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BANKRUPTING NATURE, DENYING OUR PLANETARY BOUNDARIES

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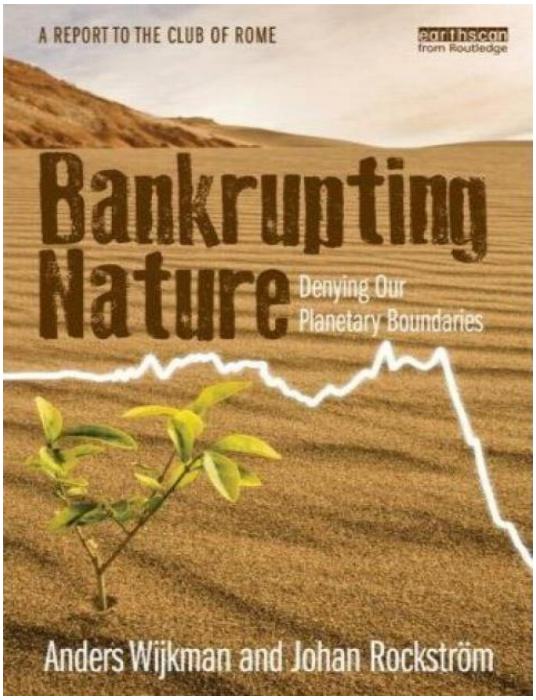

Published under the aegis of Compania Publishing House, in 2013, it is intended to generate shockwaves in society. The authors Anders Wijkman and Johan Rockstrom bring, on the 320 pages of the book a clear signal concerning the way we thought and still we think, and the way we *should* think if we intend to create another society, aiming to wake up an atrophied society which is unconscious about its own future…

It has found open gates in Romanian publishing landscape, through the benevolence of Compania publishing house, this being one of the first translations. In fact, this is a report for the Club of Rome, and it continues the same direction established few decades ago by the founder of this prestigious international scientific organism, Aurelio Peccei – it is a sign of mutiny against humankind's ignorance, and a way to a responsible amelioration of humankind's condition on the solely Planet which offers shelter for it.

The clear signals which the authors put forefront regarding the natural boundaries and the real danger of crossing over the maximal supportive capacity of Planet Earth underscore the following idea: the urgent need to come out from the damaging paradigm of irresponsible consumerism, which forgets that the main objective of development has to be the *man in a functional harmony with nature*.

Even the book has 19 chapters all are interconnected and carries the reader through the same main theme: human behavior through the sins of pride and greed brought humanity near collapse; but there are some ways out from

the path to total collapse, but they require determined and sustained actions both at governmental level, and at the individual level, too – this means a new type of economy, of society, and finally of humankind.

Even the book debates the subject of climate changes, its covering area is much larger; it examines critically the relationship between humankind and nature, and the *threat* mankind poses for the complex Earth's natural systems, which are the fundamentals for all living organisms. It aims to change the old paradigm – that social development and the environment are separate phenomena – to a new perspective, one that aims to show that biosphere and natural resources are fundamentals for the future human development and prosperity.

The myth of unstoppable materialistic development is due to the fact that humanity lives much over its normal possibilities, while the indicator of Gross Domestic Product misrepresent in fact the welfare and development of a given society. The authors are confident that a paradigm's changing is possible, but for this to become reality, there are necessary to be fulfilled three conditions: we need an acceptable consensus regarding the menaces and the problems we are facing and *will* face; we need a coherent vision and a strategy over the long-haul about the society which we intend to create; we need a strategy for a transition period, from nowadays to the new society we intend to create.

The situation we are facing is at least a concerning one and the reason is not only the narrow geographical perspective. What there's missing the most is the absence of a *vision*; today's politics suffers from short-sightedness, being focused only on short term aims, while the problems humanity is facing impose urgently a policy with long and very long term perspective. Today's politics is a symbolic one while in the same time its content has become more are more diluted. Mass-media has concentrated more and more on people instead on ideas, the personality of spokesman becoming more important than the message he provides... The entertainment is becoming more important than strong analysis and than the debates over the key-elements of society. The current crisis which affects much of the Western world has the roots in the unsustainable use of resources of resources in both, the financial economy, and in the economy based on natural resources. Ignoring the signals coming from reputed scientists (some of them Nobel Prize winners) regarding the nature's fundamentals, and promoting the economic theories emanating from old economic school cannot bring the so much desired sustainable development.

The scientific evidences and science in general have a decisive role in the way negotiations are carried on in areas connected to the environment and natural capital. In order to influence the way negotiations evolve, the science should present its facts and finding with integrity, impartiality, and a great respect. The climate change is a good example of comprise we make with the planet Earth and with the scientific evidences... There is no scientific evidence telling us that a lower concentration than 450 ppm CO_2 in the atmosphere is enough in order to avoid dangerous climate changes; while in negotiations concerning climate, this level is considered as not dangerous. It is noteworthy to be mentioned that the threshold considered dangerous from climate change point of view is based on political compromise, and not on scientific evidence, and its limit established at maximum 2 Celsius degrees over the temperature of preindustrial period is only a "political" aim, and not a scientific proof. Furthermore, there is a question concerning the fact that keeping CO_2

concentration under the 450 ppm level means a temperature rising under 2 Celsius degrees. Present science is missing and cannot answer the complex question regarding the way our planet system regulates itself, and doesn't know how it would react to our intervention which injects into the system disequilibrium through greenhouse gases emissions. A reduction of CO_2 emissions in 2050 is considered by worldwide leaders as necessary target for keeping the temperature rising under the limit of 2 Celsius degrees. More recent scientific data indicate that for keeping the rise of temperature in the limit of 2 Celsius degrees, there is needed a more ambitious target in curbing CO_2 emissions: in 2009 IPCC shown that halving emissions in 2050 means the probability on only 0,5 of the risk regarding a rising in temperature lower than 2 degrees; those researches bring a cautionary tone concerning curbing CO_2 emissions: there is needed a 100% reduction of CO_2 emissions in 2050 for a chance of only 0,7 to avoid a rising lower than 2 Celsius degrees. As Johan Rockstrom points, the politics and science are at odds, one of them trying to signal the dangerous route we are heading in the long run, while the other trying to minimize, or even to negate altogether the role emissions and human activity have upon nature and climate change. Sometimes, even policymakers try to use scientific data in order to sustain their position; but the key to solve this uncomfortable situation is to create the framework for a complete independent science from external influences, while keeping science far from political process. An interdisciplinary analysis is more than welcome in order to bring the desired results.

Chapter four presents the evolution of debates concerning climate changes from Copenhagen to Durban. It starts presenting the way negotiations regarding climate changes has been carried on, signaling that they have moved desperately slowly; there are over 20 years since it was signed in 1992 at Rio de Janeiro the United Nations Framework Convention on Climate Change (UNFCCC), and the appearance of a binding international agreement isn't very close to be signed, while the greenhouse gasses' emission have been rising, and the negotiations for fighting climate changes are moving extremely slow.

The authors took part in the conference at Copenhagen in 2009, a conference whose outcomes were full of great hopes, the main one being a binding agreement relating to climate changes. But the result was well under all expectations – only a political declaration which didn't pleased anyone. A little progress was made, however; it was convened by developed economies to create a found to protect climate in the lowest developed economies (USD 10 bn./year between 2010-2012), and the intention to rise this amount to USD 100 bn./year between 2013-2020. Another strong point at Copenhagen concerned deforestation's limitation. The main point was the one upon which all countries confirmed their ambition to fight for: avoiding temperature's rising with more than 2 C degrees, but nothing was said about how to hit this target. Instead of a binding agreement, most of the participating countries pushed forward to UN only intention declarations concerning the quantity of CO_2 emissions which would be reduced until 2020. Then followed Cancun, in 2010 – where there was postponed the problem's solving concerning curbing emissions. But there were reiterated the target of 2 C degrees, the promised emissions' curbing at Copenhagen would be integrated in an United Nations international treaty, it was decided to create a Found for Climate to finance efforts in climate area in lower income countries, and there was established a framework to reduce deforestation in developing countries.

But after that there came Durban, with a leap forward; in Durban there was agreed by the national governments that the future negotiations' objective shall be a binding treaty, starting with 2020 – the deadlock was over. Even China, India and USA which previously refused to discuss about binding agreements, agreed to this principle – a remarkable progress. The Kyoto Protocol remains valid until 2017, or until 2020. It was created the Ecological Found for Climate aiming at providing financial help to sustain investments aimed at adaptive measures in developing countries. This result was due to a last minute coalition among EU, lowest developed countries and island-states. But all these reaffirm the rising gap between what science tells us about what has to be done, and what is politically acceptable. The main challenge resides in the fact that the tender Durban agreement has to be the cornerstone for a future global environment agreement, in the mean time pushing for the actions aimed at a de-carbonized economy in as much countries as possible.

Chapter 5th – The Respect for Planetary Limits – is a enlightening presentation of how the Earth works; how natural systems such as natural resources, biophysical processes and living ecosystems function and interact. It is important to understand that the ecology contains economy, and to leave for ever the paradigm that economy is over ecology. The aspects of climate, ecosystems, natural resources and *economic* prosperity cannot be separated. Due to human greed, natural systems are under great pressure and there is needed a radical change in our attitudes related to how economy should be organized in order to prevent an accelerating erosion of much of the most important ecosystems.

Human activity, and especial economic activity, creates an ecological footprint – the area needed to a population in order to provide row materials and to administrate its wastes – and it's very important to recall that in time this surface has been rising, especially after Second World War. Human greed is big, but the Earth is limited. Mankind is the biggest geological force on Earth.

As humankind exploits in an unsustainable manner the forests, land, water, fisheries, the risks of loosing arable lands, fresh water resources, and finally of reducing biodiversity is now bigger than ever… Already 75% of biodiversity in agriculture is lost, and 70% of animals and plants are on the way to disappearance. The habitat which facilitated humankind to become the dominant specie on Earth is menaced by its greed, in this way humanity being the biggest mortal enemy of itself, because this situation would bring such changes in vital resources availableness while people's number is rising; in the same time, there are possible wars to create access to resources and, taking account of what weapons and technologies exist, these wars could put, in an extreme case, an end even to human history…

Human activity affects in a negative manner all earthly systems, because it generates a higher temperature, and this brings with it a lower biodiversity. That for, it is necessary to rethink the way how the result of human activity is evaluated, introducing in the analysis the way natural capital is affected by this activity. There are borders of Earth, and if some thresholds are crossed over, there could be generated *non-linear evolutions* and interactions among different elements of the ecosystem. Human development is in close correlation with biophysical process and the planetary limits such as climate stability, ozone layer, oceans' water acidity are true global ones, while there are four biophysical global processes which determine the Earth resilience capacity to future shocks

and threshold effects: the cycle of nitrogen and phosphorus, biodiversity reduction, earthly resources degradation, and drinkable water resources' overexploitation.

As a consequence, the *political* objectives in climate related area have to embrace over CO_2 emissions control, the administration of oceans, and of earthly ecosystems.

The greatest challenge humanity faces comes from the rising number of world population, whereas agriculture is the economic sector which contributes the most to climate changes... one third of the greenhouse gas emissions is due to agricultural process, while the agriculture is the most affected sector by climate changes. Today at least 1 bn. people suffer from chronic malnutrition, while the agriculture should provide live stocks for additional 2-3 more bn. people in the decades ahead. But a warmer climate means lower quantity of water which could be used for agricultural purposes. And this in the context of great quantities of nitrates found in the ground, exhaustion of biodiversity and water reserves, and of excessive amount of ozone close to the Earth's surface.

The agriculture's resilience and force are based on biodiversity. The agriculture's aim in the coming decades is to provide what humankind needs, and to be resilient to catastrophes and climate instability. An interesting solution concerns the creation of seeds which, once seeded in the ground, they can generate multiple and repeated harvests few years, without the need to plow.

But all these in the perspective of rising world food production with over 50% in four decades from now; and this can be obtained through productivity's *rising* of lands used nowadays in agricultural purposes. The authors mention even the fact that we need to keep on the table the options offered by biotechnology, and to remain open to genetic modified products – an aspect which could generate very hot debates in some parts of the world such as in European Union member countries, in the future. Greater productivity and greater resilience during new epidemics, climate instability, fresh water resources' missing and the shortage of agricultural lands push humankind to rethink all its traditional views about agriculture. As a consequence, there are needed more changes in fields such as: plants' harvesting, soils' administration, fresh water's using, the use of pesticides and landscape's administration.

There is another chapter specially dedicated to energy, and oil. Oil has had a tremendously impact upon economic and social development. Since 1950 oil production rose over 10 times; the world population 2,5 times bigger, while the world economy is 10 times bigger. These things and all their consequences are the result of oil using, and of cheap oil. As one can easy note, any evolution in transportation brings with it development, and power, and since over 90% of oil used is used in transportation, the consequences of this is that economy is globalized now exactly due to cheap oil. In the same time, agriculture has become deeper dependent on oil. Last two centuries witnessed the productivity's rising 20 times, and this is due to the same cause: cheap oil. *But* one of the greatest transformations due to oil using by human society is to be found in agricultural production: the agricultural exploitations have become fewer and on a greater surfaces, and more mechanized, being situated at remote places from one another. This change is felt all over food production chain: milk factories, gross-sellers, deposits, slaughter-houses, mills – all are now bigger and are situated very far from one another. New types of seeds, fertilizers, pesticides, intensive irrigations determined a 2.5 rising of agricultural production in the

first three decades after WW2, and world population met the proper conditions for its rising. But we recall here that oil is the main cause for all these things… There is a direct causal link between energy and poorness: nowadays over 1.6 bn. people don't have access to electricity, the majority being located in Africa and South-Asia. In this context, the report brings to our attention the fact that – as the role of governments is to mobilize the buying capacity of poor households – and as oil will become more expensive and hard to be found in the future, in order to avoid negative consequences due to emissions resulted from oil's burning and to eliminate fossil fuel in house using in poorest societies, there is a good solution to create a worldwide found which would provide financing for the quick extension of renewable electricity in poor countries. As soon as this measure is implemented, the pressure on oil resources, which become less and less accessible, would be less intense, the possible negative impact of peak oil being in this way attenuated. If measures to reduce oil dependence are not taken seriously, the consequences will be such as: oil exporting countries will consolidate their international position from economic and *political* view point, oil price will register a dramatic rising, while economy will enter the recession phase and finally the collapse one, all these bringing political crises in a numerous countries, which already have a lot of chronic and social problems.

It is noteworthy to bring to the reader's attention the fact that military staff in some countries signal the menaces looming over humanity due to peak oil; while *politics* is focused on short term aims, *strategic* thinking – which is found in military and security apparatus – is focused on long term possible evolution and menaces… They are focused on risk's evaluation, and since the menaces peculiar to Cold War politics has disappeared, the world is changing and will face other types of menaces: terrorist, ecological, climate changes, vital resources acute and then chronic shortages. As we can see, there are other menaces, which are dealing in a way or the other with *oil*. The solution is to fight for oil dependency's reduction, and to promote renewable for energy production, and recycling and reusing for materials which have the needed characteristics.

Even there are some new elements which could bring in some way a better supply of fuels – namely tar sands, shale gas, or even liquid coal – all of them have great inconvenience in connection with CO_2 emissions; that for, there is needed a *transition* to a green energetic system. But the transition will not be easy: there are a lot of hindrances along the way: political, financial, and technical, adding a great reluctance of a great number of big producer companies of conventional energy. They control nowadays the energy market, looking with skepticism both at renewable sources, and at a decentralized energy infrastructure in the future. Here could be added the institutional inertial impulse of old style institutions and organizations involved in energy market. But there is a hope in the long run: EU intends to cut off CO_2 emissions between 85% and 90% in 2050 in comparison with 2010. This is an achievable aim, in case renewable energies represent 80% in electricity production in 2050, coupled before with an efficiency rising of energy use, and the cut off of subsidies for fossil fuels (during 2010, 37 governments subsidized together energy use with USD 409 bn., which brought an artificial lower price for fossil fuels).

Another aspect which is a key-point in the Club of Rome report is world population, and its evolution; its importance is so great that UN has it on its agenda – it is a humankind problem, asking for global solutions. In 1994, there took place a UN conference in Cairo, concerning world population and its

possible trends. Global population trend has registered a spectacular evolution in the last century, rising from 2 bn. (1928) to 5,7 bn. (in 1994) and 7 bn. nowadays, and this only contributed to the rising complexities in the world today... In 2050, there are expected to be some 9 bn. people on Earth, all of them having the right to a decent life... But this aspect will put a lot of pressure upon ecosystem, resources, living space, and finally upon CO_2 emissions and climate changes. That for, the authors signal that there cannot be found a solution to climate changes decoupled of world population; they are two facets of the same complex global problem. After Cairo, there were registered significant progresses in connection with world population's evolution. Limiting population's rising, reducing poverty, rising welfare, and reducing the human impact upon environment are all intertwined and have the greatest influence upon one another. Each year world population adds to its number another 80 millions new incomers, and this poses a great challenge upon humankind: as there are some 3 bn. peoples without access to energy and needed resources for a decent life, in 2050 there will be added another 2-3 bn. peoples which will demand their access to a decent life. But there is a key-aspect which should be regarded as the cornerstone for humankind's evolution in the long run: there is needed a stable, of better, a reducing number of people in order to provide good living condition for all humans, on a limited Earth. It is important to note that some countries such as Afghanistan, Yemen, Saudi Arabia, Pakistan, East Timor, Papua New Guinea, Guatemala, Bolivia, and a most of the African countries register a medium birth/woman between 4 and 8, showing that in the long run there will be a rising of complexity of the problems these countries already have. The main cause for this trend is *poorness*, the role of women in society, and woman's discrimination. But past experience shows that rising income per capita contributes to lowering the birth rate, and rising school rate for the girls is the best mean to reduce birth rate, and to diminish children death rate in poor societies.

Taking account of these trends, there are needed measures aimed at reducing birth's number, and as a consequence there will be registered a lower impact upon the environment. The rise of world population is not sustainable from environmental, climate, and resources points of view, and if there will not be taken earlier some measures concerning reducing the birthrates, later there will be some human or natural aspects which will bring a rise in mortality's rate. Solutions which are already proved concern facilitating access to school for girls, and providing access to modern energy (!). Almost all countries which have a high level of birth rate, have great deficiencies regarding access to energy.

But there are some voices which only seed doubt concerning humankind present and especially future problems. They have the aim of denying the scientific truths concerning humankind contribution to environmental degradation. They are climate–deniers which say that there are other influences which could contribute to climate changes (from Earth's position in comparison with the Sun, natural cycles on the Earth, the evolution of solar radiation, and others). But as collected data prove, there is an accelerating rise in medium temperature in the last century, which is due especially to human activity – especially that activity which involves burning fossil fuels for producing energy. The press has a crucial role in spreading the message of climate-deniers, while in the US the problem is seen through ideological lens – and this is a huge problem because US has the biggest economy. But backyard the climate-deniers,

there are opaque interests which push them to speak against ecological movements, and especially against scientific community involved in climate science. These are narrow corporative interests connected to oil industry and classic energy capacities, and to financial and bank institutions which see with anger the possibility to create a new energy system, and as a consequence, a new economy and a new type of society…

These people are grouped in foundation – especially in the US – all of them being partisans of free competition and of free market, and all of them contesting the scientific results arrived at by IPCC and main discoveries in climate science. They see only the market and its mechanisms, and do not accept at all any economical instruments such as taxes, subsidies, or any intervention made by state in economy. The climate-deniers believe in the reduced role for the governments and a small role for the state. But the truth is this: there are pumped USD hundreds millions for lobbying US Congress, in order to finance the opposition at any legislation concerning energy and climate change, some congressmen receiving big subsidies from fossil fuels industry. But they are focused only on short term aspects and profits, denying a good future even for their own children…

There is a good proof proving the dangers which stay ahead – the ice cap in the Arctic area. In behaves like a canary in a mine. The health of the Earth is indicated by ice cap's surface and its thickness. It is a very remote area for most people, but for climate scientists it is a key-element for study. And as the measurements taken in 2007 had shown, in few months the Arctic ice lost 30% of its volume – which could be regarded as a very dramatic event. In the period of five years, between 2004 and 2008 the multiyear marine ice lost 42%. And this is an alarming phenomenon because it destroys a unique economic and social system, and endangers the way life conditions on entire planet are regulated. And the impossibility to predict accurately the evolution in the Arctic area, and as a consequence at global level, is complicated by the fact that the changes take place in a framework with a non-linear evolution. It is due principally to human activities. A lower surface of ice means that solar radiations are much better absorbed, instead of being reflected back in the space, which means a greater acceleration of global warming. This is coupled with higher acidification of ocean waters, which in its turn changes the equilibrium of carbonates in the oceans, menacing all beings with shells, and the corals. Recent evolutions in the Arctic area give us serious reasons which should concern us. The most alarming data connected to climate changes are those which explain the alarming changes which has taken place in the Arctic region, and that for it is needed more than ever an urgent and comprehensive program which should be assumed by political leaders, globally. The Arctic is the proof that climate changes will push humankind to take radical measures regarding the way it lives and behaves.

The Swedish authors bring in the forefront the case of Sweden: is she a world champion in climate policies? Even this country is recognized as leader in climate policies, the authors go further, and bring evidences that this country is not as clean as one could expect. But the way they think differs from the classical thought – they see the Swedish imports from different countries as elements which generated emissions in their country of origin, even they didn't polluted Sweden; and a lot of developed countries are in a similar position. Over 30% of CO_2 emissions are "incorporated" in final products which are imported from other countries; for important exporting countries such as China, the

situation in opposed: between 25% and 30% of Chinese emissions are due to their exports, which go especially to EU and USA. And even that Sweden implemented a tax on fossil fuels beginning with 1991, reducing in this way the CO_2 emissions due to house heating to a modest percentage of 5%, while the situation in other EU countries this sector contributes with 30-40% to CO_2 emissions, the total Swedish carbon footprint has risen in the same time span. And this is a clear sign concerning the fact that humankind should change its way of behavior, especially economic behavior. Looking through this angle, Sweden is not a world climate champion anymore. That for, it is compulsory to change our direction, in order to create the necessary conditions where economy and ecology can go hand in hand.

It is necessary for us to understand the right way the new economy works. We have in this historical moment three crises: one global financial crisis, economic crises of some countries which generate budgetary deficits, a great public debt and rising unemployment rate, and of course the crisis in the administration of the *environment*. The conclusion is that our economic model is not good anymore. The rapid erosion of natural capital is not the main focus for the most economists, which regard the nature as a constant and stable base for economic activities – which is not the case. What is more and more regarded as important is not the economic development, but the economic progress. Recently United Nations Environmental Program (UNEP) indicated in a report that the ecology of economic activities is not a luxury reserved exclusively to rich countries, meaning that a "green economy" is an essential factor for poverty's reduction and eradication. The ecological footprint of rich countries is a high one, and the life styles and the consumerism they encourage is in a great part responsible for the situation we face as humankind.

As a consequence, the GDP is not a good indicator for welfare measurement anymore. The sustainability of conventional economic activity becomes more and more unsustainable, because the negative aspects are greater than benefits, and the GDP doesn't distinguish between the activities which generate positive or negative effects upon the environment. We should regard the natural capital a great subsidizer of our economic activity, and this is not mentioned in GDP. And the natural capital is already crossed over due to economic activity.

That for, it is necessary to rethink the way we activate in economic and social areas, and a key-aspect is the creation of such type of development which would facilitate us to use more efficiently energy and other natural resources. The problem of access to resources should be posed both at nationally and internationally levels. *If* we don't' start to use more efficiently and equitably the resources of our unique planet, the consequences over the long run would be: hindrances in access to resources which will generate tensions and military confrontations, and death due to starving for some bn. of people. Instead of GDP, another indicator is more fitted in the new economy: it is HDI (Human Development Index), which focuses not only on incomes and purchasing power, but on life expectancy and education level, too. This is a more fitted indicator, because as DGP/capita rose, it brings a rising in welfare. But when it crosses a certain level it doesn't bring anymore benefits; contrary, it can generate *negative* effects.

Old economic model – based on GDP's evolution – has a lot of deficiencies: it is unsustainable from climate, environment, and resources point of view; it is unsustainable from equity point of view; it is unstable; it cannot create the

working places for the unemployed; has low efficiency in providing public goods; doesn't create the necessary conditions which bring welfare's rising. What matters the most in the new type of economy is not GDP/capita, but welfare's rising and human prosperity. The measures to be taken in order to go in the right direction regard the necessity to give the right value for natural capital, to understand that it has limits, and technical evolution is not a definitive solution to human problems; and we should correctly appreciate the high quality energy, which is not based on fossil fuels. The authors wish to signal that we *must* rethink the way economy is organized, and we should give up the unsustainable way we live nowadays, heading to a new type of *circular economy*, with a premium on reusing, recycling, and reconditioning. The producers should focus in this new type of economy on services and services providing instead on manufacturing products, and on administrating these products, instead in selling as much as they can to their clients. Furthermore the old economy – which is an economy of fiscal type – bites the natural capital and "eats" it, destabilizing the ecosystems, and even menacing the life on Earth. That for, the politicians should assume their responsibility: a lot of our present problems – which are systemic – could be solved by politicians using some, taxes, tariffs, or subsidies. But this means a greater role for the states, and a lesser role for "free hand" in economy. But these types of solutions are necessary, and they must be fitted in new economic theories, and new regularization measures. A comprehensive solution should embrace a *new way of thinking* and a new *attitude*. Signals from Arctic and Africa prove that there is a serious matter humankind faces; and traditional economic scientists should reinvent their discipline connecting it to understanding the way nature works, and how important it is for entire economic activity.

Not only the economic thought must be totally reformed, but financial institutions should face the reality that they cannot deny the risks of the future anymore. The assuming of great risks by financial institutions and by financial markets brought our present world crisis, while the governments tacitly accepted financial practices which caused these malfunctions. Deregulation by governments starting with '80s means that they played a role in this context. And the extraction of the profits which account over 40% of the total profits gained in the US is against the interests of the real economy.

That for, it is urgently needed to *restructure* the global financial system, aiming at providing credits to small and medium size companies, and especially if they concentrate upon investments in a green infrastructure and sustainable energy. Living on credit – as Americans did a lot in the past – in unsustainable from financial, economic, and ecological points of view; and a new look to financing economic activities should be the way banks work: they should focus on long term trends and benefits, and move away from short term perspective. The reform in financial sector is a much needed one; in can become a benefic force sustaining the efforts aimed at a sustainable society. It is a fatal error to ignore the inherent risks in continuing to finance the investments in fossil fuels projects or those projects which determine an unsustainable use of the biosphere. And such a negative trend will hurt the common man because economic activity will loose its force to provide the needed things in a sustainable manner, while the pension founds would be affected, as a direct consequence.

The conventional rising models policies will surely hurt more and more the ecosystems, biodiversity, climate stability, non-renewable resources such as oil,

phosphorus and arable lands. The real challenge is connected to natural resource base. The classical model sees the parallel rising of GDP and demand, while this is based on natural resources' and energy consumption. While a rising in purchasing power in a specific country brings a greater pressure upon the environment. The key for the future has to do directly with a model involving a social development in such a way that it would permit decent living conditions, and in the same time, ecological sustainability. One aspect is that energy efficiency doubles in 56 years, while energy demand doubles in 37 years, meaning that consumption has a greater peace in rising. While the carbon proportion in world economy has lowered from 1 kg CO_2/USD 1 value of production (1980) to 770 g/USD 1 value of production (2008), CO_2 emissions has risen with a greater peace (with 80% in comparison with 1970). Greenhouse gases rise in the same time with the income. And a better efficiency in energy and resources use only accelerates the economic rising, meaning that households have greater means to satisfy greater and more diversified needs, which means a greater rate of consumption, and a greater pressure upon the limited resources. But a society efficient from energy point of view is far better prepared for recessions, energy shocks, and fuel's rising prices.

The present economic model has at its base the myth that material wealth is the best measure for prosperity; which in fact is not true. We are obsessed with GDP's rising, hoping that a little more will put all things at their proper place. But it is a non-sense – this model undermines human happiness and causes even "social recession". The greatest problem we face is that society thinks about itself as being based on a sustainable rising, which is not true at all. It is unsustainable and creates unstable situations in the future. Until the end of the 21st century, if we do nut change our way we live and create welfare, the humankind will meet a hostile climate, resources' exhaustion, species' disappearance, food deficits, mass migrations, and almost inevitable, will face war. That for there are needed changes such as: implementation of new indicators for a better use of resources; making a fiscal reform aimed at reducing taxes on work, while rising them on consumption of fossil fuels and raw materials; identifying the signs announcing scarcity of resources (water, land); and one of the most important aspects – the remaking of energy system, with a more ecological and sustainable infrastructure.

The authors focus then of the solutions concerning the way economy should work: they present the type of new economy which is more sustainable from energy, resources, and climate change points of view. *It is the circular economy*. Rising population, natural resources exploitation, climate changes, and other factors push the world toward an unsustainable path. If we do not change our models for production and consumption, sure we will face a dangerous future. And this will be only amplified by the fact that humans' capacity to make things is far greater that their capacity to understand what they have done. If human society will face overpopulation, overconsumption in wealthy societies, using some technologies, would only create havoc to environment, and dangerous differences in society. Rising efficiency is not sufficient for providing a more sustainable future for our children; a more intensive recycling is needed, while reducing raw materials exploitation to a minimum. And recycling is a promising business: only electronic wastes rose to a huge quantity of 50 mil. tones/year, while only 15-20% of this quantity is recycled. We should move from a linear world economy towards a circular

regional economy, reducing the consumption of natural resources and recycling rate's rising. If we can rich the point where there will be no wastes as a consequence of social and economic activities, than we can say that we meet the point where the economy has a circular character. And the welfare's rising can be reached by reducing material consumption, and focusing upon recycling, reusing, and reconditioning.

Present economic models praise the amount of sold products, looking for its maximization, while the new type of circular economy praises services provision in connection to the products created by companies. Some instruments must be used in order to have such an effect: establishing compulsory levels for an efficient use of resources; sustainable innovation, promoting sustainable projects involving resources' using in a closed circuit; fiscal reform, aimed at reducing taxes levied on work, while rising them on consumption.

All these things will create the conditions for a better world to live in, with lower rate of pollution, with better use of natural capital, and with greater happiness for humans.

The economic type of the past brought humankind on the disaster threshold, and there are needed some radical social transformations which will prove to be difficult and painful. There is needed a better and fitted administration of natural capital, and missing it will mean the impossibility of satisfying the needs of world population, whose number is on a rising path. It is crucial to start working globally at different levels simultaneously: al household level, companies, and governments. *On the long run, there is needed new and radical idea and concepts concerning the way society is organized and functions*; and in order to arrive at that point, we should start with economy and international cooperation; while educational policies should be coupled to these trends, too. The authors say that there will surely take place *radical changes in global governance*, with a reformed and reinforced new world organization which will have the aim of working for humankind common interest. Some aspects, such as reducing meat consumption/capita, reducing oil consumption, a more rational use of buildings, producing goods with a better quality and a longer life, and even suppression of private car ownership – which as we live today, is a very radical change – are expected.

A total restructuring of political framework is needed, too. And as a consequence, there is needed, and it will surely take place, a peaceful but a painful *revolution, both in attitudes, and in socio-economical organization, too*. The economic rising doesn't mean economic wealth, and the message of *the Club of Rome Report – Denying Our Planetary Boundaries – is focused on starting a debate at social level with the aim of creating a new economic paradigm, while in the same time, the authors signaling that the main hindrances are not of technological character, but they depend on political will.*

They end their report with some advices for a world with 9 bn. of people. Their conclusions focused on radical solutions for present production and consumption systems, a new infrastructure with minimum CO_2 emissions, looking always on the whole, and not on the parts, the changing of producers' activity which would focus on services rather than selling products. But an institutional reform is needed, too; the institutional reform must take place both at national level, and at international (global) level, too. All solution connected to the mankind's future should have a global vision – and we should reconnect all human communities and through them the world economy to the biosphere.

That for what is most needed, argue the authors, *is a global type of government*, which should generate planetary solutions in order to overcome the problems humanity will face in the future. And there are needed strategies aimed at creating the fitted framework for the administration of the whole planet. The steps in that direction should start with the common effort of key-players which would promote the needed framework for a future global administration, with the aim of creation of *a planetary integrative management system*.

And as the authors of the Report's main aim was to use it in order to generate global debate concerning viable solution for the future, the reviewer aims only to bring to the Romanian public opinion's attention their desire, and he hopes it will do it.

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