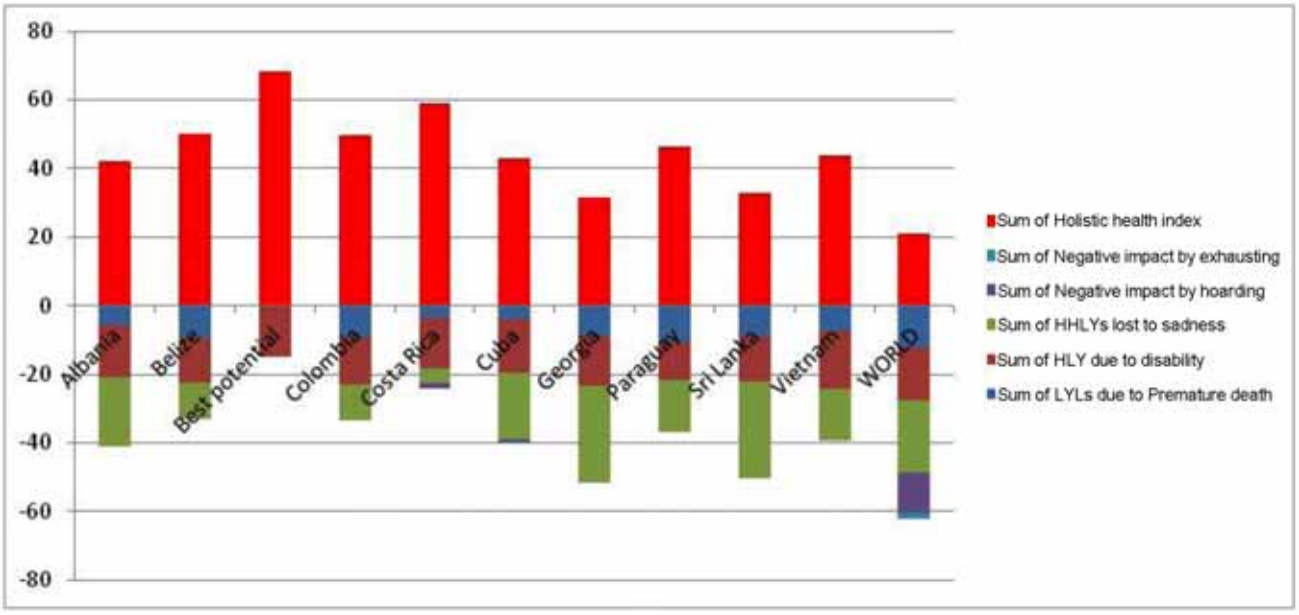

FIGURE 114: HOLISTIC HEALTH INDEX IN THE STANDARD BEST FEASIBLE AND SUSTAINABLE HEALTH MODELS FOR GHE.

The analysis of the different health holistic indices of the ten (with available data) of the fourteen healthy-feasible-sustainable (HFS) countries shows how, while there is a moderate loss of life due to premature death and disability (here estimated against the best life expectancy level, Japan), the main factor influencing the differences on final holistic index is sadness. Countries like Albania, Cuba, Georgia, Sri Lanka and Vietnam have lower happiness indexes with a lower healthy happy life expectancy. Interestingly, those five countries have a communist history and/or present order and while it may have meant greater collective good and restrained the capitalist production/consumption machinery, the effect on individual freedom (even of being wrong) may have an effect in happiness, an essential element of holistic health.

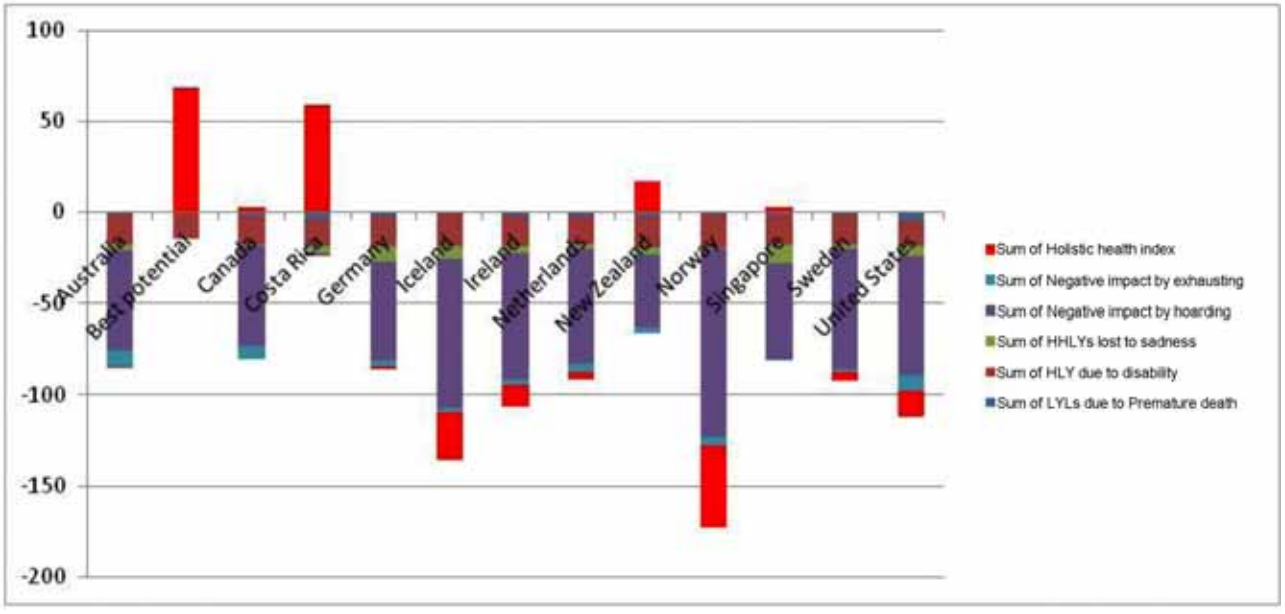

FIGURE 115: HOLISTIC HEALTH INDEX IN 10 COUNTRIES WITH HIGHEST HDI VS BEST HHI AND POTENTIAL HHI.

The analysis of the HHI among the countries with higher Human Development Index as estimated by UNDP in 2013, in contrast with the best potential and best performer (Costa Rica), reveal that all of them have very low HHI, mainly due to a major negative impact of hoarding and, to a lesser extent (most likely under-estimated), exhausting. Interestingly, the effect of sadness is minor. Hoarding tends to go with isolated societies (living in their comfort shells) with reduced (and only volatile and mitigating charity) empathy (possibly even lacking information) for the pain their cause in others near and less so if distant.

In this context, the message of ODA as able to bring on its own higher global justice is not only wrong but counter-productive.

In fact, all except Canada, Singapore and New Zealand (those with a very low positive HHI) have negative levels of HHI, meaning that each person living in these “development model countries” prevents on average at least the life of another person in countries below the minimum threshold.

This analysis questions the present concept, reference and framework of development, which does not relate or connect excess with the need and is also complacent with the production/consumption models exhausting our mother Earth and preventing our children and grandchildren to enjoy it.

IX. CONCLUSIONS AND POLITICAL PROPOSALS

CONCLUSIONS

1. The research described in this book is based on the ethical principles -and neglected international commitments- of the universal right to health through health equity.

2. It identifies models of good health (on average with 10% higher life expectancy than the average) which are replicable (use resources below the world's average) and sustainable (do so with carbon emissions below the planetary boundary).

3. These healthy-feasible-sustainable (HFS) models allow us to estimate the burden (gap from objective) of health inequity and reflect its distribution by countries, sex, age-groups and time in the last 60 years.

4. Health inequity may be the best indicator of socioeconomic inclusion (justice) within and between generations.

5. It concludes that socioeconomic inclusion and justice (measured through the universal -and equitable- right to health) has remained stagnant since the mid-80s (and possibly marked by the Washington consensus) and reveals that more than one in three deaths every year are avoidable, and affects more those in countries with lowest income, and also women and the younger.

6. It also enables the setting of an income "minimum dignity threshold" (not that people living below have less dignity but that their dignity and right to live is not being respected) and the equitable distribution of the world's resources which would enable the universal and equitable right to health.

7. By doing so, it also looks at nature (and how most variables follow a "normal" distribution) and estimates the maximum threshold of income, above which the hording of resources has an effect in health inequity by preventing sufficient resources from reaching the basic health needs of others.

8. The world has enough natural and economic resources to enable the universal right to health, even with a wide fair-inequality distribution of resources (allowing ratios between extremes of 4 to 7).

9. The levels of redistribution required -from the hoarding extreme to the under dignity- challenge the present model of ODA in its magnitude, distribution, volatility and non-binding nature.

10. There is no international framework for the monitoring of the national levels and features of health equity, and only low income countries report (through high-income countries' financed surveys) on inequalities. Setting national standards is essential to address the subnational challenge and action of health equity and balance it with the burden of global health inequity requiring global actions.

11. The holistic health index (individual healthy happy and impact on collective life expectancy) reveals that the world enjoys only one third of the potential healthy happy life expectancy respecting as well others.

PROPOSALS

The evidence above listed calls for transformational changes at international, national, social and individual levels:

1. International level

a. Adherence and compliance with the binding commitment (with reporting and accountability mechanisms) of all nations to social, economic and cultural rights, complementing political and civil rights and freedom. (ICESCRs and its optional protocol).
b. Setting of global health feasible and sustainable standards, and monitoring frameworks (mapping its geographical -international and subnational- and social distribution) on global health inequity, as the barometer of national and international social inclusion/cohesion.
c. Agreement of an international framework of economic equity enabling the right to life and health, and setting the redistribution levels and flows from countries above the maximum threshold to those below the minimum in a sufficient and binding way.
d. Agreement on the international ethical and legal must to respect the sustainable limit on carbon emissions and planetary boundaries.

2. National level

a. Constitutional recognition of the universal right to health through a national binding commitment (and reporting and accountability mechanisms) on social, economic and cultural rights, complementing civil right and freedom.
b. Setting of national health feasible and sustainable standards, and monitoring frameworks (mapping its geographical and social subnational distribution) of national health equity (and the burden of national health inequity) as the barometer of national social inclusion/cohesion.
c. Agreement on a national framework of economic equity (minimum levels of dignity and maximum levels of hoarding), enabling the right to life and health, and setting the redistribution (fiscal equity) levels and flows from social groups with income above the maximum threshold to those below the minimum level of dignity.
d. Agreement on the national legal and ethical must to limit carbon emissions and surface use per capita below the planetary boundaries.

3. Social and individual level

a. Recognition on the fact that the universal right to health is feasible and an ethical must for all to strive towards it in her or his capacities and social roles (for health workers a revised Hippocratic Oath promoting the universal right to health).
b. Promotion by all means and ways of social and individual awareness and compliance with the ethical must of respecting, at individual level, the planetary boundaries (exhausting threshold), and the effect it has on coming generations.
c. Recognition of the fact that the levels of income above the "hoarding threshold" have a negative effect on the lives and health of others (who live under the minimum threshold of dignity).

RESEARCH AGENDA

This document describes an analysis of the burden of health equity, based on the health right and equity principles, at global level, based on international databases. Many questions are still open on the health equity challenges at national, subnational and community/individual levels.

These are some of the open questions which need to be examined and surely will lead to more:

1. International level

- Dynamics and blockages for the adherence to the ICESCRs and its optional protocol.
- Measurement and analysis of "by all, in all and for all" dimensions of global health initiatives.
- Validity of WB, UN and WHO/GBD data and their limitations.
- Validity of the above data in the 14 HFS models.
- Specificities of the 14 HFS models.
- Specificities of HFS efficient models.
- Update of data for the five-year period 2010-2015.
- Models of future trends in equity.
- Hoarding-deficit correlations.
- Hoarding-exhausting correlations.
- Models of health impact from climate change.
- Global fiscal structure and mechanisms to ensure GHE.
- Opportunities to address GHE ethical redistribution replacing traditional ODA.
- Inter-cultural validity of assessment of happiness indexes.
- Political strategies for monitoring and reporting of GHE as WHO main goal.
- Political strategies to introduce GHE as measurable objective in the post-2015 agenda.
- Pertinence and opportunities for an International Institute for Studies and Proposals on Health, Social and Ecological equity (IISPHSEE).

2. National level

- Availability of national mechanisms of guarantee/reporting on the national compliance of health as a universal human right.
- Availability of health, income and carbon footprint data at municipal and sub-municipal levels.
- Specificities of the national HFS models.
- Specificities of national HFS efficient models.
- Update of data for the five-year period 2010-2015.
- Models of future trends in national equity.
- National hoarding-deficit correlations.
- National hoarding-exhausting correlations.
- National fiscal structure and mechanisms to ensure NHE.
- Models of health impact by national effects of deforestation, biodiversity, water exhaustion and others.
- National inter-cultural validity of assessment of happiness indexes.
- Political strategies for monitoring and reporting of GHE as national health main goal.
- Political strategies to introduce GHE as measurable objective in the social inclusion national policies.
- Pertinence and opportunities for a National Institute for Studies and Proposals on Health, Social and Ecological Equity (NISPHSEE).
- Share and correlations of global and national burden of health inequity.

3. Community and individual levels

- Awareness of health as a human right.
- Awareness of health professionals on health as a human right and its equity/sustainability dimensions.
- Individual hoarding (and its impact of others´ health) monitoring mechanisms (apps and other user-friendly appliances).
- Individual exhausting (and its impact of others´ health) monitoring mechanisms (apps and other user- friendly appliances).
- Exercise of freedom and its correlation with the common good.
- Perceptions of happiness and potential happiness and its relation with the responsibility and commitment to common good.
- Potential of physical and psychosocial fulfillment gap dynamics and its relations of holistic health.
- Correlations between physical and psychosocial fulfillment and ecological sustainability, and knowledge/participatory community dynamics.

X. ANNEXES

ANNEX 1: BURDEN OF GLOBAL HEALTH INEQUITY IN LOSS OF LIFE EXPECTANCY

Country	1960	1970	1980	1990	2000	2010	2012
Afghanistan	-29.46	-28.54	-27.64	-21.93	-17.37	-14.81	-14.21
Albania	1.21	1.73	1.36	1.46	2.06	2.57	2.63
Algeria	-14.91	-14.85	-10.71	-3.74	-3.28	-3.79	-3.83
Angola	-28.06	-28.18	-28.72	-29.36	-27.01	-23.75	-23.25
Antigua and Barbuda	0.74	0.33	-0.29	0.67	1.18	0.93	0.95
Argentina	4.17	1.39	0.64	1.05	1.53	1.26	1.30
Armenia	4.82	4.73	1.81	-2.75	-0.94	-0.19	-0.28
Aruba	4.53	3.89	3.34	2.89	1.51	0.54	0.49
Australia	9.78	5.82	5.46	6.50	7.02	7.29	7.38
Austria	7.54	4.69	3.55	5.03	5.81	5.97	6.22
Azerbaijan	-0.21	-0.46	-4.20	-5.75	-5.46	-3.96	-4.09
Bahamas, The	1.69	0.67	-0.42	0.13	0.04	0.18	0.20
Bahrain	-8.95	-1.50	0.90	2.01	2.38	1.86	1.82
Bangladesh	-14.02	-17.61	-14.01	-10.49	-6.89	-4.92	-4.42
Barbados	-0.28	-0.27	-0.65	0.38	0.81	0.39	0.42
Belarus	6.67	4.88	0.92	0.34	-3.30	-4.00	-2.65
Belgium	8.66	5.77	4.33	5.56	5.51	5.83	5.67
Belize	-1.08	0.35	0.69	0.69	-1.67	-1.14	-1.02
Benin	-23.76	-22.85	-21.64	-17.08	-17.03	-15.66	-15.60
Bhutan	-28.68	-28.26	-23.92	-18.03	-11.92	-7.40	-6.83
Bolivia	-18.37	-19.43	-16.91	-11.72	-9.26	-8.09	-7.79
Bosnia and Herzegovina	-0.77	0.86	1.35	-3.05	2.46	1.40	1.41
Botswana	-10.51	-10.59	-8.17	-7.56	-21.72	-27.97	-27.73
Brazil	-6.35	-6.34	-6.17	-3.98	-1.96	-1.33	-1.10
Brunei Darussalam	1.42	2.08	1.99	3.22	3.82	3.58	3.66
Bulgaria	8.21	6.06	2.28	1.15	-0.55	-0.90	-0.40
Burkina Faso	-26.56	-26.10	-22.88	-21.13	-21.73	-19.40	-18.85
Burundi	-19.81	-21.42	-21.59	-23.17	-24.01	-21.78	-21.09
Cabo Verde	-12.04	-13.04	-8.66	-4.61	-2.62	-0.55	-0.17
Cambodia	-19.84	-23.52	-39.26	-15.74	-10.33	-3.77	-3.31
Cameroon	-19.52	-19.12	-17.67	-16.90	-20.28	-20.71	-20.13
Canada	10.09	7.50	6.20	6.88	7.02	6.49	6.52
Caribbean small states	0.95	0.08	-1.22	-1.67	-2.88	-2.98	-2.92
Central African Republic	-24.56	-23.26	-20.17	-24.45	-28.52	-26.31	-25.24
Chad	-23.03	-23.89	-24.21	-24.15	-25.53	-24.64	-24.02
Chile	-4.02	-3.19	0.18	3.05	4.54	4.64	4.86
China	-17.58	-2.29	-1.85	-1.02	-0.07	0.48	0.48
Colombia	-4.33	-4.33	-3.40	-2.20	-1.23	-1.04	-0.94
Comoros	-17.60	-17.49	-16.92	-14.90	-14.33	-14.20	-14.07
Congo, Dem. Rep.	-20.02	-21.35	-22.79	-23.06	-25.86	-25.42	-25.09

Country	1960	1970	1980	1990	2000	2010	2012
Congo, Rep.	-12.46	-11.84	-12.74	-15.32	-19.91	-17.20	-16.42
Costa Rica	0.56	1.64	3.65	5.23	5.52	4.87	4.99
Cote d'Ivoire	-24.17	-21.45	-18.17	-17.89	-25.76	-24.73	-24.31
Croatia	3.57	3.00	1.30	1.67	0.59	2.07	2.21
Cuba	2.86	4.68	4.95	4.15	4.46	4.31	4.35
Cyprus	8.55	7.32	5.88	6.02	5.76	4.90	4.92
Czech Republic	9.31	4.24	1.40	0.89	2.75	3.02	3.36
Denmark	11.13	8.15	5.22	4.31	4.38	4.69	5.34
Djibouti	-17.02	-16.06	-15.26	-13.83	-15.20	-14.12	-13.41
Dominican Republic	-9.20	-6.66	-5.84	-2.55	-1.58	-1.62	-1.48
Ecuador	-7.92	-7.42	-5.95	-1.66	1.14	1.24	1.48
Egypt, Arab Rep.	-13.03	-13.08	-10.56	-5.95	-3.62	-3.96	-3.81
El Salvador	-9.74	-8.65	-12.11	-4.62	-2.66	-2.77	-2.61
Equatorial Guinea	-24.31	-25.46	-25.97	-23.94	-24.45	-22.88	-22.10
Eritrea	-23.68	-24.67	-25.56	-22.26	-16.19	-13.22	-12.48
Estonia	6.86	4.74	0.04	-1.02	-1.80	1.02	1.71
Ethiopia	-22.64	-22.26	-25.13	-23.55	-19.97	-12.94	-11.75
Fiji	-5.08	-5.29	-5.87	-4.92	-4.61	-5.03	-4.97
Finland	7.78	4.98	4.56	4.32	5.25	5.46	5.91
France	8.83	6.46	5.17	6.10	6.84	7.26	7.85
French Polynesia	-4.68	-4.92	-4.17	-1.67	0.24	1.28	1.41
Gabon	-21.48	-18.57	-14.03	-9.21	-12.53	-12.12	-11.64
Gambia, The	-29.00	-27.33	-22.53	-18.28	-17.04	-16.27	-16.11
Georgia	2.39	1.96	0.50	-0.50	-0.58	-0.73	-0.77
Germany	8.27	5.44	3.80	4.68	5.71	5.58	6.18
Ghana	-15.21	-15.86	-16.61	-13.74	-15.23	-13.81	-13.77
Greece	7.12	5.71	4.77	6.44	5.67	5.98	5.92
Grenada	-1.23	-1.61	-2.51	-2.02	-1.96	-2.07	-2.11
Guatemala	-15.51	-13.15	-11.68	-8.26	-4.47	-3.41	-3.05
Guinea	-26.16	-28.55	-27.62	-20.58	-20.96	-19.11	-18.87
Guinea-Bissau	-18.90	-21.16	-23.00	-21.42	-20.77	-20.85	-20.68
Guyana	-2.81	-5.69	-8.20	-8.37	-8.73	-8.71	-8.67
Haiti	-18.88	-18.01	-18.15	-16.07	-14.79	-12.54	-12.01
Honduras	-14.75	-12.68	-9.27	-3.81	-1.73	-1.56	-1.22
Hong Kong SAR, China	5.96	6.25	5.79	6.88	8.66	8.57	8.76
Hungary	6.96	3.97	0.18	-1.18	-0.97	-0.20	0.35
Iceland	12.39	8.74	7.97	7.54	7.44	7.49	8.20
India	-19.66	-16.36	-13.50	-11.97	-10.05	-8.71	-8.51
Indonesia	-16.24	-12.81	-10.29	-7.05	-4.96	-4.24	-4.11
Iran, Islamic Rep.	-16.10	-14.33	-14.21	-7.05	-2.61	-1.28	-0.95
Iraq	-13.01	-7.01	-8.59	-2.09	-1.38	-5.58	-5.47
Ireland	8.65	5.80	3.67	4.25	4.32	6.34	6.18
Israel		6.02	5.00	6.11	6.74	7.19	6.99
Italy	8.08	6.36	5.06	6.48	7.56	7.93	8.22
Jamaica	3.15	2.99	1.61	0.16	-1.74	-1.56	-1.43
Japan	6.62	6.75	7.21	8.34	8.86	8.43	8.38

Country	1960	1970	1980	1990	2000	2010	2012
Jordan	-8.36	-5.01	-2.65	-0.57	-0.43	-0.97	-0.97
Kazakhstan	-2.67	-2.92	-2.25	-2.16	-6.70	-6.11	-5.11
Kenya	-14.68	-12.97	-11.06	-11.38	-19.37	-14.86	-13.63
Kiribati	-14.17	-13.82	-13.04	-9.86	-7.61	-6.52	-6.18
Korea, Dem. Rep.	-9.96	-5.92	-3.13	-1.15	-7.23	-5.51	-5.22
Korea, Rep.	-8.04	-3.16	-3.07	0.80	3.62	6.14	6.65
Kuwait	-0.69	0.94	0.81	1.76	1.14	-0.25	-0.36
Kyrgyz Republic	-4.91	-4.95	-5.97	-2.20	-3.66	-5.11	-4.71
Lao PDR	-17.85	-18.97	-19.87	-16.38	-10.57	-7.51	-6.91
Latvia	8.74	4.64	-0.07	-1.22	-1.90	-0.93	-0.94
Lebanon	2.24	0.88	-0.92	-0.27	2.18	4.84	5.13
Lesotho	-14.53	-16.29	-15.21	-11.16	-25.03	-26.92	-25.88
Liberia	-26.26	-25.90	-22.86	-23.29	-19.80	-14.97	-14.51
Libya	-18.40	-9.08	-4.59	-1.93	-0.25	0.38	0.46
Lithuania	8.81	5.61	1.60	0.67	-0.19	-1.14	-0.85
Luxembourg	7.40	4.79	3.20	4.51	5.66	6.22	6.68
Macao SAR, China	3.62	3.81	3.59	4.78	5.41	5.28	5.41
Macedonia, FYR	-0.42	1.09	-0.23	0.65	1.03	0.31	0.32
Madagascar	-21.07	-20.42	-19.85	-19.49	-13.74	-11.06	-10.47
Malawi	-23.21	-24.59	-24.51	-23.38	-26.18	-20.94	-19.99
Malaysia	-1.57	-0.74	-0.82	0.26	0.64	0.09	0.13
Maldives	-25.18	-21.04	-16.62	-9.89	-2.75	2.38	2.86
Mali	-32.83	-32.81	-29.27	-24.03	-23.16	-20.64	-20.11
Malta	6.56	5.24	4.05	4.68	5.99	6.99	6.03
Mauritania	-17.56	-16.09	-14.64	-12.11	-12.54	-13.39	-13.37
Mauritius	-2.30	-2.08	-1.91	-1.09	-0.55	-1.44	-1.15
Mexico	-3.98	-3.85	-2.32	0.30	2.05	2.28	2.42
Micronesia, Fed. Sts.	-3.46	-3.56	-3.69	-4.30	-4.94	-5.79	-5.87
Moldova	0.77	-0.39	-4.12	-3.03	-5.32	-5.95	-6.02
Mongolia	-12.67	-9.85	-11.95	-10.23	-9.29	-7.51	-7.38
Montenegro	2.66	4.54	3.99	3.85	1.81	0.01	-0.07
Morocco	-12.60	-12.66	-11.37	-5.81	-4.08	-4.24	-4.07
Mozambique	-26.04	-25.98	-26.03	-26.92	-24.79	-25.27	-24.88
Myanmar	-18.31	-14.23	-13.94	-11.80	-10.19	-9.83	-9.78
Namibia	-14.16	-12.67	-11.20	-9.27	-17.09	-11.93	-10.83
Nepal	-22.59	-22.77	-21.22	-15.46	-10.17	-7.30	-6.73
Netherlands	12.35	8.39	6.86	6.38	5.77	6.29	6.39
New Caledonia	-2.40	-2.17	-2.31	-0.01	2.71	1.42	1.54
New Zealand	10.19	6.07	3.95	4.88	6.42	6.29	6.44
Nicaragua	-14.04	-11.55	-10.38	-6.36	-2.57	-0.61	-0.25
Niger	-25.53	-28.93	-29.47	-26.54	-21.51	-17.42	-16.75
Nigeria	-23.86	-24.02	-23.33	-24.39	-25.59	-23.12	-22.61
North America	8.85	5.79	4.92	4.94	4.68	4.37	4.27
Norway	12.51	8.89	6.79	6.04	6.42	6.59	6.74
Oman	-18.37	-14.94	-9.15	-3.23	0.14	1.64	1.88
Other small states	-15.55	-15.25	-14.20	-11.50	-15.88	-15.68	-15.18

Country	1960	1970	1980	1990	2000	2010	2012
Pacific island small states	-7.42	-7.18	-7.16	-6.80	-5.48	-5.14	-5.03
Pakistan	-14.61	-11.70	-10.81	-9.31	-8.33	-8.28	-8.28
Panama	-0.17	0.35	1.39	2.56	2.90	2.54	2.65
Papua New Guinea	-22.58	-19.16	-15.99	-14.79	-13.41	-12.40	-12.42
Paraguay	2.75	0.24	-2.11	-2.48	-2.14	-2.38	-2.52
Peru	-13.35	-11.74	-8.81	-4.97	-1.71	-0.50	-0.20
Philippines	-3.23	-4.39	-6.72	-5.27	-5.42	-6.18	-6.16
Poland	6.64	4.67	1.22	0.39	1.53	1.84	2.08
Portugal	1.77	1.87	2.34	3.47	4.10	4.62	5.66
Puerto Rico	7.68	6.35	4.82	3.67	4.48	3.77	3.82
Qatar	0.21	3.33	3.97	4.80	4.61	3.74	3.74
Romania	4.60	2.86	0.21	-0.75	-1.05	-0.95	-0.15
Russian Federation	5.01	2.94	-1.84	-1.59	-6.87	-5.55	-4.26
Rwanda	-18.79	-20.91	-20.97	-37.88	-24.57	-12.20	-11.22
Samoa	-11.07	-10.23	-8.91	-5.46	-2.73	-2.00	-1.73
Sao Tome and Principe	-10.59	-9.33	-8.37	-8.72	-8.92	-8.55	-8.58
Saudi Arabia	-15.38	-12.47	-5.77	-1.35	0.40	0.67	0.78
Senegal	-22.84	-25.98	-19.94	-13.31	-14.44	-11.57	-11.51
Serbia					-0.08	-0.47	0.52
Sierra Leone	-30.71	-30.59	-28.23	-33.14	-34.10	-29.57	-29.39
Singapore	4.62	3.08	3.16	5.53	5.84	7.13	7.43
Slovak Republic	8.93	4.94	1.53	0.44	0.84	0.70	1.39
Slovenia	7.94	3.41	2.23	2.71	3.20	5.01	5.41
Solomon Islands	-11.66	-10.81	-9.99	-13.79	-9.38	-7.34	-7.21
Somalia	-24.08	-24.25	-24.14	-25.11	-21.34	-20.38	-20.02
South Africa	-12.01	-12.35	-11.91	-8.38	-16.38	-20.02	-18.62
South Sudan	-29.37	-29.39	-29.84	-26.97	-22.98	-20.94	-20.07
Spain	8.07	6.83	6.47	6.34	6.75	7.22	7.66
Sri Lanka	-1.29	-0.92	-0.57	-0.82	-1.06	-0.65	-0.65
St. Lucia	-3.74	-2.35	-0.10	0.55	-0.79	0.00	-0.04
St. Vincent and the Grenadines	-3.32	-0.36	-1.50	-0.42	-1.63	-2.22	-2.31
Sudan	-12.85	-12.98	-14.64	-14.98	-14.24	-12.93	-12.85
Suriname	-1.36	-1.92	-2.94	-2.99	-4.28	-4.07	-3.90
Swaziland	-16.81	-17.24	-14.65	-11.15	-23.55	-26.06	-25.87
Sweden	11.96	9.45	6.86	7.04	7.43	7.04	6.99
Switzerland	10.27	7.82	6.58	6.75	7.47	7.84	7.98
Syrian Arab Republic	-8.27	-6.03	-3.06	-0.24	1.12	0.46	-0.01
Tajikistan	-4.89	-5.17	-6.64	-7.63	-8.44	-7.41	-7.46
Tanzania	-17.39	-18.52	-18.39	-20.03	-22.24	-15.23	-13.87
Thailand	-5.80	-5.67	-4.69	-0.08	-1.30	-0.59	-0.53
Timor-Leste	-27.31	-25.67	-34.45	-22.02	-12.73	-8.46	-7.70
Togo	-20.77	-18.66	-16.57	-14.65	-18.67	-18.94	-18.57
Tonga	0.32	-0.31	-1.33	-0.91	-1.45	-2.23	-2.23
Trinidad and Tobago	1.62	-0.09	-1.82	-2.47	-3.62	-4.81	-4.90
Tunisia	-19.03	-14.06	-6.85	-0.19	0.39	0.19	0.38
Turkey	-15.66	-12.94	-10.19	-6.21	-2.22	-0.20	0.15

Country	1960	1970	1980	1990	2000	2010	2012
Turkmenistan	-6.58	-6.84	-8.02	-7.82	-8.31	-9.39	-9.40
Uganda	-17.06	-16.39	-19.44	-23.00	-24.10	-17.11	-16.07
Ukraine	7.26	5.04	-0.06	-0.36	-4.35	-4.13	-3.77
United Arab Emirates	-8.80	-3.30	-0.90	1.22	2.19	2.19	2.24
United Kingdom	10.08	6.77	4.80	5.38	5.53	5.99	6.78
United States	8.73	5.61	4.78	4.72	4.42	4.13	4.03
Uruguay	6.85	3.49	1.41	2.04	2.45	2.21	2.19
Uzbekistan	-2.16	-2.42	-3.61	-3.81	-5.27	-6.55	-6.61
Vanuatu	-14.55	-12.72	-10.34	-7.30	-4.66	-3.57	-3.31
Venezuela, RB	-1.51	-0.20	-0.66	0.61	0.23	-0.24	-0.23
Vietnam	-1.97	-5.46	-1.45	0.01	1.42	0.90	0.89
Virgin Islands (U.S.)	2.69	2.55	2.55	4.29	4.41	4.76	4.76
Yemen, Rep.	-28.66	-24.04	-18.32	-12.73	-11.76	-11.88	-11.81
Zambia	-15.93	-16.17	-17.73	-26.68	-30.43	-19.88	-17.69
Zimbabwe	-9.50	-10.30	-9.50	-11.36	-28.29	-20.82	-16.67

ANNEX 2: BURDEN OF GLOBAL HEALTH INEQUITY IN AVOIDABLE DEATHS

Major area, region, country or area *	1950-1955	1955-1960	1960-1965	1965-1970	1970-1975	1975-1980	1980-1985	1985-1990	1990-1995	1995-2000	2000-2005	2005-2010
Afghanistan	219743	220305	222948	237317	240998	207285	230362	163076	167342	187124	186797	174888
AFRICA	3883520	4054797	4219455	4516334	4738909	5119144	5376334	5830486	6758808	7535027	7907477	7767781
Albania	3595	2888	-368	-865	-936	-403	-975	-1438	351	32	-3207	-2894
Algeria	126529	115221	123138	133316	140836	136563	83990	50252	44211	40333	32602	41305
Angola	122338	108913	114809	118858	125159	137410	160597	185384	214530	228964	216805	227517
Antigua and Barbuda	5	8	15	-9	0	-3	23	6	2	18	-9	-9
Argentina	-29568	-28633	-25364	-7985	-7980	5831	-1459	4184	5961	7658	-3409	-3622
Armenia	-2490	-3082	-3682	-3993	-3897	-1663	-732	4053	6922	5500	2819	2110
Aruba (Not-ODA)	-45	-85	-98	-82	-80	-51	-59	-50	-35	-11	-22	-6
Asia	16897596	16943595	18131467	11290966	9594390	9412866	8877802	8544960	8315063	8304442	5723899	5379233
Australia	-40209	-38005	-36137	-25482	-24593	-21892	-28413	-31734	-35915	-40991	-56983	-63815
Australia/New Zealand	-50603	-47560	-45000	-31898	-30048	-25223	-32021	-35284	-41107	-46612	-65823	-73849
Austria	-20596	-17418	-18675	-10501	-8743	-3560	-4989	-9172	-10531	-12258	-18757	-21180
Azerbaijan	4687	4635	5060	4056	8676	12202	2907	15058	25058	19652	16243	13611
Bahamas	-75	-73	-95	-76	-22	57	75	96	151	236	78	123
Bahrain	1341	1222	793	376	-98	36	-289	-439	-455	-482	-887	-1271
Bangladesh	455082	508150	524436	918822	603177	700455	657664	590621	516936	431960	311463	259754
Barbados	130	134	224	200	69	234	193	160	104	137	75	69
BelarusÂ	-6622	-17037	-20844	-15588	-11037	-665	7084	6695	24268	47296	51202	45288
Belgium	-31617	-29675	-27311	-16197	-13447	-7059	-10291	-13817	-16003	-16267	-22263	-24900
Belize	173	128	106	90	59	99	26	15	126	248	188	189
Benin	50381	47893	45498	44467	46121	44729	45795	49974	50474	58389	60240	60495
Bhutan	4641	5062	5360	5777	5799	5785	5457	5099	4050	3156	2391	1903
Bolivia (Plurinational State of)	38345	42863	46297	50965	54728	51629	45074	40301	37422	36198	32079	30734
Bosnia and Herzegovina	254	2119	12296	6276	-1086	-595	-180	-100	18727	762	-51	736
BotswanaÂ	3290	3572	3791	4227	4003	4018	3783	3682	5846	13087	21006	26113
Brazil	283757	313225	319211	326746	315617	345211	331982	295985	273772	273576	205483	187663
Brunei Darussalam	-32	40	-89	-118	-140	-71	-181	-184	-228	-229	-398	-443
Bulgaria (Not-ODA)	-12910	-18341	-24570	-18861	-13858	-2509	2091	7495	13462	21262	16602	15882
Burkina Faso	99028	98509	98908	100420	101959	103556	94348	103047	119816	134984	137982	139551
Burundi	34948	38248	41263	45105	49357	52237	57459	67020	86001	82447	84057	92240
Cambodia	70263	95246	129767	399535	86542	82689	60746	76280	72226	66179	47601	33313
Cameroon	65191	69765	73442	79556	81798	86982	92617	104234	119331	144815	170465	185122
Canada (Not-ODA)	-70707	-70040	-70741	-57582	-52693	-41804	-50294	-55535	-57189	-57320	-77645	-82532
Cape Verde	1577	1209	1854	1891	1496	1689	2118	942	845	747	413	230
Caribbean	73404	66475	56781	49097	40856	49061	54077	54179	60147	62577	50114	44356
Central African Republic	27060	26263	27711	28218	26290	25417	27652	34883	43997	52494	56260	55256
Central America	265034	239807	221465	242916	224149	207615	169589	127930	91474	60946	-2923	-15044
CENTRAL ASIA	65366	65414	65229	68113	73241	97665	103290	112416	156851	190202	170488	181667
Chad	44945	49315	52915	57434	59737	66396	71498	80532	95803	112424	128989	141953
Channel Islands	-494	-444	-406	-318	-280	-173	-203	-209	-215	-215	-329	-372
Chile	15040	22141	22659	18521	11881	6726	-2020	-6207	-8977	-9544	-20079	-19996
China	6094887	6635471	8532723	2164237	738775	807839	787360	877419	833243	976983	-216208	-244637
China, Hong Kong SAR	-5308	-6428	-7968	-8425	-9299	-7987	-10404	-11505	-12174	-14222	-18994	-20913
China, Macao SAR	-57	-91	-296	-389	-415	-332	-375	-498	-566	-585	-789	-944
Colombia	68316	54399	51282	53905	49576	51886	34067	36925	46841	43999	28163	26679
ComorosÂ	2122	2406	2354	2496	2477	2786	3022	2958	3095	3437	3595	3841
Congo	8617	8317	8024	8708	9586	11383	12464	15086	20864	27491	30898	30937

Major area, region, country or area *	1950-1955	1955-1960	1960-1965	1965-1970	1970-1975	1975-1980	1980-1985	1985-1990	1990-1995	1995-2000	2000-2005	2005-2010
Costa Rica	1356	1186	637	-207	-1228	-1702	-3428	-3917	-3986	-3847	-5396	-5531
Côte d'Ivoire	61853	66502	68868	74796	75981	81973	87908	100115	128963	188396	225267	215878
Croatia	2782	744	-1031	-604	-592	44	3091	1886	3610	2360	1926	628
Cuba	-2311	-5040	-8273	-13816	-18274	-16319	-15686	-13360	-9357	-10006	-14577	-15693
Curaçao	-122	-184	-172	-186	-178	-137	-157	-137	-96	-20	-54	-97
Cyprus	-2070	-1907	-1975	-2111	-1769	-1381	-1433	-1492	-1518	-1475	-1894	-1909
Czech Republic	-27228	-26793	-23582	-9637	-1009	6787	13098	13472	11445	7035	-583	-6131
Dem. People's Republic of Korea	29486	70952	142841	73516	53583	21553	20741	18122	13453	89292	59813	71140
Democratic Republic of the Congo	377883	263451	179171	201441	230940	284947	334294	439972	535827	692117	707871	782712
Denmark	-23455	-20921	-19439	-15062	-14001	-9209	-7015	-5408	-3556	-2923	-6883	-8869
Djibouti	742	839	966	1294	1497	2040	2820	3201	4320	4633	4758	4742
Dominican Republic	25380	25054	22752	20392	16448	15815	14559	12777	11118	12103	9685	9971
Eastern Africa	1160088	1223695	1272600	1384699	1502486	1714223	1941672	2182008	2678781	2768567	2747019	2448987
Eastern Asia	6233880	6684470	8516846	2078436	529237	595616	512680	523685	452260	642036	-750887	-831180
Eastern Europe	-156827	-423083	-541106	-314127	-161049	232399	450176	441114	897452	1217494	1331891	1142578
Ecuador	25889	25902	24260	26719	25956	25773	19903	14844	10471	6746	-1248	-1181
Egypt	336328	296609	288873	294524	299736	273449	237551	180018	154970	128282	113157	125748
El Salvador	21336	20466	19869	20516	21512	26224	28507	17669	9863	10172	7956	8390
Equatorial Guinea	4376	4213	4731	3438	4168	4477	3948	5056	5660	6396	7058	7302
Eritrea	36360	31995	28869	25450	23184	20704	27595	37855	35394	27950	25995	27410
Estonia	-2900	-2143	-3092	-2113	-1458	969	1846	1967	4640	4658	3370	2051
Ethiopia	368835	373418	367168	396045	442167	513711	613518	634232	682957	688838	612011	482915
EUROPE	-1270362	-1455017	-1591360	-1091537	-887130	-222726	-80472	-161715	311978	579014	384200	69239
Fiji	1405	1081	1129	1161	1149	1166	1430	1377	1445	1595	1534	1763
Finland	-12137	-10097	-7922	-3602	-4070	-2886	-5332	-4834	-5340	-6638	-10646	-12120
France	-153274	-150543	-159247	-119063	-122194	-90208	-100041	-113615	-118917	-121986	-160247	-171625
French Guiana	90	81	56	11	11	48	18	-15	-49	-74	-141	-144
French Polynesia	381	220	203	211	228	187	292	163	169	117	8	-83
Gabon	6926	6922	7217	6811	6142	5795	4991	4347	4901	6214	7576	7565
Gambia	8881	6526	7803	8925	8627	8598	8386	8724	9716	10397	10554	11222
Georgia	1163	-317	-2422	-803	1809	-2305	-2588	2066	4970	5863	3629	4455
Germany	-246843	-216282	-210434	-130678	-98413	-38200	-61059	-90829	-95968	-116880	-188507	-216469
Ghana	58642	65014	71382	79345	85239	92454	98154	99824	97781	120694	130943	127974
Greece	-23480	-19501	-21490	-18188	-18249	-13394	-16902	-18386	-23185	-22144	-29623	-28712
Grenada	85	87	124	90	84	139	134	115	161	167	123	111
Guadeloupe	668	412	363	122	-36	7	-75	-176	-277	-358	-621	-717
Guam	69	59	38	17	-19	-3	-29	-42	-47	-62	-156	-176
Guatemala	39780	43140	44297	44840	41394	43830	42667	38449	34172	29582	21250	20996
Guinea	79488	82425	83927	74788	71352	68208	81167	75495	80600	92933	98858	91524
Guinea-Bissau	8092	7800	7712	7953	10835	11345	12019	12446	12940	13656	14133	14875
Guyana	216	737	966	1474	2020	2717	2561	2570	2719	2875	2833	2580
Haiti	50872	51892	52613	49994	50245	54655	59454	57708	57011	56674	54772	50082
Honduras	20423	21380	20080	20986	21655	19157	15650	11587	10337	8988	6841	6954
Hungary	-20593	-23551	-24320	-13144	-8070	9606	21083	24153	29698	27896	19316	15930
Iceland	-941	-924	-916	-740	-663	-625	-586	-598	-604	-583	-802	-847
India	6530623	6267018	5838170	5461099	5000700	4764246	4675998	4773335	4871604	4760898	4195630	4012986
Indonesia	1095777	1036888	938583	866258	760214	720480	637749	561686	510520	479216	396518	374563
Iran (Islamic Republic of)	268334	257639	215817	231996	260989	267202	362530	240116	109146	89023	49811	42304
Iraq	103967	72228	57158	45955	38437	39921	62130	34453	15482	21481	24470	52317
Ireland	-9562	-4446	-2605	-2292	-8770	-9068	-5859	-2407	-2724	-2522	-6329	-8574

Major area, region, country or area *	1950-1955	1955-1960	1960-1965	1965-1970	1970-1975	1975-1980	1980-1985	1985-1990	1990-1995	1995-2000	2000-2005	2005-2010
Israel	-7035	-7530	-7789	-7033	-7242	-6082	-6704	-7188	-8030	-9426	-13419	-15306
Italy	-169428	-155898	-155031	-123641	-128357	-88510	-97020	-115499	-120810	-132899	-185522	-204107
Jamaica	435	-224	-1984	-1671	-1914	-972	-742	235	1799	2880	2556	2301
Japan	-136017	-166640	-200920	-213975	-266360	-274024	-319866	-366815	-376092	-390369	-493396	-519217
Jordan	4696	5317	5297	5279	4335	3319	2404	1488	1527	2085	429	848
Kazakhstan	18535	17196	18415	18471	19586	28161	28770	27922	49049	78890	67665	66566
Kenya	77611	85112	84709	90133	91451	99101	98652	118381	155073	241054	288612	263753
Kiribati	346	307	318	289	331	356	340	329	323	285	229	219
Kuwait	663	435	254	173	-350	-580	-1278	-2132	-1935	-1294	-2033	-1818
Kyrgyzstan	8174	7717	7424	7308	7528	9477	10808	10498	12158	12942	12895	15306
Lao People's Democratic Republic	24516	22008	26685	29766	32347	35455	37189	38011	34418	27861	20192	17923
LATIN AMERICA AND THE CARIBBEAN	829590	835897	816615	866378	802751	836421	729874	636617	579997	540579	318330	276301
Latvia	-4430	-5900	-6514	-4265	-2266	2199	3598	3414	9133	8944	6731	6596
Least developed países	3492591	3626468	3773366	4027358	4541049	4917448	4827702	5031478	5590883	5726267	5462653	5202134
Lebanon	-1053	-1353	-1396	-543	-429	1120	1488	1416	1164	59	-3307	-6329
Lesotho	8562	8406	8213	9583	10371	10812	10037	9699	8538	16249	26812	25380
Less developed regions	21784461	22037358	23403396	16920042	15433781	15673497	15331851	15410958	16063288	16806140	14476682	13975915
Less developed regions, excluding China	15693373	15418564	14893436	14777665	14723431	14889020	14572196	14563064	15258063	15856898	14740557	14271685
Less developed regions, excluding least developed countries	18291870	18410890	19630030	12892684	10892732	10756050	10504149	10379480	10472405	11079873	9014029	8773780
Liberia	25830	21940	19677	24178	25188	26381	27928	29520	28176	26434	30716	24339
Libya	22824	21322	17286	13382	9834	7935	5326	3884	2978	2392	-274	-1084
Lithuania	-8827	-3895	-6486	-7309	-5584	-1206	968	1275	6962	8436	7091	9557
Luxembourg	-694	-600	-713	-316	-178	28	-177	-356	-485	-533	-865	-995
Madagascar	73122	77926	81295	86285	90277	98517	99888	119676	122679	111108	93016	88734
Malawi	51806	58612	66327	76958	83427	98273	107884	119989	137241	152514	154206	138755
Malaysia	14675	10950	2651	4911	870	3942	2054	-25	647	2155	-5531	853
Maldives	1452	1899	1457	1769	1764	1566	1324	1181	863	564	111	-152
Mali	136554	147442	139324	133394	147679	139900	129428	122745	124762	138293	140542	146830
Malta	-1022	-684	-609	-400	-393	-287	-397	-466	-486	-496	-691	-823
Martinique	535	281	68	27	-145	-162	-239	-369	-472	-558	-821	-908
Mauritania	10078	10623	10533	11011	11442	12206	11642	11992	13246	15306	16707	18808
Mauritius	970	1438	2523	660	679	1088	690	1043	1122	1388	1135	1141
Mayotte	-4	69	143	119	90	37	28	-23	-50	-65	-141	-177
Melanesia	26377	29820	33361	34841	36077	30737	29251	30601	31916	34490	32909	32870
Mexico	134504	163841	117860	138386	125411	101908	68593	49502	31399	8006	-37367	-48648
Micronesia	630	576	509	561	546	634	657	669	673	574	295	229
Micronesia (Fed. States of)	94	97	102	119	102	104	139	169	200	230	201	190
Middle Africa	598192	482512	444791	524082	571594	671444	752091	869982	1041442	1271510	1326513	1438945
Mongolia	8818	9532	8992	8754	8471	10294	11630	11044	10141	9413	7512	7508
Montenegro	-54	-163	-663	-681	-981	-760	-780	-664	-508	-274	467	508
More developed regions	-2233552	-2392825	-2498285	-1777495	-1577463	-865829	-818051	-932768	-452506	-189436	-640867	-1024814
Morocco	94538	111020	117400	119585	117892	120548	98221	71732	55607	51527	44113	46901
Mozambique	150951	153512	156669	165782	170657	183653	204720	217363	226766	233508	254188	274802
Myanmar	325837	280010	270486	224252	223047	236897	235276	222990	212761	209358	185966	184563
Namibia	6028	5767	5567	5713	5774	5936	5563	5779	6749	10256	16121	10918
Nepal	151227	143376	155914	163697	168366	172582	164644	150415	130204	115016	91268	76171
Netherlands	-62566	-56976	-55150	-43657	-39348	-30419	-31249	-30337	-28138	-26122	-34637	-41989
New Caledonia	326	251	199	191	136	134	84	42	21	-6	-104	-163

Major area, region, country or area *	1950-1955	1955-1960	1960-1965	1965-1970	1970-1975	1975-1980	1980-1985	1985-1990	1990-1995	1995-2000	2000-2005	2005-2010
New Zealand	-10395	-9555	-8863	-5455	-6416	-3330	-3608	-3550	-5193	-5621	-8839	-10034
Nicaragua	17474	18011	17099	16944	16505	18177	18143	15411	10340	8369	5192	3964
Niger	90109	62099	50522	74882	103582	116878	124719	139633	147972	148727	141013	97573
Nigeria	795717	758635	815964	871388	921202	998258	1068332	1245744	1443761	1643421	1738161	1714396
Northern Africa	675703	671150	672779	684112	685855	668840	565321	460887	432285	412886	371867	392705
NORTHERN AMERICA	-776569	-723608	-661005	-440086	-393925	-343856	-385692	-368954	-347285	-331469	-465848	-500987
Northern Europe	-322983	-286758	-270406	-202487	-173676	-89736	-96477	-97075	-88916	-92151	-162590	-191713
Norway	-21604	-19607	-17977	-14586	-13495	-10125	-9869	-8056	-8129	-8585	-11205	-12604
OCEANIA	-12866	-11131	-10061	491	1322	5819	-4046	-3203	-7779	-10889	-32242	-40466
Oman	8458	7840	7275	7005	6667	6193	4863	3271	1799	828	-733	-1497
Other non-specified areas	1566	-10159	-14042	-13503	-18712	-15043	-16926	-17522	-15278	-12934	-27884	-29277
Pakistan	422366	482409	549917	413512	417293	452862	499976	548473	554773	562061	469874	486650
Panama	993	992	610	691	73	-79	-570	-786	-777	-571	-1587	-1359
Papua New Guinea	23133	26009	26889	30598	33246	31967	27849	26677	28028	30647	29766	29703
Paraguay	-2931	-1584	-1027	456	744	3084	4347	5594	6368	7291	5186	5481
Peru	85978	93407	95180	99432	84272	81685	67428	57394	48293	37158	17228	13332
Philippines	42913	51881	61361	75654	81525	130863	138073	129093	144546	166644	163163	187441
Poland	-25605	-60220	-71554	-52423	-42460	-6689	4682	26807	45201	40858	11211	9781
Polynesia	1151	1027	1002	1021	1005	1157	941	810	739	660	377	283
Portugal	-7119	-4583	-6961	-2873	-6875	-3671	-8612	-10500	-8978	-9968	-17826	-20683
Puerto Rico	-5458	-7014	-7052	-6232	-5911	-5478	-4820	-4400	-1945	-1396	-3600	-3771
Qatar	83	66	26	-38	-169	-232	-451	-766	-813	-816	-1359	-2281
Republic of Korea	127150	149269	87698	127862	47290	53316	40520	13441	-467	-15542	-60941	-94840
Republic of Moldova	2685	1815	1468	2244	3909	8713	12862	9991	13352	18142	17544	17597
Réunion	2123	1445	1031	663	253	273	121	-48	-179	-268	-652	-805
Romania	-15222	-15114	-41871	-12606	-21126	971	12543	27212	41160	57129	41648	32295
Russian Federation	6013	-161945	-208760	-101741	-6469	194946	298759	257202	560402	757410	928373	764701
Rwanda	33214	38740	42594	46913	56610	67635	67327	95060	265568	92547	94302	58348
Saint Lucia	183	493	468	258	109	103	38	-2	68	148	108	32
Saint Vincent and the Grenadines	343	79	37	177	345	102	56	47	68	120	122	125
Samoa	663	687	667	681	689	668	577	483	383	320	201	188
Sao Tome and Principe	508	498	552	347	365	330	442	490	531	596	589	581
Saudi Arabia	41441	44485	47089	48796	41609	34114	24598	15605	7125	3951	-9074	-14701
Senegal	72859	47495	52132	59236	77285	70066	61835	53282	56728	68765	66245	57849
Serbia	1623	-1444	-5910	-5559	-5936	546	2129	4350	6744	15909	16610	15104
Seychelles	59	59	16	32	-9	-2	-5	21	48	68	63	94
Sierra Leone	49061	52034	55873	59935	56380	57507	61760	75433	91085	90052	87654	84662
Singapore	-3889	-2908	-1242	-2339	-2032	-1401	-2592	-3429	-4825	-5431	-8472	-10807
Slovakia	-9571	-13132	-14022	-8455	-4882	-421	1972	4247	5624	6097	3938	3597
Slovenia	-3138	-3156	-3053	-1236	-1071	-157	573	-52	58	-346	-1838	-3305
Solomon Islands	761	829	856	952	1050	1101	1248	2022	1966	1830	1427	1326
Somalia	46182	48805	51105	54342	56931	74406	85693	87339	100116	86833	88737	92719
South Africa	137011	133685	138883	149472	165320	148731	152612	136872	141867	242029	440670	517130
South America	491152	529615	538369	574366	537746	579745	506209	454508	428375	417056	271139	246989
South Sudan	80722	70052	70543	72934	76912	86595	97133	98847	84657	79257	82910	90261
South-Central Asia	8258416	7983287	7508486	7214164	7059770	6660332	6679998	6596863	6527815	6374875	5482552	5245284
South-Eastern Asia	1453780	1407970	1378784	1299943	1338829	1532077	1186129	1066674	951757	910602	948814	935855
Southern Africa	129962	132277	146706	174715	159950	157553	164080	155774	157573	276683	524727	600177
Southern Asia	8193050	7917873	7443257	7146051	6986529	6562667	6576708	6484446	6370964	6184674	5312063	5063616
Southern Europe	-253648	-253811	-287965	-236840	-251541	-180558	-210352	-230235	-209739	-234384	-336807	-378868

Major area, region, country or area *	1950-1955	1955-1960	1960-1965	1965-1970	1970-1975	1975-1980	1980-1985	1985-1990	1990-1995	1995-2000	2000-2005	2005-2010
Spain	-69329	-78632	-95376	-84566	-86744	-75435	-91728	-89266	-86051	-88420	-117562	-136304
Sri Lanka	1830	8470	4669	11175	21008	13599	9023	12130	16045	34872	4718	9112
State of Palestine	5715	4989	3542	7328	7680	8680	8439	2602	2583	2294	1292	1504
Sub-Saharan Africa	3207816	3383647	3546676	3832221	4053053	4450304	4811013	5369598	6326523	7122141	7535610	7375076
Sudan	57780	62052	67395	76022	83604	103408	123447	143188	168640	187804	183854	180338
Suriname	477	530	388	302	384	297	497	548	707	990	1033	958
Swaziland	3539	3868	4271	4788	4799	4926	4650	4685	5027	8471	13053	13141
Sweden	-40290	-36782	-36465	-30938	-29858	-21520	-22563	-22703	-22522	-22675	-26915	-28699
Switzerland	-21224	-19733	-20215	-17549	-18421	-15306	-15886	-17262	-16645	-17758	-22816	-25388
Syrian Arab Republic	26919	26607	25882	24899	19345	16281	10101	5614	2176	1285	-6706	-8622
Tajikistan	8796	9881	9487	11201	12571	14858	18032	21576	26975	26643	20774	20500
TFYR Macedonia	-45	-777	595	1848	3156	-117	658	138	1044	1365	881	1359
Thailand	98190	109250	102471	115430	98894	101862	77008	22520	38746	71894	59562	42402
Timor-Leste	10699	10569	10164	14399	10907	10563	10576	9115	8853	6489	4348	3698
Togo	25283	24712	26492	23389	24440	25959	26213	27982	31416	40785	44996	49684
Tonga	-43	-4	-10	-7	-8	55	56	57	88	111	92	101
Trinidad and Tobago	292	53	-346	31	503	1075	1369	1647	1983	2530	2537	2999
Tunisia	50201	55029	54584	46267	32902	25608	15305	10558	4683	1419	-2629	-1591
Turkey	313790	326664	303332	280027	261229	244899	203895	162303	132531	96898	36296	16030
Turkmenistan	8134	7733	8373	8260	8883	10671	11487	12909	15114	15173	15352	16780
Uganda	75931	80498	84114	90293	104011	129838	157000	198574	259091	300769	277668	255639
Ukraine	-47775	-88765	-113050	-83916	-56048	21659	76002	63840	152840	234370	242640	243637
United Arab Emirates	816	676	599	489	359	98	-655	-1459	-2039	-2633	-5122	-7897
United Kingdom	-203577	-173219	-159686	-117346	-97198	-44588	-54434	-59257	-66321	-69804	-116362	-137520
United Republic of Tanzania	100242	114775	132570	152079	165711	182487	207963	243275	311377	363057	355811	307942
United States of America	-705832	-653541	-590186	-382444	-341192	-302107	-335473	-313507	-290214	-274290	-388273	-418525
United States Virgin Islands	0	-23	-45	-34	-91	-89	-72	-90	-97	-115	-165	-165
Uruguay	-7108	-5965	-6213	-3795	-2265	-394	-674	-4	234	117	-1510	-1859
Uzbekistan	21728	22887	21530	22874	24672	34497	34193	39512	53556	56554	53802	62515
Vanuatu	614	632	628	597	579	577	507	483	456	424	285	241
Venezuela (Bolivarian Republic of)	12757	12745	10771	7532	2713	5023	4488	2390	4618	10072	5528	6372
Viet Nam	89381	72292	50151	61699	205357	68964	57346	49458	38983	24606	-2446	8457
Western Africa	1589269	1444507	1522142	1702886	1774816	1873626	1943744	2156892	2438274	2791973	2944415	2894462
Western Asia	646275	612153	562215	519298	465371	445993	405753	318898	278341	238789	131732	123167
Western Europe	-536904	-491366	-491882	-338082	-300864	-184831	-223819	-275520	-286819	-311945	-448294	-502757
Western Sahara	314	478	711	1016	1052	1329	1482	1256	1196	1128	1045	1088
WORLD	22378571	22359125	23681287	17540402	15953937	16333040	16360286	16561451	17603116	18591914	17428328	16821851
Yemen	143219	127728	118033	111220	100893	97223	90264	84445	91792	95020	91088	93921
Zambia	28613	32069	35782	41189	43728	51684	65855	95491	132401	161862	155454	128531
Zimbabwe	19675	22491	25450	29837	33343	37876	35574	41755	71103	137629	171295	138102

ANNEX 3: BURDEN OF GLOBAL HEALTH INEQUITY IN PROPORTION OF DEATHS WHICH ARE AVOIDABLE BY GHE

Country	1950-1955	1955-1960	1960-1965	1965-1970	1970-1975	1975-1980	1980-1985	1985-1990	1990-1995	1995-2000	2000-2005	2005-2010
AFGHANISTAN	74.30%	75.80%	76.30%	77.70%	79.60%	79.90%	77.50%	79.50%	77.70%	77.00%	73.70%	71.50%
AFRICA	61.50%	63.20%	64.00%	66.10%	66.60%	69.10%	69.30%	70.50%	73.10%	75.00%	73.40%	72.30%
Albania	20.00%	16.30%	-2.50%	-6.50%	-6.70%	-2.80%	-7.10%	-10.30%	2.30%	0.20%	-25.30%	-21.40%
Algeria	56.10%	54.20%	55.50%	58.10%	58.80%	59.20%	46.40%	33.80%	31.00%	29.10%	22.30%	24.90%
Angola	76.20%	71.20%	73.20%	74.50%	76.80%	79.30%	81.00%	82.70%	84.50%	85.20%	82.40%	82.20%
Antigua and Barbuda	1.10%	1.80%	4.10%	-2.20%	0.10%	-0.70%	6.40%	1.70%	0.70%	5.40%	-2.60%	-2.80%
Argentina	-19.80%	-18.70%	-15.40%	-4.50%	-4.30%	3.00%	-0.80%	2.10%	3.00%	3.90%	-1.70%	-1.80%
Armenia	-17.10%	-20.70%	-25.20%	-31.40%	-30.70%	-11.40%	-4.50%	18.90%	29.40%	25.70%	14.20%	11.50%
Aruba (Not-ODA)	-13.20%	-26.90%	-31.50%	-27.40%	-27.00%	-17.10%	-19.70%	-16.40%	-10.40%	-2.70%	-4.80%	-1.10%
Asia	52.80%	53.80%	55.90%	44.80%	40.10%	41.00%	38.80%	37.00%	36.10%	36.00%	25.60%	23.80%
Australia	-63.20%	-57.00%	-50.20%	-32.00%	-29.70%	-27.50%	-36.60%	-39.90%	-46.30%	-55.00%	-81.00%	-95.10%
Australia/New Zealand	-64.40%	-57.90%	-51.10%	-33.00%	-29.70%	-25.70%	-33.30%	-35.90%	-43.40%	-51.00%	-76.60%	-89.90%
Austria	-29.70%	-25.20%	-27.40%	-14.90%	-12.60%	-5.50%	-8.40%	-18.00%	-23.20%	-28.50%	-46.70%	-58.20%
Azerbaijan	11.80%	10.80%	11.30%	10.20%	22.10%	28.20%	8.00%	32.20%	44.60%	39.30%	32.30%	27.90%
Bahamas	-9.60%	-9.10%	-11.00%	-8.20%	-2.20%	5.50%	6.80%	8.30%	12.20%	17.60%	5.60%	7.80%
Bahrain	52.40%	49.40%	39.00%	23.80%	-7.30%	2.60%	-20.50%	-31.80%	-32.80%	-33.00%	-54.20%	-62.30%
Bangladesh	52.10%	54.90%	54.90%	67.70%	58.30%	62.80%	60.40%	57.40%	53.90%	49.30%	38.30%	34.10%
Barbados	5.70%	6.40%	8.90%	7.80%	3.50%	11.70%	10.20%	9.20%	6.40%	8.40%	4.60%	4.30%
BelarusÂ	-8.10%	-25.30%	-34.70%	-27.10%	-18.00%	-1.00%	9.30%	9.10%	27.60%	43.30%	44.30%	43.00%
Belgium	-37.40%	-36.30%	-32.80%	-18.90%	-15.80%	-8.80%	-14.00%	-21.00%	-26.80%	-27.50%	-39.00%	-47.90%
Belize	17.70%	13.10%	11.10%	9.80%	6.60%	11.80%	3.30%	1.90%	14.40%	24.70%	17.80%	17.40%
Benin	72.20%	71.40%	68.80%	65.50%	63.10%	66.90%	68.80%	71.90%	71.50%	74.00%	71.70%	70.70%
Bhutan	72.10%	74.70%	75.40%	76.90%	75.70%	75.40%	73.00%	70.80%	67.10%	63.10%	52.40%	44.80%
Bolivia (Plurinational State of)	56.70%	60.30%	62.30%	65.30%	66.40%	66.40%	62.80%	59.50%	57.10%	55.90%	49.70%	48.00%
Bosnia and Herzegovina	1.00%	7.60%	30.20%	18.80%	-4.70%	-2.70%	-0.80%	-0.40%	47.50%	3.70%	-0.20%	2.80%
BotswanaÂ	41.40%	43.50%	45.80%	49.70%	47.70%	48.10%	45.10%	43.70%	54.40%	72.50%	79.10%	82.60%
Brazil	32.80%	34.60%	34.10%	35.00%	33.80%	36.70%	34.80%	31.90%	30.10%	29.60%	21.60%	19.50%
Brunei Darussalam	-4.70%	6.10%	-12.80%	-17.00%	-18.50%	-8.90%	-25.10%	-24.70%	-31.50%	-30.80%	-51.50%	-51.10%
Bulgaria (Not-ODA)	-19.20%	-31.70%	-46.70%	-33.70%	-21.90%	-3.60%	2.80%	9.70%	17.20%	25.70%	21.00%	21.50%
Burkina Faso	72.00%	70.70%	72.50%	73.70%	74.00%	75.50%	73.30%	75.00%	77.80%	80.10%	78.60%	78.30%
Burundi	58.70%	61.80%	64.30%	67.30%	69.50%	72.20%	73.40%	75.80%	80.40%	80.80%	79.40%	79.80%
Cambodia	60.20%	69.00%	75.90%	92.40%	73.00%	64.50%	56.30%	68.30%	66.20%	64.00%	52.90%	42.40%
Cameroon	58.10%	60.80%	61.80%	63.90%	63.70%	65.80%	66.20%	68.20%	70.70%	74.60%	75.30%	76.40%
Canada (Not-ODA)	-69.10%	-65.60%	-64.50%	-51.70%	-45.30%	-34.60%	-41.60%	-44.80%	-45.40%	-44.80%	-62.10%	-65.30%
Cape Verde	48.10%	42.30%	49.60%	48.60%	40.90%	44.30%	53.20%	37.20%	35.60%	33.40%	19.80%	12.10%
Caribbean	28.80%	27.30%	23.80%	21.80%	18.90%	23.00%	24.30%	24.10%	26.30%	27.30%	21.60%	19.40%
Central African Republic	66.60%	64.30%	67.70%	69.10%	67.50%	68.10%	69.10%	73.70%	78.10%	81.20%	81.00%	81.00%
Central America	38.40%	35.50%	33.00%	35.10%	32.40%	31.70%	27.30%	21.90%	16.40%	11.30%	-0.50%	-2.80%
CENTRAL ASIA	24.10%	22.50%	21.30%	22.80%	24.20%	31.20%	32.20%	34.20%	42.90%	49.10%	44.70%	46.40%
Chad	61.80%	64.90%	67.10%	70.10%	70.70%	74.10%	75.50%	77.40%	79.90%	82.20%	81.90%	82.60%
Channel Islands	-53.50%	-48.50%	-42.50%	-32.90%	-28.40%	-17.80%	-21.90%	-23.40%	-26.10%	-27.60%	-45.10%	-53.10%
Chile	18.40%	24.80%	24.60%	21.90%	15.50%	10.20%	-3.40%	-10.90%	-16.10%	-16.80%	-36.50%	-33.70%
China	49.80%	53.40%	60.90%	28.70%	11.70%	13.50%	12.90%	13.50%	12.80%	14.80%	-3.60%	-3.90%
China, Hong Kong SAR	-33.30%	-38.00%	-46.00%	-48.50%	-54.60%	-42.00%	-51.50%	-52.00%	-53.80%	-62.10%	-81.50%	-93.50%
China, Macao SAR	-3.20%	-5.80%	-21.10%	-29.10%	-31.00%	-27.00%	-29.80%	-39.70%	-45.10%	-44.90%	-58.70%	-67.90%
Colombia	33.80%	29.00%	27.40%	28.70%	26.90%	29.10%	20.70%	21.60%	25.60%	24.10%	15.10%	13.80%
ComorosÂ	56.10%	60.30%	59.10%	62.50%	62.20%	65.30%	65.60%	65.00%	66.30%	68.60%	66.40%	67.10%
Congo	49.90%	49.30%	47.70%	49.70%	50.90%	55.90%	57.10%	61.30%	68.20%	73.60%	73.30%	72.60%

Country	1950-1955	1955-1960	1960-1965	1965-1970	1970-1975	1975-1980	1980-1985	1985-1990	1990-1995	1995-2000	2000-2005	2005-2010
Costa Rica	10.30%	8.80%	4.70%	-1.70%	-11.10%	-17.00%	-37.40%	-41.50%	-40.50%	-37.10%	-48.10%	-44.70%
Côte d'Ivoire	69.80%	71.10%	70.00%	70.20%	67.90%	68.40%	67.40%	68.50%	72.50%	78.80%	79.90%	79.30%
Croatia	7.80%	2.10%	-2.80%	-1.40%	-1.50%	0.10%	8.50%	5.40%	10.00%	6.90%	5.40%	1.90%
Cuba	-3.80%	-8.90%	-14.50%	-26.90%	-38.70%	-36.70%	-34.90%	-28.20%	-18.70%	-20.80%	-30.00%	-32.10%
Curaçao	-11.40%	-19.20%	-21.90%	-21.70%	-23.50%	-20.00%	-24.30%	-21.00%	-14.30%	-2.80%	-7.50%	-13.20%
Cyprus	-56.70%	-53.10%	-59.70%	-69.90%	-50.30%	-40.80%	-43.70%	-46.10%	-46.30%	-42.70%	-51.30%	-47.50%
Czech Republic	-33.00%	-34.80%	-29.80%	-10.90%	-1.00%	7.00%	13.40%	14.90%	14.10%	9.40%	-0.80%	-9.60%
Dem. People's Republic of Korea	24.80%	44.70%	61.10%	46.20%	38.50%	21.50%	20.70%	17.60%	12.90%	48.50%	35.90%	38.90%
Democratic Republic of the Congo	74.70%	68.40%	58.00%	62.20%	65.30%	69.20%	73.20%	76.90%	79.30%	83.00%	81.50%	82.40%
Denmark	-77.70%	-68.40%	-59.40%	-43.60%	-39.70%	-25.80%	-19.10%	-14.80%	-10.00%	-8.60%	-22.10%	-30.70%
Djibouti	54.50%	58.00%	57.00%	59.20%	57.00%	59.20%	62.80%	62.00%	66.40%	68.30%	66.40%	65.60%
Dominican Republic	49.10%	48.00%	44.90%	42.70%	37.10%	37.30%	34.30%	30.40%	26.80%	28.00%	21.40%	21.30%
Eastern Africa	61.80%	63.80%	64.60%	66.80%	67.80%	71.10%	72.80%	74.60%	78.00%	78.40%	75.70%	72.80%
Eastern Asia	45.80%	49.00%	56.10%	24.10%	7.20%	8.60%	7.30%	7.10%	6.00%	8.40%	-10.60%	-11.30%
Eastern Europe	-7.00%	-22.00%	-30.70%	-16.70%	-7.70%	9.80%	17.30%	17.40%	31.40%	39.30%	40.40%	38.00%
Ecuador	38.50%	38.60%	36.90%	39.80%	38.70%	39.80%	33.10%	26.30%	19.60%	13.20%	-2.50%	-2.20%
Egypt	58.80%	55.50%	53.90%	54.70%	54.80%	53.80%	49.30%	41.90%	38.20%	34.00%	29.00%	30.70%
El Salvador	46.80%	46.00%	44.80%	46.10%	47.00%	53.60%	55.80%	44.40%	30.80%	31.80%	25.70%	27.20%
Equatorial Guinea	64.80%	62.20%	69.40%	71.40%	69.50%	66.50%	73.40%	75.50%	76.90%	79.00%	78.50%	78.20%
Eritrea	77.90%	76.50%	73.90%	70.90%	68.20%	63.50%	73.40%	78.10%	77.40%	73.80%	68.10%	66.80%
Estonia	-28.60%	-18.60%	-31.00%	-20.20%	-12.90%	7.60%	14.00%	15.30%	31.90%	33.70%	26.20%	18.40%
Ethiopia	66.00%	67.80%	67.50%	69.40%	70.90%	74.60%	77.30%	77.30%	77.60%	77.40%	72.60%	66.80%
EUROPE	-24.30%	-30.20%	-34.20%	-22.50%	-17.50%	-4.20%	-1.50%	-3.20%	5.90%	10.60%	6.90%	1.40%
Fiji	32.60%	25.70%	26.60%	27.30%	28.00%	28.40%	33.90%	32.50%	34.50%	37.40%	33.70%	36.00%
Finland	-35.40%	-30.80%	-23.20%	-10.00%	-11.40%	-8.40%	-16.50%	-15.00%	-17.50%	-23.10%	-39.20%	-46.80%
France	-36.50%	-38.70%	-42.10%	-30.60%	-32.10%	-24.70%	-29.30%	-36.80%	-42.20%	-43.40%	-58.40%	-68.20%
French Guiana	22.60%	20.50%	14.20%	3.30%	3.10%	12.30%	4.60%	-3.40%	-10.70%	-15.50%	-26.00%	-23.50%
French Polynesia	38.70%	25.80%	23.30%	23.70%	24.60%	20.50%	30.00%	17.30%	17.50%	12.50%	0.80%	-8.40%
Gabon	55.70%	57.80%	59.50%	59.20%	56.40%	56.50%	52.20%	48.20%	50.90%	56.80%	59.20%	58.80%
Gambia	75.50%	70.40%	73.80%	75.90%	74.30%	74.60%	72.80%	72.30%	73.40%	74.30%	71.80%	72.20%
Georgia	2.50%	-0.70%	-6.00%	-2.50%	5.10%	-6.90%	-7.40%	5.70%	13.50%	16.70%	10.80%	13.60%
Germany	-38.40%	-33.10%	-31.40%	-18.50%	-13.80%	-5.60%	-9.80%	-16.40%	-18.90%	-24.00%	-40.10%	-49.50%
Ghana	53.20%	56.10%	57.10%	59.90%	61.20%	64.70%	65.40%	64.80%	63.50%	67.80%	66.40%	64.70%
Greece	-39.60%	-31.40%	-35.40%	-29.30%	-28.10%	-20.20%	-26.30%	-30.00%	-42.40%	-39.00%	-51.90%	-50.40%
Grenada	12.40%	8.80%	12.80%	10.00%	11.10%	20.70%	20.50%	18.10%	24.60%	27.40%	21.80%	21.20%
Guadeloupe	21.70%	14.50%	13.00%	5.30%	-1.70%	0.30%	-4.10%	-9.50%	-15.20%	-19.90%	-34.60%	-40.30%
Guam	12.50%	11.30%	7.60%	3.70%	-4.30%	-0.80%	-6.20%	-8.30%	-8.70%	-11.10%	-29.10%	-33.30%
Guatemala	53.90%	56.50%	57.00%	57.70%	54.90%	57.20%	55.60%	52.60%	49.00%	44.90%	33.60%	32.50%
Guinea	77.50%	78.10%	76.20%	71.70%	69.30%	66.40%	74.90%	75.80%	74.80%	76.50%	76.10%	74.60%
Guinea-Bissau	62.40%	57.10%	58.50%	64.70%	70.30%	72.30%	74.30%	75.10%	76.10%	77.50%	76.20%	76.90%
Guyana	4.50%	13.70%	17.10%	24.30%	31.30%	41.50%	41.90%	44.20%	47.70%	51.50%	51.50%	52.60%
Haiti	61.50%	61.90%	61.30%	61.90%	62.10%	65.30%	66.40%	65.80%	66.00%	66.50%	63.60%	61.40%
Honduras	53.70%	55.70%	54.20%	54.70%	55.80%	53.00%	46.70%	38.50%	35.10%	31.60%	23.50%	23.20%
Hungary	-22.70%	-28.00%	-30.10%	-15.10%	-8.60%	9.30%	19.20%	23.00%	28.70%	28.20%	20.90%	18.80%
Iceland	-116.30%	-111.20%	-102.00%	-74.90%	-63.60%	-65.80%	-58.60%	-60.20%	-61.20%	-57.80%	-85.70%	-91.40%
India	63.00%	62.80%	61.40%	60.70%	58.20%	58.10%	56.70%	56.60%	56.90%	56.30%	50.00%	48.20%
Indonesia	59.20%	58.20%	55.50%	54.20%	50.70%	50.70%	47.00%	43.60%	41.10%	39.30%	32.20%	30.50%
Iran (Islamic Republic of)	57.50%	58.40%	54.10%	55.50%	57.40%	57.00%	64.10%	52.50%	33.50%	29.40%	16.70%	13.80%
Iraq	63.00%	54.00%	47.50%	40.60%	34.60%	36.40%	46.60%	32.80%	17.90%	23.00%	22.70%	37.80%
Ireland	-33.10%	-18.80%	-11.60%	-9.80%	-37.00%	-35.70%	-25.10%	-11.20%	-13.80%	-13.20%	-37.00%	-55.30%

Country	1950-1955	1955-1960	1960-1965	1965-1970	1970-1975	1975-1980	1980-1985	1985-1990	1990-1995	1995-2000	2000-2005	2005-2010
Israel	-83.70%	-75.90%	-65.30%	-49.90%	-43.70%	-32.90%	-35.30%	-38.50%	-41.50%	-46.20%	-66.00%	-75.40%
Italy	-45.00%	-42.10%	-41.00%	-32.00%	-33.60%	-23.20%	-26.40%	-34.00%	-38.30%	-44.00%	-65.70%	-79.10%
Jamaica	2.90%	-1.60%	-15.20%	-13.20%	-16.40%	-8.80%	-6.50%	1.90%	13.70%	20.90%	17.90%	16.70%
Japan	-18.70%	-27.00%	-34.90%	-38.60%	-48.50%	-52.90%	-63.10%	-73.80%	-73.20%	-72.50%	-90.80%	-95.60%
Jordan	43.70%	42.40%	38.40%	35.00%	27.80%	23.30%	16.90%	10.60%	10.20%	12.70%	2.60%	4.50%
Kazakhstan	19.00%	16.70%	16.60%	17.60%	18.80%	26.30%	26.70%	26.40%	40.20%	54.80%	50.50%	50.40%
Kenya	52.10%	54.00%	53.20%	54.80%	53.90%	56.30%	54.80%	58.50%	64.50%	73.70%	74.20%	71.40%
Kiribati	56.50%	52.70%	52.10%	49.00%	53.00%	55.50%	57.40%	54.30%	53.80%	51.90%	44.30%	42.50%
Kuwait	29.00%	19.30%	9.00%	4.50%	-7.60%	-12.00%	-26.60%	-46.80%	-46.30%	-27.40%	-34.70%	-25.70%
Kyrgyzstan	27.40%	25.70%	24.50%	25.30%	26.20%	32.60%	35.40%	34.80%	39.40%	41.90%	40.20%	46.20%
Lao People's Democratic Republic	59.40%	56.30%	61.30%	64.10%	65.10%	68.40%	69.20%	69.20%	66.60%	62.20%	52.30%	49.10%
LATIN AMERICA AND THE CARIBBEAN	31.20%	31.10%	29.90%	31.50%	29.40%	31.20%	27.80%	24.80%	22.90%	21.40%	12.40%	10.70%
Latvia	-22.20%	-34.40%	-39.70%	-24.00%	-11.30%	9.70%	15.50%	15.50%	34.90%	36.10%	29.30%	30.30%
Least developed países	62.80%	64.60%	65.50%	67.30%	69.40%	72.10%	71.10%	71.70%	73.30%	73.60%	70.00%	68.30%
Lebanon	-6.60%	-8.40%	-8.70%	-3.40%	-2.80%	7.20%	9.60%	9.50%	7.90%	0.40%	-24.00%	-48.40%
Lesotho	51.60%	52.80%	53.00%	57.90%	59.70%	62.10%	59.90%	59.40%	56.80%	72.30%	80.50%	80.70%
Less developed regions	54.00%	55.10%	56.80%	49.30%	46.40%	48.10%	46.70%	46.00%	46.70%	47.80%	41.10%	39.40%
Less developed regions, excluding China	56.10%	56.00%	54.90%	55.40%	54.80%	56.20%	54.80%	54.20%	55.00%	55.80%	50.80%	49.20%
Less developed regions, excluding least developed countries	52.60%	53.50%	55.40%	45.50%	40.70%	41.80%	40.40%	39.20%	39.20%	40.50%	32.90%	31.50%
Liberia	74.10%	71.20%	67.90%	73.20%	74.40%	74.90%	74.80%	76.90%	78.60%	76.40%	75.10%	69.40%
Libya	64.60%	62.40%	57.00%	50.10%	40.80%	35.50%	25.40%	19.20%	15.20%	12.30%	-1.40%	-5.70%
Lithuania	-46.80%	-14.60%	-30.00%	-36.90%	-25.40%	-4.90%	3.70%	5.00%	23.40%	27.60%	24.00%	32.10%
Luxembourg	-23.00%	-19.70%	-23.90%	-10.00%	-5.50%	0.90%	-6.20%	-13.90%	-20.90%	-23.50%	-39.30%	-47.00%
Madagascar	62.30%	63.70%	64.40%	66.20%	66.50%	69.30%	69.40%	72.90%	72.90%	70.40%	63.20%	61.30%
Malawi	62.90%	67.60%	70.60%	74.10%	74.60%	77.50%	78.40%	78.70%	79.70%	81.50%	79.70%	77.30%
Malaysia	17.00%	13.50%	3.80%	6.50%	1.30%	5.80%	2.90%	0.00%	0.90%	2.70%	-6.30%	0.90%
Maldives	66.40%	71.80%	67.80%	71.80%	70.40%	67.40%	62.00%	57.40%	49.30%	39.00%	9.90%	-16.50%
Mali	79.90%	80.00%	77.10%	74.40%	79.00%	79.20%	78.80%	78.10%	78.70%	80.80%	79.40%	79.70%
Malta	-39.70%	-27.50%	-27.30%	-19.60%	-20.10%	-14.90%	-20.90%	-25.80%	-27.80%	-27.80%	-36.30%	-41.10%
Martinique	17.40%	10.30%	2.70%	1.10%	-6.90%	-9.00%	-13.60%	-21.60%	-28.60%	-34.80%	-52.30%	-58.20%
Mauritania	60.60%	61.60%	60.40%	61.30%	61.10%	63.20%	61.00%	61.00%	62.60%	65.40%	63.80%	65.20%
Mauritius	17.80%	21.60%	32.20%	11.30%	12.50%	20.30%	13.30%	18.60%	19.40%	22.20%	17.40%	17.10%
Mayotte	-1.20%	20.10%	42.30%	34.40%	25.80%	11.40%	9.10%	-7.30%	-15.50%	-18.60%	-37.90%	-49.90%
Melanesia	57.20%	59.70%	62.40%	62.50%	61.30%	61.50%	60.20%	60.60%	61.30%	62.60%	57.80%	56.60%
Mexico	29.30%	34.20%	25.90%	29.10%	26.10%	23.20%	16.90%	12.70%	8.20%	2.20%	-10.10%	-13.10%
Micronesia	30.50%	27.90%	25.20%	27.50%	27.20%	31.30%	30.70%	29.40%	28.40%	25.40%	13.80%	11.10%
Micronesia (Fed. States of)	20.30%	20.20%	20.80%	23.60%	20.40%	22.20%	27.50%	31.10%	34.60%	39.30%	36.20%	36.60%
Middle Africa	69.30%	64.40%	61.30%	66.50%	68.90%	72.50%	74.00%	76.20%	78.70%	81.70%	80.40%	81.10%
Mongolia	51.00%	51.90%	48.80%	48.00%	46.70%	53.30%	56.20%	55.00%	54.30%	55.20%	48.20%	47.40%
Montenegro	-1.20%	-3.80%	-17.90%	-20.40%	-32.90%	-26.20%	-27.60%	-23.30%	-17.80%	-8.50%	10.60%	11.60%
More developed regions	-30.10%	-34.40%	-36.50%	-25.10%	-21.60%	-11.70%	-10.90%	-12.90%	-6.10%	-2.50%	-8.30%	-14.20%
Morocco	49.20%	51.70%	52.50%	54.00%	53.90%	56.60%	51.20%	43.30%	36.70%	34.50%	28.70%	29.70%
Mozambique	69.50%	71.00%	71.70%	73.50%	73.80%	76.10%	77.70%	79.80%	80.80%	80.90%	79.90%	80.60%
Myanmar	64.00%	60.50%	59.80%	55.80%	55.10%	57.90%	57.20%	56.00%	55.20%	55.10%	49.90%	49.70%
Namibia	53.10%	52.90%	52.10%	53.20%	52.30%	54.00%	52.40%	52.50%	54.90%	64.50%	72.10%	64.10%
Nepal	66.90%	65.30%	67.40%	69.20%	69.40%	71.00%	69.30%	67.10%	63.40%	60.10%	50.80%	45.60%
Netherlands	-104.20%	-91.70%	-82.80%	-60.00%	-51.70%	-40.40%	-41.90%	-40.40%	-37.30%	-34.30%	-46.50%	-61.60%
New Caledonia	33.10%	28.30%	22.80%	21.80%	15.30%	15.30%	9.90%	5.10%	2.60%	-0.70%	-11.40%	-16.40%

Country	1950-1955	1955-1960	1960-1965	1965-1970	1970-1975	1975-1980	1980-1985	1985-1990	1990-1995	1995-2000	2000-2005	2005-2010
New Zealand	-69.60%	-61.70%	-55.20%	-30.00%	-37.70%	-17.90%	-19.50%	-19.00%	-30.30%	-33.50%	-56.80%	-66.70%
Nicaragua	55.50%	55.20%	53.90%	54.40%	52.50%	55.40%	54.30%	50.00%	39.90%	34.90%	22.90%	18.10%
Niger	78.10%	71.70%	66.70%	75.00%	79.70%	81.90%	82.10%	83.10%	83.10%	82.20%	78.30%	54.60%
Nigeria	68.50%	66.10%	69.30%	71.30%	71.90%	74.20%	74.70%	77.20%	79.50%	81.50%	80.30%	79.60%
Northern Africa	55.70%	55.10%	54.50%	55.40%	55.10%	55.70%	50.50%	44.80%	42.80%	41.50%	36.10%	36.40%
NORTHERN AMERICA	-55.80%	-50.20%	-43.50%	-27.70%	-24.80%	-22.80%	-25.40%	-23.70%	-22.40%	-21.60%	-30.60%	-33.20%
Northern Europe	-47.10%	-43.40%	-40.10%	-29.40%	-24.70%	-12.80%	-14.30%	-15.10%	-14.70%	-16.30%	-31.60%	-40.80%
Norway	-106.90%	-92.90%	-76.20%	-57.30%	-50.80%	-38.40%	-38.00%	-30.10%	-32.70%	-38.40%	-56.40%	-71.10%
OCEANIA	-9.00%	-7.80%	-6.80%	0.30%	0.80%	3.80%	-2.70%	-2.10%	-5.10%	-7.20%	-21.80%	-27.90%
Oman	64.00%	63.10%	60.90%	60.20%	57.50%	54.50%	44.80%	33.40%	20.90%	11.50%	-11.50%	-24.60%
Other non-specified areas	2.00%	-14.30%	-20.00%	-19.40%	-28.20%	-21.60%	-22.00%	-21.10%	-17.00%	-13.50%	-29.30%	-30.50%
Pakistan	51.20%	55.10%	57.20%	51.20%	50.60%	53.00%	53.40%	54.20%	53.80%	53.90%	46.50%	46.80%
Panama	9.60%	9.50%	5.80%	6.60%	0.70%	-0.80%	-6.00%	-8.10%	-7.70%	-5.30%	-13.60%	-10.60%
Papua New Guinea	61.70%	64.80%	64.60%	67.50%	65.40%	67.00%	66.40%	64.70%	65.30%	66.70%	62.50%	61.40%
Paraguay	-22.70%	-11.20%	-6.90%	2.80%	4.50%	16.70%	20.90%	24.40%	26.30%	28.60%	19.80%	20.00%
Peru	50.60%	52.80%	52.50%	53.90%	49.20%	49.40%	43.80%	39.30%	34.80%	28.80%	14.20%	11.00%
Philippines	16.70%	19.20%	21.70%	25.80%	26.70%	37.80%	38.10%	35.90%	38.20%	41.40%	37.50%	39.80%
Poland	-10.20%	-28.40%	-36.30%	-25.60%	-18.80%	-2.70%	1.80%	9.80%	16.30%	15.20%	4.40%	3.90%
Polynesia	31.50%	29.00%	28.00%	28.90%	29.20%	34.40%	29.80%	26.50%	24.80%	23.00%	13.30%	10.10%
Portugal	-8.20%	-5.50%	-8.80%	-3.80%	-9.70%	-5.20%	-12.80%	-16.40%	-14.10%	-15.90%	-29.80%	-37.10%
Puerto Rico	-31.30%	-50.40%	-50.90%	-46.30%	-44.30%	-40.80%	-31.00%	-26.80%	-10.20%	-7.10%	-19.50%	-21.70%
Qatar	20.90%	15.50%	5.50%	-7.40%	-29.80%	-36.20%	-59.80%	-90.50%	-91.70%	-84.40%	-116.40%	-124.50%
Republic of Korea	39.80%	43.60%	31.50%	38.90%	20.10%	23.50%	18.40%	6.70%	-0.20%	-8.10%	-34.20%	-57.70%
Republic of Moldova	9.00%	6.10%	5.00%	8.00%	13.00%	25.80%	33.40%	28.10%	35.70%	44.80%	44.00%	46.20%
Réunion	42.60%	33.70%	26.70%	19.10%	8.40%	10.10%	4.50%	-1.80%	-6.70%	-9.90%	-23.60%	-28.40%
Romania	-9.40%	-9.50%	-32.20%	-8.00%	-13.50%	0.60%	7.00%	14.50%	21.50%	28.20%	21.30%	18.10%
Russian Federation	0.60%	-18.10%	-25.30%	-11.70%	-0.70%	16.90%	23.50%	21.10%	38.10%	46.60%	50.50%	46.90%
Rwanda	57.30%	60.90%	63.60%	67.20%	70.60%	74.60%	73.40%	79.10%	92.90%	81.80%	78.00%	68.90%
Saint Lucia	19.80%	38.20%	37.80%	24.90%	13.20%	14.10%	5.70%	-0.30%	8.60%	18.00%	13.70%	4.30%
Saint Vincent and the Grenadines	30.70%	11.00%	5.60%	20.40%	32.20%	15.50%	9.60%	8.70%	12.40%	21.00%	20.60%	21.60%
Western Samoa	48.10%	44.00%	43.60%	44.10%	44.60%	44.80%	45.90%	42.30%	37.30%	34.00%	23.10%	22.40%
Sao Tome and Principe	48.10%	49.60%	47.50%	40.90%	40.60%	39.20%	45.80%	49.70%	52.50%	56.70%	54.80%	54.10%
Saudi Arabia	54.50%	56.20%	56.50%	56.70%	50.30%	43.40%	32.00%	21.10%	10.60%	6.10%	-13.70%	-21.80%
Senegal	73.60%	63.80%	66.50%	69.10%	73.90%	72.50%	69.10%	65.10%	65.70%	69.80%	66.20%	62.40%
Serbia	2.00%	-2.00%	-9.20%	-9.20%	-9.60%	0.80%	3.20%	6.50%	9.70%	19.60%	19.40%	18.90%
Seychelles	12.10%	12.70%	3.80%	7.60%	-2.30%	-0.60%	-1.40%	5.60%	12.40%	16.60%	14.50%	19.70%
Sierra Leone	71.70%	74.80%	76.50%	78.40%	77.00%	78.20%	79.10%	82.30%	86.20%	87.60%	85.80%	84.60%
Singapore	-43.40%	-31.00%	-12.70%	-23.80%	-19.70%	-13.50%	-25.30%	-32.20%	-45.60%	-45.70%	-63.90%	-76.10%
Slovakia	-31.00%	-48.60%	-53.20%	-28.00%	-14.10%	-1.10%	5.10%	11.00%	15.10%	16.50%	10.80%	10.30%
Slovenia	-23.10%	-25.10%	-24.30%	-9.10%	-7.70%	-1.10%	4.00%	-0.40%	0.50%	-2.80%	-14.90%	-30.10%
Solomon Islands	46.00%	47.40%	46.10%	48.00%	48.20%	49.50%	51.90%	63.60%	62.60%	60.30%	50.10%	46.90%
Somalia	66.00%	68.00%	69.20%	71.00%	71.60%	74.20%	74.90%	76.90%	80.80%	79.40%	77.60%	78.00%
South Africa	48.10%	47.70%	48.40%	52.10%	55.10%	51.00%	51.40%	49.60%	49.90%	62.70%	72.60%	74.60%
South America	28.70%	30.00%	29.60%	31.30%	29.50%	32.00%	28.40%	25.90%	24.50%	23.80%	15.20%	13.60%
South Sudan	77.90%	74.60%	72.70%	75.60%	77.30%	79.90%	81.00%	81.30%	80.40%	80.00%	77.30%	76.90%
South-Central Asia	60.80%	60.60%	59.20%	59.00%	58.20%	57.80%	56.90%	56.00%	55.50%	54.80%	48.00%	46.20%
South-Eastern Asia	40.80%	40.40%	40.60%	39.50%	39.60%	44.50%	38.80%	36.50%	32.80%	31.30%	32.00%	31.10%
Southern Africa	39.70%	41.10%	44.70%	50.70%	46.90%	47.00%	49.70%	48.70%	47.70%	60.90%	74.30%	76.00%
Southern Asia	61.50%	61.50%	60.10%	60.00%	59.00%	58.50%	57.50%	56.60%	55.90%	55.00%	48.10%	46.20%
Southern Europe	-25.70%	-27.10%	-31.80%	-26.20%	-28.00%	-20.20%	-24.30%	-27.70%	-25.60%	-29.40%	-43.10%	-51.80%

Country	1950-1955	1955-1960	1960-1965	1965-1970	1970-1975	1975-1980	1980-1985	1985-1990	1990-1995	1995-2000	2000-2005	2005-2010
SUSTAINABLE ENERGY	-28.40%	-35.10%	-44.90%	-39.70%	-40.30%	-35.90%	-46.60%	-45.30%	-43.60%	-45.00%	-61.40%	-77.40%
Sri Lanka	2.20%	10.00%	5.50%	11.80%	17.20%	13.50%	10.30%	13.00%	16.60%	30.40%	5.00%	8.90%
State of Palestine	44.30%	42.70%	34.20%	47.90%	41.90%	48.40%	46.80%	27.00%	25.10%	21.30%	11.40%	12.70%
Sub-Saharan Africa	62.90%	65.10%	66.20%	68.40%	69.00%	71.70%	72.50%	74.20%	76.80%	78.70%	77.40%	76.30%
Sudan	47.70%	49.80%	51.30%	54.30%	55.30%	60.80%	63.50%	65.90%	68.00%	69.40%	65.90%	64.60%
Suriname	17.50%	22.20%	13.60%	10.20%	12.50%	10.10%	21.90%	23.70%	28.60%	35.40%	33.60%	31.60%
Swaziland	55.00%	57.80%	60.30%	63.50%	62.60%	64.00%	61.60%	60.50%	61.60%	73.50%	79.90%	80.20%
Sweden	-79.10%	-72.00%	-68.40%	-55.90%	-52.90%	-37.20%	-40.50%	-42.90%	-46.20%	-51.50%	-66.90%	-77.50%
Switzerland	-54.80%	-51.00%	-50.90%	-43.10%	-45.90%	-40.00%	-42.90%	-50.00%	-50.50%	-57.70%	-79.20%	-94.20%
Syrian Arab Republic	39.90%	39.10%	38.20%	37.80%	31.20%	28.00%	18.60%	11.00%	4.50%	2.60%	-13.60%	-16.30%
Tajikistan	34.00%	34.10%	31.20%	35.20%	37.80%	42.90%	46.90%	50.50%	56.40%	57.90%	49.50%	48.60%
TFYR Macedonia	-0.40%	-7.40%	4.70%	12.60%	18.20%	-1.10%	5.50%	1.20%	8.70%	11.00%	6.70%	9.90%
Thailand	31.00%	33.00%	30.80%	33.40%	29.50%	31.60%	25.50%	8.70%	13.60%	21.70%	16.40%	11.70%
Timor-Leste	71.00%	74.50%	73.90%	83.70%	81.40%	73.40%	72.70%	77.70%	76.40%	70.80%	59.70%	55.30%
Togo	64.80%	64.40%	63.60%	64.40%	65.50%	66.50%	65.70%	66.20%	68.50%	74.10%	73.60%	74.90%
Tonga	-9.30%	-0.70%	-1.90%	-1.40%	-1.60%	11.10%	11.50%	12.20%	18.20%	22.60%	18.80%	21.10%
Trinidad and Tobago	3.90%	0.70%	-5.30%	0.50%	7.70%	15.70%	18.70%	22.00%	26.40%	32.20%	30.20%	33.00%
Tunisia	62.90%	64.50%	63.70%	60.30%	51.70%	46.30%	32.40%	23.70%	11.50%	3.70%	-6.60%	-3.70%
Turkey	57.70%	58.40%	56.60%	55.30%	52.50%	51.60%	46.50%	40.80%	35.90%	28.40%	11.40%	5.10%
Turkmenistan	36.50%	34.00%	34.70%	35.50%	37.30%	43.20%	44.60%	47.10%	50.50%	50.90%	48.80%	51.00%
Uganda	57.50%	59.30%	59.80%	61.10%	63.40%	69.10%	72.10%	75.70%	79.40%	81.40%	77.60%	75.30%
Ukraine	-12.90%	-28.20%	-39.70%	-27.70%	-16.30%	5.40%	16.70%	14.80%	30.80%	41.90%	42.40%	44.40%
United Arab Emirates	51.50%	46.90%	41.40%	31.50%	15.50%	2.90%	-16.50%	-34.00%	-44.30%	-53.70%	-92.90%	- 112.20%
United Kingdom	-44.20%	-38.60%	-34.70%	-25.30%	-20.70%	-9.60%	-12.40%	-14.40%	-17.80%	-20.20%	-37.40%	-49.10%
United Republic of Tanzania	55.50%	59.10%	62.00%	65.00%	65.80%	68.30%	69.90%	72.40%	76.20%	78.50%	75.50%	71.60%
United States of America	-54.70%	-48.90%	-41.90%	-25.90%	-23.20%	-21.80%	-24.00%	-21.90%	-20.40%	-19.50%	-27.80%	-30.30%
United States Virgin Islands	0.10%	-7.60%	-14.10%	-9.60%	-24.20%	-22.30%	-16.20%	-20.40%	-21.80%	-26.10%	-36.00%	-33.20%
Uruguay	-37.40%	-31.00%	-32.30%	-18.70%	-10.50%	-1.80%	-3.20%	0.00%	1.10%	0.60%	-7.90%	-10.40%
Uzbekistan	22.60%	21.60%	19.40%	20.80%	22.00%	29.30%	28.90%	32.30%	39.60%	41.40%	37.80%	41.30%
Vanuatu	54.60%	55.70%	55.10%	53.60%	51.50%	52.10%	47.60%	45.50%	43.60%	42.00%	30.10%	25.40%
Venezuela (Bolivarian Republic of)	18.70%	17.90%	14.50%	10.40%	3.80%	6.90%	5.80%	3.00%	5.40%	10.70%	5.30%	5.70%
Vietnam	24.10%	19.30%	13.60%	16.40%	39.30%	19.00%	16.00%	13.90%	11.20%	7.50%	-0.80%	2.50%
Western Africa	70.00%	66.50%	68.90%	72.00%	72.30%	74.20%	74.10%	75.60%	77.50%	79.70%	78.40%	77.50%
Western Asia	52.90%	51.40%	49.00%	47.50%	43.90%	43.40%	40.00%	33.90%	30.60%	26.90%	14.90%	13.40%
Western Europe	-40.70%	-37.90%	-37.50%	-24.70%	-22.00%	-14.10%	-18.50%	-25.30%	-28.60%	-31.80%	-47.30%	-57.50%
Western Sahara	65.40%	68.60%	69.70%	71.30%	70.60%	70.10%	65.50%	60.80%	59.90%	57.50%	47.70%	43.40%
WORLD	46.90%	47.60%	49.30%	42.40%	39.30%	40.90%	40.60%	40.70%	42.10%	43.50%	40.60%	39.40%
Yemen	75.00%	75.40%	74.10%	73.70%	71.90%	72.10%	69.00%	66.40%	65.50%	64.70%	61.20%	61.50%
Zambia	53.20%	56.70%	58.60%	61.60%	61.60%	65.70%	70.00%	76.80%	82.00%	84.80%	82.50%	79.30%
Zimbabwe	39.10%	41.30%	43.40%	47.30%	48.90%	52.60%	49.50%	52.50%	65.00%	78.70%	81.20%	78.60%

ANNEX 4: DEFICIT OR EXCESS (-VE) GDP BY GLOBAL HEALTH EQUITY ECONOMIC THRESHOLDS

Country name	1961	1970	1980	1990	2000	2010	2013
Afghanistan	1709037942	2303288597	11474904885			116196446494	144825395937
Albania				2951139671	3759639869	1364966315	2125532906
Algeria	480626399	540648823	-20009176613	-21703892167	21671620494	11243662528	2273649881
American Samoa							
Andorra		-69686366	-405016862	-945183648	-975995989		
Angola				5627168331	24437303965	8489948029	-5355590557
Antigua and Barbuda			-29438490	-296395421	-600518120	-729665900	-742399154
Argentina		-22763535386	-44710957939	-91194540381	-255315801075	-274845071937	-385304599953
Armenia				3192812941	5503559442	4528672851	5696919733
Aruba					-1654433726	-1994979468	
Australia	-17046146063	-36729706481	-133107414264	-285157546658	-369038706879	-1039281015851	-1435257967012
Austria	-5524709252	-12468237791	-72557374584	-152949083834	-172758378185	-338642760346	-369754775794
Azerbaijan				2148316718	14129027304	-10773466762	-22534856168
Bahamas, The	-161067957	-476124380	-1093694142	-2771903232	-5609785648	-6210712508	
Bahrain			-2659926960	-3467317798	-7452316760	-19890336692	-25569492695
Bangladesh	8032000033	15399468671	76502765717	134967367149	271993063415	602817216939	718682995770
Barbados	-34811225	-93723393	-575108234	-1624612239	-2475422099	-3129035069	
Belarus				-1704921973	11380810342	-11064560231	-20416191299
Belgium	-10084114535	-22829261932	-113977972926	-187508469113	-207961479802	-420406963792	-447452707841
Belize	-6083103	-8289113	-29423305	-124705544	-256623797	37373102	193963310
Benin	386214253	736015969	2858947630	5729041906	14392751145	37690074908	47632688725
Bermuda	-77775684	-166067856	-550598978	-1501191577	-3331166757	-5441396129	
Bhutan			337723701	523862025	921242094	1750475763	2201750959
Bolivia	252030687	534173207	1620101463	5577655972	12080514187	27608393549	27222770159
Bosnia and Herzegovina					3736985404	1118946166	2922118416
Botswana	102450738	158746465	83181435	-1662995634	-1556872424	-4583493049	-3836522808
Brazil	3673813492	-6991107342	-95400564362	-231880830665	-224047059526	-1234767318241	-1159973813383
Brunei Darussalam		-131362035	-4707417177	-3125546346	-5201326634	-10505886527	-13847293682
Bulgaria			-9876339282	-7322710185	6791154506	-13315319320	-13642431688
Burkina Faso	884079532	1610644080	5896391180	10444875082	25370702623	63098674445	80182091709
Burundi	513292789	1028991241	3812997267	7486427530	15218290152	40932553877	52349381160
Cabo Verde			203647660	234215941	527267986	604466115	815244990
Cambodia	837414368	1864529694			25809949338	55596853001	66763109013
Cameroon	722977882	1330746446	3503486673	7405519622	29107362611	73470467495	91312354219
Canada	-36160343554	-79918073166	-245231143604	-549288733555	-665283677723	-1455847695269	-1636256602073
Caribbean small states	-935245060	-1841301469	-6935405003	-8414159964	-16757228601	-27324603912	-29035481878
Cayman Islands							
Chad	438061876	871539917	4142677015	7411407619	18625375981	43878350823	56082510921
Channel Islands					-6081192690		
Chile	-2726817899	-5457436134	-14735769168	-11243690972	-42074855312	-137700505095	-181723034074
China	116966599886	209516830696	935976835944	1388308165483	1845208363481	293754854876	-1885048616133
Colombia	-394678396	653457314	-2509445987	10932240800	-3710037328	-70913464329	-116309044884

Country name	1961	1970	1980	1990	2000	2010	2013
Comoros			236159695	384596959	1071628632	2634956671	3324986729
Congo, Dem. Rep.	856810649	2483101036	15834366635	44322149384	94085989133	268848269508	335206515333
Congo, Rep.	110583438	216161732	354506985	865338586	4315996031	7123670899	9992201348
Costa Rica	-141926116	-314555399	-2138037669	-2670460264	-6473929945	-14570577431	-23220330844
Cote d'Ivoire	290134534	472792867	-695864446	7831118442	28468505677	65376089347	79181317701
Croatia				-17433340327	-10848639894	-38318337622	-34494460561
Cuba		-2487110123	-8633036778	-12347590831	-3715364311	-11834863947	
Curacao							
Cyprus			-2114562256	-6212741762	-10386621839	-25645335196	-22629653595
Czech Republic				-23244369528	-34086785325	-149756809134	-141437307827
Denmark	-5770855483	-14777454720	-63833766626	-127934419720	-147211045615	-287136398706	-300194661262
Djibouti				454627328	1191332638	2752105286	3273803664
Dominica			27276435	-57276764	-156498325	-144049616	-114652857
Dominican Republic	209549648	178755252	50508942	4065060598	-3112948404	-4372641399	-4238867193
Ecuador	192198561	-646251521	-8810191912	324841467	11884389354	2285345348	-4744806927
Egypt, Arab Rep.		5686271889	28619950619	43482094489	59587770115	144393526124	172665276427
El Salvador		241254597	1771228969	3415369901	1229938819	7514569754	10097856571
Equatorial Guinea		40680062	202350510	462643093	203103763	-8347186276	-11471521922
Eritrea					8789669425	24596211776	30873199616
Estonia					-2308179455	-12838206566	-17298875794
Ethiopia				61909136334	151064000815	375863245941	463033555947
Faeroe Islands					-950270534		
Fiji	-14317381	-28398156	-473992633	-217268656	272415187	779031698	746304823
Finland	-4796672228	-9528074683	-47526004824	-131217340825	-109316239110	-211751097415	-227367656787
France	-56420071456	-127350884695	-626985895743	-1154363943462	-1179504595958	- 2262490747952	-2377161251262
French Polynesia		-213389253	-1188164592	-2876230157	-2875596466		
Gabon	-40597962	-107073905	-3446468281	-4496822503	-2113657420	-7328524159	-10285022423
Gambia, The		112240176	452069600	1092431295	2179335850	6868106283	9106408917
Georgia				-355348983	7593129982	9080061130	8132386558
Germany		-180114637420	-829820129477	-1592348884872	-1688225438716	-2923936112878	-3197958078923
Ghana	429287358	947194193	7944149237	16601132332	40396051297	80719539643	92440275893
Greece	-2898207798	-9295203412	-43131737877	-77730091233	-98100903212	-242326557539	-181939972356
Greenland		-52451456	-418477419	-933497194	-932551443		
Grenada			18463820	-73039240	-278295105	-284055608	-260251013
Guam							
Guatemala	-4092711	88173188	150858465	6017960799	7717804511	25392442097	30020690385
Guinea				6588769588	18087717604	45869540173	57450722009
Guinea-Bissau		172500403	827831006	1320176526	2707537792	6547070664	8376178911
Guyana	-40598483	-2642664	287857106	718106557	1081925132	1398506377	1257121634
Haiti					17013855932	39424784462	47447799155
Honduras	165586965	267017319	1603967894	4490095138	7925673019	19621637687	25328852099
Hong Kong SAR, China	-731815550	-2344419990	-23054892885	-68158131860	-155601772338	-195954537313	-235065978711
Hungary		-1739592326	-9878826489	-17107055295	-21771416964	-80973802509	-76358537904
Iceland	-208737681	-443698016	-3069673709	-5981132871	-8019436315	-11084880744	-12869630611
India	75737158091	140717034759	612049073358	1009233790702	2035826816432	3901236688053	4908159480733

Country name	1961	1970	1980	1990	2000	2010	2013
Indonesia		32303582498	88854292857	160206143801	338638548518	410661705173	485598824910
Iran, Islamic Rep.		-64915294	-45438861683	-29383694238	57596122938	-76099509506	50757866178
Iraq	53673413					1251299719	-41800402437
Ireland	-1375748116	-3229191582	-17443098245	-43017618141	-88158916493	-188169076808	-192915435633
Isle of Man					-1378522221		
Israel	-2935935765	-4278293864	-17333292794	-45325992078	-109735130546	-196202269846	-247685686147
Italy	-32098378752	-89456011950	-395106094559	-1050890375111	-966747014870	-1779541164403	-1747100727001
Jamaica	-331459410	-717195404	-233042992	-917796788	-2766748551	-710609418	349481573
Japan	-29565657540	-170686494507	-953050883419	-2913771002051	- 4425370835202	- 4902368223255	-4211520969166
Jordan		-84791128	-1408321240	713662987	3105539100	1706277896	1320861431
Kazakhstan				-1799139797	17585903738	-72104059673	-132093794466
Kenya	1315649625	2535852968	11392336209	27474445567	62709183836	157907770231	196237800353
Kiribati		1838936	34581936	80803789	132052843	304360910	385656836
Korea, Dem. Rep.							
Korea, Rep.	4140592000	2450243566	-24078246060	-218849429353	-448317099463	-864596028718	-1032429139352
Kosovo					2248758301	2521689028	2924052228
Kuwait		-2597590339	-27065903655	-15261060113	-33122924597	-106015041385	
Kyrgyz Republic				4077077591	10438202016	20554377832	23765904153
Lao PDR				5660010343	11257584179	22577408677	25541866347
Latvia				-3352646180	-2125943778	-14249889135	-20046781863
Lebanon				1317164766	-9461282694	-17811122546	-20145015273
Lesotho	182753835	310976915	1067917027	1911486994	3703343706	7171697224	9011147529
Liberia	104801757	199157400	1315828860	2848585469	6442201790	17123581746	21317313239
Libya				-22355819373	-21419089100	-46648701679	-41852280528
Liechtenstein		-82276510	-505030116	-1377316032	-2404117885		
Lithuania				-4821599597	-2998353594	-22298053468	-29913664293
Luxembourg	-624242917	-1320438146	-5550280910	-12081598180	-19215823194	-49694504251	-57439807699
Macao SAR, China				-2437120100	-5060656595	-25872125012	-48684084047
Macedonia, FYR				-1382079090	1359898970	442804586	1197255541
Madagascar	618143700	1307279921	5989234002	14669128265	34076160044	89376751393	113426116547
Malawi	735138614	1375780542	5915347563	12643323201	25547654984	64459155734	84958296254
Malaysia	-296985454	-263846028	-9071138232	-16025873967	-37332315318	-115967845888	-151408464706
Maldives			134521351	116774918	33131426	-618671212	-430270385
Mali		1743007432	5937312600	9822867289	22311268561	55653528530	71972175080
Malta		-139396856	-887039098	-2002825559	-3038119155	-6235161439	-7348692009
Marshall Islands				-5756477	14799564	80744182	110207345
Mauritania	115043238	213296095	1050463932	2092368958	5234375807	13267457338	16915521743
Mauritius			-28639416	-1025714004	-1721532155	-3758272655	-4914139420
Mexico	-4081970359	-16049644857	-113668997702	-130374084001	-433254273063	-503109935220	-598033277455
Micronesia, Fed. Sts.				900304	25740289	188015451	226099962
Moldova				2089413636	7485039771	10762367019	11349889428
Monaco		-284435110	-1347456024	-2436057760	-2570550600	-5179555913	
Mongolia				797163618	4642359714	6421842014	3867647737
Montenegro					489045890	-1229697461	-1060689403
Morocco	1179550837	1917645620	4028646170	12339761526	32576832697	57911951295	76250245640
Mozambique			10399407847	18347414990	39744408557	102243726013	124666131209

Country name	1961	1970	1980	1990	2000	2010	2013
Myanmar							
Namibia			-1273244523	-628233819	666486679	-1002821244	-98668214
Nepal	1916770037	3386253122	14552075224	24216792285	50392630005	108918727257	131331462365
Netherlands	-10558754606	-30555848814	-164541942119	-271884501666	-346685199921	-699847320317	-709116589765
New Caledonia		-319087107	-1018450529	-2271025117	-2168343057		
New Zealand	-5059858247	-5435137082	-19469770552	-39978469443	-42712399025	-123143436790	-161561548135
Nicaragua	217426346	104168457	1583662068	5352023785	7188751857	18152161273	21692584578
Niger	379024363	973303916	4182770783	9440265799	24693249321	68234009705	89266431821
Nigeria	7169458976	8102652698	20322517038	116246055422	249815899281	374047839819	418964470782
Northern Mariana Islands							
Norway	-4722132658	-11303976404	-59028571595	-111102802327	-157462780183	-398196323562	-485030774509
Oman	96822123	9953628	-4657808100	-8902174001	-14582640307	-45771901371	-60887369595
Other small states			-205458099	-104169763	10888657410	7220509063	11711961638
Pacific island small states			-259039851	225045076	1302013468	3838114996	4271222258
Pakistan	7715671411	11751605342	68044244119	130781873514	272763526348	628487181944	750349379157
Palau				-53690011	-113635587	-102313128	-133695255
Panama	-168520704	-455066598	-1527899097	-1490004125	-4256688102	-11700002040	-21709359513
Papua New Guinea	259797191	250104564	1141852545	3172673937	9445606413	22434191195	24382277339
Paraguay		365269861	-426053654	838404681	4701120142	10026145289	6910663301
Peru	-245920030	-2381432734	-787125752	8462896646	11993666187	-12351752336	-37699650281
Philippines	-406935294	6483924472	21910834219	50928976679	106158252900	235201098337	261146927471
Poland				-5957674556	-79051344064	-292132852022	-308756742617
Portugal	-1165699680	-4806910892	-21256698544	-62315497165	-92495089965	-179743380823	-163343697419
Puerto Rico	-1259932180	-4034864206	-10759140541	-25166097575	-52516112669	-81066721513	-83545746567
Qatar		-261569073	-7572473452	-6627836903	-16328756168	-116980998343	-190698646766
Romania				-2628358182	16795059710	-70584836996	-81461699347
Russian Federation				-288828560442	93672260206	-862405240058	-1319195726089
Rwanda	633561612	1161236668	4641198707	8541764684	18503115673	44797822522	56361647750
Samoa				138331495	181218776	292609495	337190350
San Marino					-708897212		
Sao Tome and Principe					259390451	628245744	735084661
Saudi Arabia		-2879781228	-153018937279	-91862715271	-139882108225	-399979908508	-589057815179
Senegal	-12933248	526809375	2883694371	5835628120	19092577835	47325731027	61434158681
Serbia					12035822045	-3063408742	-3701144413
Seychelles	-776170	1285113	-73496902	-260966014	-419306714	-555661581	-784817868
Sierra Leone	224202761	496957644	2546726014	5565611334	9343264436	24185422644	28081853614
Singapore	-334987684	-1156376443	-9310380250	-34215219957	-86126470718	-212798771840	-268684668435
Sint Maarten (Dutch part)							
Slovak Republic				-3569466366	-15734201390	-61991468741	-66432865896
Slovenia				-14309808782	-15185041954	-37467479491	-35668269798
Small states	-150205963	-697990289	-7390730335	-8159945017	-4566557723	-16265979853	-12978482040
Solomon Islands			95775704	176924943	558860029	1767937634	1944740047
Somalia	518152719	951274573	6380688617	8801873893			
South Africa	-3216120896	-9782531568	-48916606430	-57897079991	-26812938470	-128393955270	-63537132728

Country name	1961	1970	1980	1990	2000	2010	2013
South Sudan						29916005689	47413852864
Spain	-6082400597	-27326481229	-182857464035	-460761466317	-483288540339	-1168125331331	-1105494740740
Sri Lanka	1109849219	2306894067	12888703470	18126490823	29715733597	46529586741	43809018026
St. Kitts and Nevis	427180	210166	1551789	-96423276	-306780346	-448631663	-449318717
St. Lucia			1900966	-184753172	-386122522	-426805153	-344541286
St. Martin (French part)							
St. Vincent and the Grenadines	6715312	14825256	54962864	-32921924	-137354663	-172841017	-132897142
Sudan	1073635437	2215824015	10792096866	21128332708	56958838910	114564514547	139169027097
Suriname	-23145977	-110192728	-375575169	237063301	232767505	-1925427981	-2308739462
Swaziland	47134808	51866958	150000635	211673106	1039660163	1660079029	2979425040
Sweden	-14250748457	-33181311366	-125277385986	-235266067752	-225873392348	-419426231943	-506969632330
Switzerland	-9342278784	-20679389018	-105284122443	-233697945110	-238724850230	-512696027065	-606585833926
Syrian Arab Republic	250754590	206104357	-2790611135	6834504228	20137907196		
Tajikistan				5514708780	14051548944	29847288980	35967607003
Tanzania				34800432072	71525313312	185660845465	232667784161
Thailand	4076313433	6479511729	21974120037	1647695530	27557295381	-9942135306	-24143007278
Timor-Leste					1707519054	4027633922	4769582680
Togo	276472087	524232981	1984118400	4194672018	10432535532	26168540525	32600538397
Tonga			53409595	32743862	47520158	115148961	104453634
Trinidad and Tobago	-366736986	-473858570	-4991135651	-3189502223	-5097772062	-14578649458	-17373557097
Tunisia		446765627	-1421248964	246093120	1580215086	5030225052	11861871240
Turkey	-898546985	-4295815521	-18433765602	-67664411001	-114281562416	-395516593141	-414170187884
Turkmenistan				2407155382	7946284291	1312015048	-13456549889
Turks and Caicos Islands							
Tuvalu				5018099	8963231	13899711	15380210
Uganda	1325281963	2215232829	13148723936	22653848489	52324676571	142109365620	182145336533
Ukraine				-1677118492	87279873735	77014178099	69063444398
United Arab Emirates			-42434845289	-47924114454	-97042168023	-248143878897	
United Kingdom	-63379126248	-104319288484	-477323554914	-931294480723	-1351664364421	- 2003474943687	-2174058705452
United States	-492727284271	-1000470151093	-2601895785097	- 5595826944440	-9609530182953	- 13519024228688	- 15086995727375
Uruguay	-901052107	-1103570270	-6818965410	-4517583280	-14818164669	-23191482174	-37246130839
Uzbekistan				18171684184	45660928296	93566277600	107071498829
Vanuatu			19197382	67037728	174078979	398680080	534884305
Venezuela, RB	-6938023822	-9048094083	-49821034145	-16677813996	-58311709387	-258664990027	-273527164653
Vietnam				95023036345	153493965414	288559698162	314712925663
Virgin Islands (U.S.)	-17100578	-195824998	-616550759	-1404866210			
West Bank and Gaza					2846551564	9402217608	
Yemen, Rep.				12479202323	32602809082	74171091591	96301536307
Zambia	117982193	-247047895	2821666146	8771860599	21095483171	45307602055	56396672191
Zimbabwe	-119026476	30970286	1680960598	7300238268	23450863285	51389546981	63870595337

ANNEX 5: HOLISTIC HEALTH INDEX 2012

Country	Healthy life expectancy	Happiness index	LYLs x exhausting	LYLs x hoarding	Consolidated health index
Afghanistan	42.39	4.76			25.46
Albania	62.06	5.27			43.19
Algeria	59.50	5.24	-0.42		40.16
Angola	40.31	4.21	0.00		23.36
Argentina	62.25	6.44	-1.06		52.44
Armenia	59.67	4.37			35.02
Australia	65.17	7.41	-8.37	70.85	-15.39
Austria	64.65	7.35	-3.12	47.56	12.44
Azerbaijan	56.65	4.22	-1.28		31.01
Bahrain	59.47	4.55	-9.12	19.18	6.53
Bangladesh	48.93	4.99			31.77
Belarus	60.39	5.53	-2.03		43.23
Belgium	64.65	6.85	-4.26	43.13	11.26
Belize	60.42	6.45			51.10
Benin	46.07	3.67			22.52
Bolivia	52.76	5.78			39.91
Bosnia and Herzegovina	61.26	4.67	-3.01		34.90
Botswana	55.87	3.55	-0.05		26.30
Brazil	58.70	6.84			53.94
Bulgaria	62.08	4.22	-1.85		33.09
Burkina Faso	43.46	4.04			23.47
Burundi	41.18	3.79			20.70
Cambodia	49.73	4.16			27.47
Cameroon	48.70	4.43			28.36
Canada	65.57	7.65	-6.99	51.38	7.83
Central African Republic	40.84	3.57			19.85
Chad	43.63	3.74			21.88
Chile	62.63	6.64	-0.96		54.54
China	61.14	4.65	-1.96		35.54
Colombia	60.09	6.41			51.70
Comoros	49.26	3.92			25.21
Congo	45.90	3.82			23.41
Costa Rica	64.65	7.27			61.48
Cote d'Ivoire	46.63	4.20			26.34
Croatia	61.27	5.60	-1.21		44.71
Cuba	63.44	5.42	-0.50		44.33
Cyprus	65.71	6.39	-2.52	24.62	27.79
Czech Republic	61.99	6.15	-4.49		46.57
Denmark	64.24	7.77	-3.28	57.54	5.01
Djibouti	51.19	5.01			33.57
Dominican Republic	60.03	4.74			37.18
Ecuador	60.48	5.84			46.64
Egypt	53.28	3.88	-0.06		27.15
El Salvador	58.36	6.74			53.32
Estonia	60.31	5.14	-6.04		36.15
Ethiopia	40.23	4.37			23.62
Finland	62.86	7.39	-5.12	44.15	12.78
France	65.06	6.80	-1.77	39.91	17.24

Country	Healthy life expectancy	Happiness index	LYLs x exhausting	LYLs x hoarding	Consolidated health index
Georgia	59.88	4.10			33.13
Germany	64.24	6.72	-3.76	41.87	11.63
Ghana	50.42	4.61			30.17
Greece	65.44	5.84	-3.01		47.13
Guatemala	54.80	6.29			45.88
Guinea	43.44	4.04			22.83
Guyana	54.42	5.99			43.53
Haiti	45.59	3.77			22.40
Honduras	58.15	5.87			44.59
Hungary	59.79	4.73	-1.35		36.84
Iceland	64.24	6.89	-2.13	42.72	13.07
India	49.58	4.99			32.13
Indonesia	55.66	5.46			39.86
Iran, Islamic Republic of	56.81	4.77	-2.69		33.31
Iraq	59.12	5.02	-0.59		37.64
Ireland	64.46	7.26	-3.60	44.90	13.19
Israel	65.02	7.36	-3.92	31.49	27.03
Italy	65.44	6.35	-2.55	32.98	19.47
Jamaica	62.11	6.21	-0.08		49.65
Japan	68.33	6.06	-3.93	48.09	2.56
Jordan	60.23	5.70	-0.49		43.95
Kazakhstan	56.76	5.51	-6.18		36.51
Kenya	53.22	4.26			29.58
Kuwait	64.74	6.58	-15.18	59.63	-19.81
Kyrgyzstan	55.60	5.00			37.54
Lao People's Democratic Republic	48.20	5.04			32.38
Latvia	59.74	4.67	-0.59		37.44
Lebanon	60.54	5.18	-1.24		39.92
Liberia	41.16	4.20			23.05
Libyan Arab Jamahiriya	60.39	4.92	-3.86		34.57
Lithuania	60.92	5.07	-0.98		40.99
Luxembourg	64.17	7.10	-10.80	110.99	-61.23
Madagascar	47.39	4.64			29.00
Malawi	40.83	5.15			28.06
Malaysia	61.52	5.58	-2.73		42.42
Mali	40.99	3.76			20.11
Malta	65.40	5.77	-2.16		47.30
Mauritania	49.97	4.97			32.28
Mauritius	60.04	5.48	-0.37		43.96
Mexico	61.80	6.80	-0.69		55.24
Mongolia	52.50	4.59	-0.83		31.51
Morocco	55.71	4.38			31.89
Mozambique	41.63	4.65			25.99
Myanmar	48.54	5.32			34.29
Namibia	52.89	4.89			34.66
Nepal	49.50	3.81			24.74
Netherlands	65.28	7.50	-4.85	44.24	15.32
New Zealand	63.89	7.22	-2.71	38.27	20.06
Nicaragua	59.14	5.69			44.43
Niger	38.78	4.10			21.15

Country	Healthy life expectancy	Happiness index	LYLs x exhausting	LYLs x hoarding	Consolidated health index
Nigeria	46.02	4.76			28.66
Norway	63.99	7.63	-5.29	101.01	-41.72
Pakistan	52.88	5.27			36.17
Panama	62.77	7.32	-0.07		60.24
Paraguay	61.44	5.84			46.53
Peru	57.73	5.61			42.53
Philippines	57.23	4.94			38.18
Poland	61.01	5.78	-3.14		44.50
Portugal	63.45	4.87	-1.38		39.78
Qatar	62.57	6.59	-20.98	100.98	-69.23
Romania	60.40	4.91	-0.72		38.87
Russian Federation	59.08	5.46	-4.75		39.42
Rwanda	42.16	4.03			22.33
Saudi Arabia	61.57	6.73	-7.75	22.39	23.73
Senegal	49.56	3.83			24.95
Serbia	62.20	4.46	-2.00		34.67
Sierra Leone	40.84	4.13			23.02
Singapore	65.30	6.53	-0.09	50.82	5.06
Slovakia	60.80	6.05	-2.24		47.33
Slovenia	62.49	6.08	-2.81		48.12
South Africa	55.15	4.65	-2.53		32.13
Spain	66.12	6.19	-1.91	25.76	26.67
Sri Lanka	61.10	4.18			34.21
Sudan	50.92	4.38			29.08
Sweden	65.51	7.50	-1.79	55.51	7.29
Switzerland	66.04	7.52	-1.43	86.05	-21.67
Syrian Arab Republic	59.64	4.07	-0.20		31.46
Tajikistan	54.22	4.38			31.63
Tanzania, United Republic of	47.42	3.23			20.17
Thailand	61.97	6.22	-1.02		50.30
Togo	48.66	2.81			17.91
Trinidad and Tobago	58.88	6.70	-17.62		34.59
Tunisia	61.35	4.69			37.74
Turkey	57.10	5.49	-0.86		41.01
Turkmenistan	53.89	6.57	-3.70		43.98
Uganda	41.89	4.19			23.56
Ukraine	60.22	5.06	-2.07		39.29
United Arab Emirates	61.37	7.20		40.25	16.76
United Kingdom	64.37	7.03	-3.06	37.60	18.97
United States	64.30	7.16	-8.40	52.75	0.01
Uruguay	62.89	6.06			50.91
Uzbekistan	57.22	5.10	-0.56		38.26
Venezuela	61.92	7.48	-2.34		58.88
Vietnam	58.75	5.77			45.46
Yemen	49.27	3.92			25.16
Zambia	42.49	5.26			29.76
Zimbabwe	52.20	4.85			33.31

ANNEX 6: LIST OF THE TABLES

ANNEX 7: LIST OF FIGURES

ANNEX 8: LIST OF ACRONYMS

ACRONYMS	
AIDS	Acquired Immunodeficiency Syndrome
AvD	Avoidable deaths
Bn	Billion
CO_2	Carbon dioxide
CSDH	Commission on Social Determinants for Health
DAC	Development Aid Committee
DALY	Disability Adjusted Life Years
DHS	Demographic Health Survey
EU	European Union
GBD	Global Burden of Disease
GDP	Gross Domestic Product
GDP pc	Gross Domestic Product per capita
GHE	Global Health Equity
GHiE	Global Health Inequity
HDI	Human Development Index
HFS	Healthy-Feasible-Sustainable
ICESCSRs	International Covenant on Economic Social and Cultural Rights
LE	Life expectancy
LYL	Life years lost
mDTh	Minimum dignity threshold
MICS	Multiple indicator cluster survey
mT	Metric Tons
NHE	National Health Equity
OECD	Organization for Economic Co-operation and Development
Tn	Trillion
UDHR	Universal Declaration of Human Rights
UN	United Nations
UNDP	United Nations Development Programme
US	United States of America
WB	World Bank
WHO	World Health Organization

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