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D R A F T

Achieving a sustainable global society anno 2100?

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Overview

In his classical 'Grandchildren Essay', Keynes (1930) "takes the wings into the future", by asking: "What can we reasonably expect the level of our economic life to be a hundred years hence? What are the economic possibilities for our grandchildren"? - The present paper outlines a thought experiment, inspired by Keynes' long-term vision. Thus, similar to - but not identical with - the Keynes approach, we try to imagine some important societal conditions for our *grandchildren (or their children). Rephrasing Keynes' question we might ask: "What can we reasonable expect the conditions of our living to be a hundred years hence?"*

Whereas Keynes puts the focus on economic possibilities at a distant point of time, this paper tries to address general life conditions underlying any economy in a future society, as regarded from an outset of today. We claim that key concepts within traditional economic theory have to be re-examined, in order to create an economy in compliance with fundamental limits for human activity on the planet. The background is, that since the times of the Keynes essay, solid evidence has been established concerning widespread damaging consequences on nature due to human activities, e.g. on global biodiversity, life-supporting ecosystems and the climate. This calls for a revised conception of the relation between man and nature.

The intention is of course not to be wise after the event, claiming that Keynes was wrong, but rather to reflect on the economic progress determinants considered by Keynes in his essay, to evaluate their relevance today as basis for a future a hundred years hence, and to suggest new premises for an updated 'Grandchildren vision', - premises which Keynes for very good reasons did not include in his analysis. – Whereas Keynes described a vision of 'a good life' for his grandchildren, this paper tries to outline some necessary conditions for enabling genuine societal progress in the next many decades.

This paper outlines (a few of the) premises on which reflections on a society anno 2100 should be build.

First section presents some considerations on Keynes' Grandchildren essay as an inspiration for the present paper. Section 2 (Some necessary conditions for achieving 'a good society' in 2100) gives a (very brief) introduction to some arguments for a shift from 'society in the economy' to 'economy-in-society-in-nature' (section 2.1). Next, the concept of worldview is unfolded and applied as a tool for exploring and comparing three economic models, the current economic model, the green economy, and the planetary economy (section 2.2). Then, in section 2.3, the actual process in the United Nations concerning Global Sustainable Development and a Post-2015 Agenda is reviewed. The last section contains a few concluding remarks.

1. ON KEYNES' GRANDCHILDREN ESSAY

This paper presents some thoughts on the future conditions two generations hence, inspired by Keynes' Grandchildren Essay from 1930[1]. The present author is by no means an expert in Keynes' *oeuvre*, and makes a virtue of a necessity by choosing the essay as the single source out of Keynes' immense production as point of departure for considerations on the challenging conditions for humanity anno 2100.

However, in this particular essay Keynes not only demonstrates some essential sides of his broad and humanistic based approach to economics as a social science, but the text also illustrates some far reaching perspectives in his view on the role that might be played by economy (and by economists) when it comes to creation of a sound foundation for decisions on the challenges faced by human societies in the future.

In his essay Keynes takes a historical view, stretching from prehistoric age to "comparatively modern times", i.e. the 1930'ies, and introduces a 'grandchildren perspective' as a basis for his considerations concerning the future.

He observes that during most of the epoch there was a slow rate or even lack of progress in society[2]. Keynes explores the long time span and identifies two drivers of progress in the very last part of the period, i.e. the most important factors enhancing economic progress. He claims the following two factors to be decisive: *important technical inventions, and *capital accumulation (enforced by compound interest)[3]. As a reference for the further discussion, Keynes presents some reflections on needs of human beings[4], and continues with unfolding (elements of) his vision for the future[5].

Keynes' reflections on needs of the human beings

> *"Now it is true, that the needs of human beings may seem to be insatiable. But they fall into two classes – those needs which are absolute in the sense that we feel them whatever the situation of our fellow human beings may be, and those that are relative in the sense that we feel them only if their satisfaction lifts us above, makes us feel superior to, our fellows. Needs of the second class, these which satisfy the desire for superiority, may indeed be insatiable; for the higher the general level, the higher still are they. But this is not so true of the absolute needs – a point may soon be reached, much sooner perhaps than we are all of us aware of, when these needs are satisfied in the sense that we prefer to devote further energies to non-economic purposes."*

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[1] Keynes (1930): Economic Possibilities for our Grandchildren

[2] Keynes uses the term 'progress' or 'economic progress', - the concept of 'development' is not found in the text. Today we would probably say 'development' or 'economic development'

[3] Keynes (1930: 2)

[4] Keynes (1939: 4)

[5] Keynes(1930: 4,5)

Keynes' vision (excerpts):

> *"Now for my conclusion, which you will find, I think, to become more and more startling to the imagination the longer you think about it.*
>
> *I draw the conclusion that, assuming no important wars and no important increase in population, the economic problem may be solved, or at least be within sight of solution, within a hundred years. This means that the economic problem is not – if we look into the future – the permanent problem of the human race.*
>
> *Why, you may ask, is this so startling? It is startling because – if, instead of looking into the future, we look into the past – we that the economic problem, the struggle for subsistence, always has been hitherto the primary, most pressing problem of the human race – not only of the human race, but of the whole of the biological kingdom from the beginnings of life in its most primitive forms.*
>
> *Thus we have expressly evolved by nature with all our impulses and deepest instincts – for the purpose of solving the economic problem. If the economic problem is solved, mankind will be deprived of its traditional purpose."*
> *……*
>
> *" Thus for the first time since his creation man will be faced with his real, his permanent problem – how to use his freedom from pressing economic cares, how to occupy the leisure, which science and compound interest will have won for him, to live wisely and agreeable and well."*
> *…..*
>
> *"For many years to come the old Adam will be so strong in us that everybody will need to do some work if he is to be contended. We shall do more things for ourselves than is usual with the rich to-day, only too glad to have small duties and tasks and routines. But beyond this, we shall endeavor to spread the bread thin on the butter – to make what work there is still to be done to be as widely shared as possible. Three-hour shifts or a fifteen-hour week may put off the problem for a great while. For three hours a day is quite enough to satisfy the old Adam in most of us!*
>
> *There are changes in other spheres too which we must expect to come. When the accumulation of wealth is no longer of high social importance, there will be great changes in the code of moral. We shall be able to rid ourselves of many of the pseudo-moral principles which have hag-ridden us for two hundred years, by which we have exalted some of the most distasteful of human qualities into the position of the highest virtues. We shall be able to afford to dare to assess the money-motive at its true value." …… "All kinds of social customs and economic practices, affecting the distribution of wealth and of economic rewards and penalties, which we now maintain at all costs, however distasteful and unjust they may be in themselves, because they are tremendously useful in promoting the accumulation of capital, we shall be free, at last, to discard."*

By emphasizing the distinction between absolute and relative needs Keynes touches upon an essential problem, highly relevant also today. Later on in the quoted text, Keynes claims that *the economic problem* in the future is not the permanent problem of the human race, assuming that no important wars or population increase do occur. - Now, WWII did occur (estimated death toll ranging from 50 million to more than 80 million persons, corresponding to about 2.5 pct. of the then world population). Furthermore, the total world population increased from about 2 billion (1930) to

around 3 million (1960) and 7 billion today. Thus the years after the essay was issued, have shown, that Keynes' assumptions were overthrown by the actual events and world population increases, - facts that naturally makes his conclusion less valid. Adding to this it should be noted, that Keynes in the essay seemingly confines his use of the term *the economic problem* to cover *the struggle for subsistence*. This may cause some confusion in a contemporary discourse where an expression as 'the economic problem for the human race' has a considerable broader meaning.

Having said so, it seems never the less fair to say that Keynes in the quoted piece invites the reader of today to take part in a number of important discussions of very pertinent matters. Such discussions might comprise issues like e.g. new production and consumption patterns, substitution of human labour with machines, consumerism as lifestyle, overexploitation of natural resources (including fossil fuels) population planning/control, etc., - just to mention a few. These challenges plus a number of other similar issues mark the conditions of today, and they should all be taken into account, when one tries to envision the future a hundred years ahead.

Recalling the "important technical inventions' (technological innovation) and "the accumulation of capital", as two factors pointed out by Keynes as key drivers of "economic progress", it is worthwhile to mention that both may be accompanied by negative consequences, which in many cases might exceed their positive impact on the economy, by leading to e.g. threats to social coherence and decreasing environmental quality. Keynes was aware of these aspects (note his expressions "technological unemployment"; …blindly pursue wealth… "), although the full consequences of such effects were not unfolded in his essay, - or for that matter explored by any other writer in those days.

Turning to questions of more direct economic relevance, as seen from a contemporary position, one might notify that issues like e.g. the social implications of globalization, the role played by the financial markets, and the institutional structures governing international economy are not present in the essay. Such things, including also the introduction of sustainable development as a global goal [6, 7], and the changes in communication forms due to the IT-revolution, could no one predict in 1930. Even the most visionary analyst or fortune-teller would not have a chance to foresee such phenomena. The reason to refer to these aspects here is solely to mark how significantly the economic scene has changed since Keynes.

As a prominent profile providing landmark analytical work, Keynes with his humanistic basis, still seems to generate impetus to innovative economic thinking within a number of areas. Readers wanting to explore new pathways for economic theory

[6] World Commission on Environment and Development (1987)
[7] UN Conference on Environment and Development, Rio de Janeiro (1992)

might not find very clear guidance in Keynes' visionary and thought provoking essay, but possibly get some inspiration for new ideas about economy-in-society-in-nature.

2. SOME NECESSARY CONDITIONS FOR ACHIEVING 'A GOOD SOCIETY' IN 2100

Against the background outlined in the previous section, it seems to be an almost impossible task to provide some relevant or useful thoughts on the conditions anno 2100. The following considerations should therefore not be regarded as anything else than a first, preliminary draft. The modest aim is to draw the attention to three areas, where prevailing economic thinking should be reconsidered and where new pathways are necessary: * The dubious primacy of economy over society * Worldviews and economic models * Economy in relation to the Post-2015 Agenda process led by the United Nations.

2.1 Shift from 'Society in the Economy' to 'Economy-in-Society-in-Nature' [8]

Ideas originating from Karl Polanyi [9], including the notion of embeddedness of the economy in society, may be invoked to substantiate the suggested shift. Polanyi questions the fundamental view adopted in most neoclassical economic theories, that economy (in practice) is superior to society in the sense that social life should be subordinated the market mechanism. He rejects the idea of a self-adjusting market, which he considers as a utopia. Society has to 'protect' itself (i.e. the citizens) from unwanted influence from the market. In mainstream economy questions concerning e.g. power relations among economic agents, handling of values of non-marketed goods and regulation of markets are (very often) relegated to the political sphere ('politics'). - The non-acceptance among mainstream economists of the superiority of the planetary boundaries underlines Polanyi's point.

In his Grandchildren Essay Keynes urges the reader not to overemphasize the importance of the economic problem. This might suggest that Keynes subscribed to the latter of the two views indicated in the title of this section

2.2 Economic models in a worldview perspective

This section explores three different economic models[10] as seen through the lenses of a specified, *common* worldview scheme (cf. box 1). This gives raise to a comparison of the three models, and they are: The 'current' economic model, the green economy

[8] The present text in this section is a first, brief version of a non-finished manuscript
[9] Polanyi ([1944] 2001)
[10] The term 'model' is used here as a generic name, and does as such not refer to any specific model

model, and the planetary economic model. The greatest differences are expected to be between the current economic model and the planetary model. The green economy model is included, since the concept (in slightly different shapes) has become a very frequently used frame of reference in analysis and debate of the (global) challenges of today and tomorrow. This case is, that almost all international organizations, as e.g. OECD (2011), most of the UN system, (e.g. UNEP (2011), UNDESA (2012)), the World Bank (2012), most scholars in academia and in practice all business representatives seemingly have adopted the green economy framework and are convinced that the green economy concept is necessary and sufficient as theoretical foundation for solving global challenges.

It is necessary at this point to emphasize that the models are explored here with focus on their virtues as tools for solving problems at a global scale. - Our approach addresses the worldviews behind the three economic models, and is doing so by examining their underlying worldviews, aiming at identifying some important similarities and differences. This comparison creates a ground for reviewing the growth paradigm.

The worldview scheme applied here is an array of the following eight dimensions [11]:

1. ***Primary goal***
   The overall policy goal generally accepted by supporters of the model as *the* main concern, - sometimes expressed through a rather broad or ambiguous vision, as e.g. growth, development or the like
2. ***Primary measure of progress***
   In case of a formalized model the measure of progress is at most expressed in terms of the numerical value of one or more indicator(s), calculated by means of specified data from an existing data base, allowing for comparison of status of achievement of the goal ('distance' from the goal) at different points of time
3. ***Scale/carrying capacity/role of environment***
   An assessment of the 'volume' of the economy, understood as the 'space of impact'. May be expressed in terms of e.g. physical space, percentage of the carrying capacity (relating to load, pressure or impact) of the surroundings, including the ecological environment
4. ***Distribution of goods in the population/degree of (in)equality***
   Formalized description of the distribution of wealth and/or income across a population, calculated on the basis of statistical material descriptions, often measured in percentage of the total volume of assets/income. An often used measure is the so-called Gini-coefficient, - stretching from the value 0 pct. (highest possible equality) to values approaching 100 pct. (increasing inequality).
5. ***Economic efficiency/allocation***
   The economic efficiency is the ability of the market as regards adequate allocation of goods and services. In most economic theories this dimension is (indirectly) connected

[11] cf. Costanza et al. (2012)

to assumptions concerning price-driven creation of an equilibrium in the market between demand and supply

6. ***Property rights***
   This dimension addresses the view supported by the economic model in question on a pursued balance between private and public ownership. The principle of private ownership of properties allows private economic actors (within certain restrictions) to make independently their decisions concerning economic activities involving their properties, be it actual income, savings or existing assets.
7. ***Role of Government***
   Strong state vs. minimal state. In contrast to private ownership this dimension concerns the extent of public ownership of facilities and the potential for provision of public goods and services. A special issue in this relation is the level of taxation and fines imposed by the state on private sector activities, - restrictions that address individuals as well as private firms.
8. ***Principles of governance***
   Prevailing ideas about nature and extent of governance mechanisms, including corresponding transparency and accountability criteria

This array of dimensions is applied for a comparison of the three above economic models. The text in the scheme gives a brief characterization of each of the models.

Box 1 Worldview

Worldview is a fundamental cognitive orientation of an individual or a community. A worldview may concern 'the entire world' (a comprehensive worldview) or addresses only a selected part of reality – denoted the worldview 'object', be it e.g. values, themes, concepts, ethical questions, knowledge, science, religion, etc. The *object* is thus understood as being conceptually embedded in a worldview, the latter acting as an underlying frame of reference. However, in discussions in academia or the public, analysis on an *object* does not always reveal the underlying worldview, which often is only tacitly present or deficiently declared. - A worldview consists of an array of basic positions, be they perceptions, normative postulates, beliefs, etc. This array is (philosophically) more or less equivalent to the group of axioms behind a logical theory. – Thus a worldview may be regarded as an organic unity - represented by a comprehensive set of positions concerning aspects or dimensions - by which 'the world' or an actual part of reality is addressed as medium for human activity.

World view

In this section the concept of worldview is unfolded and applied as a tool for exploring and comparing three economic models, the current economic model, the green economy, and the planetary economy (cf. table 1).

Table 1 Worldviews [1)]

Economic Model	**Current Economy**	**Green Economy**	**Planetary Economy** [2)]
1. Primary Policy Goal	**Continued economic growth** in the conventional sense, i.e. GDP-growth, assuming that growth ultimately will allow the solution of all other problems	Continued economic growth, but with **lower environ-mental impact**. Assuming that **decoupling** of GDP growth from carbon and material impacts is possible	A shift **from** merely **growth to develop-ment** in the real sense of improvements in **sustainable human well-being,** recog-nizing that material growth has significant negative impact
2. Primary measure of progress	**Gross Domestic Product** (GDP)	GDP, but recognizing impacts on natural capital	**Index of Sustainable Economic Welfare** (ISEW) Genuine Progress Indicator (GPI), or other improved measures of real welfare
3. Scale/ carrying capacity/role of the environment	**Not an issue**, since markets are assumed to overcome any resource limits via new technology and substitutes for resources are always available	Recognized, but assumed to be solvable via decoupling	**A primary concern** as a determinant of ecological sustainability. Natural capital and ecosystem services are not indefinitely substitutable and real limits do exist
4. Distribution /(in)equality/ poverty	**Not an issue**. Given lip service, but relegated to ”politics” and the assumed ”trickle down” economics [3) 4)] (”a rising tide lifts all boats”)	Recognized as important, assumes greening the economy will reduce poverty via enhanced agriculture and employment in green sectors	**A primary concern**, since it directly affects quality of life and social capital and is often exacerbated by growth (”a too rapidly rising tide only lifts yachts, while swamping small boats”)

[1)] table based on Costanza et al. (2012), modified; [2)] this model is denoted ’ecological’ economy by Costanza et al., - however a name that covers several schools; other names for similar approaches, as e.g. steady-state economy (Daly). [3)] Stiglitz (2012: xvi [4)] Stiglitz (2002: 78)

Table 1 Worldviews *(continued)*			
Economic Model	**Current Economy**	**Green Economy**	**Planetary Economy**
5. Economic efficiency /allocation	**The primary concern**, but generally including only marketed goods and services (GDP) and market institutions	Recognized to include natural capital and the need to incorporate the value of natural capital into market incentives	A primary concern, but including both market and nonmarket goods and services, and effects. Emphasis on the need to **incorporate the value of natural and social capital** to achieve true allocative efficiency
6. Property Rights	Emphasis on private property and conventional markets	Recognition of the need for instruments beyond the market	Emphasis on a balance of property rights regimes appropriate to the nature and scale of the system, and a linking of rights with responsibilities. Includes **larger role for common-property institutions** in addition to private and state owners.
7. Role of Government	Government intervention to be minimized and replaced with private and market institutions	Recognition of the need for govern-ment intervention e.g. to internalize natural capital and to aligning financial markets to needs of a green economy [5)]	Government plays a central role, including new functions as referee, facilitator, and broker in a new suite of common-asset institutions
8. Principles of governance	Laissez-faire market capitalism	Recognition of the need for govern-ment interventions	Lisbon principles of sustainable governance [6)]

[5)] Zadek (2014); [6)] ref: Costanza et al. (2007)

A core set of six principles was established in 1997 by ecological economist Robert Costanza for the sustainability governance of the oceans. These six principles have been generalized, and became known as the "Lisbon Principles" [12]: together they provide basic guidelines for administering the use of common natural and social resources. The principles are:

1: Responsibility
2: Scale-matching. boundaries
3: Precaution
4: Adaptive management
5: Full cost allocation
6: Participation

(More details about these principles can be found in Annex 1)

Lessons learned

As illustrated in table 1, the worldviews behind the current economic model and the planetary model are conflicting on significant positions - not the least regarding continued economic growth vs. development/sustainable human well-being, unconstrained scale vs. planetary boundaries, and the issue of distribution (cf. 'trickle-down' economics, according to which the benefits of economic growth *trickle down* even to the poor. Trickle-down economics[13] was never much more than just a belief, an article of faith[14]). These two models cannot be reconciled.

The worldview behind the green economy model shows several similarities with the current economic model (e.g. growth and markets as (primary) problem solving mechanism through right pricing). The green economy model is at some points in line with the planetary economy model (focus on reduction of environmental degradation, internalizing the natural capital, etc.). Initiatives derived from green economy analyses might certainly improve the environmental status in many cases. However, in the long run it is not possible to reconcile the two, due to the fundamental tension between the paradigm of continued material growth and the increasingly detectable ecological limitations. The green economy claim that decoupling solves the latter problem has up to now only been a hypothesis, but has not been substantiated at all.

The final conclusion is that a in order to solve global problems as e.g. climate change, it will be a necessary condition to develop new economic thinking characterized along the lines of the planetary economy model.

[12] ref: Costanza et al. (2007)
[13] Stiglitz (2012: xvi)
[14] Stiglitz (2002: 78)

2.3. Global sustainable development and the post-2015 agenda

Many voices in the academic and the public debate on global challenges hold that it is a necessity that future political decision making and public participation in global matters constantly should be informed and guided by the setting of explicit goals and targets for realizing the vision of global sustainable development, and based on the latest and best documented knowledge about the state of the planet, and the pressure imposed on life-supporting ecosystems by human activities.

As regards the first item, the on-going discourse within and around the United Nations concerning the so-called Post-2015 Agenda gives some hope in this direction.

In 2000 the United Nations launched a set of goals for the developing countries, the so-called Millennium Development Goals (MDGs). The ambition was that these goals should be achieved by 2015. The goals address eight serious challenges, such as eradication of extreme poverty, ensuring children's access to attend primary school, reduction of child mortality, etc. Since then numerous efforts have been invested in meeting these goals, and considerable results have been achieved [15].

At the September 2010 MDG Summit, United Nations Member States initiated steps towards advancing the development agenda beyond 2015. Since then the UN system has pursued a broad process aiming at conceptualization of the post-2015 agenda, including the setting of new global sustainable development goals (SDG). All member states together with representatives from business world and civil society organizations[16] are invited to participate in this process. While the SDG efforts are aiming at integrating the remaining tasks related to the MDGs in the coming SDGs, the overall orientation of the SDG work diverge significantly from the MDG program by adopting a global (universalistic) scope, which means that the coming goals should address challenges to be met by all nations (i.e. not only directing the attention upon developing countries as the MDGs do), while respecting the principle of common but differentiated responsibility (CBDR). For many reasons this overall direction is of course far more demanding than the previous one [17].

Comprehensive analysis and preparatory considerations on possible focal areas for the coming SD goals is right now in a phase marked by increasing activity in the UN and in governmental offices all over the world, and by all other involved stakeholders. The

[15] cf. United Nations (2013) *The Millenium Development Goals Report 2013*. United Nations, New York

[16] In the UN lingo civil society organizations is specified as belonging to the so-called 'major group of stakeholders', a designation that originates from the UN Conference on Environment and Development, Rio de Janeiro 1992.

[17] As an illustration at the technical/bureaucratic level it can be mentioned that the MDG framework uses 8 overall goals, 21 specified targets, and 60 (official) indicators serving as tools for concrete monitoring of the achievements within the program, nationally and at regional level. So far the SDG considers (as of May 2014) 17 focus areas (candidates for future goals), about 300 potential targets and an yet unknown number of indicators.

time line for these activities is the United Nations General Assembly September 2015, where the Secretary General will present to the Assembly a draft comprising set of Sustainable Development Goals.

An indication of the character of the actual Post-2015 Agenda efforts can be given by regarding the (as yet preliminary) list of potential focus areas for coming SDGs. The list is presented in Annex 2.

In parallel with the outlined activities two related processes are ongoing in the UN system, - both are more or less intertwined with the Post-2015 Agenda process: First, the continued negotiations on the follow-up of renewing the commitments along the lines of the Framework Convention on Climate Change. Future COP-meetings (COP: Conference of the Parties) will take place in December 2014 (COP 20 in Lima) and November-December 2015 (COP 21 in Paris), and second, a process dedicated to establishing financing mechanisms for advancing sustainable development.

The SDG work involves more or less 'the entire world' in an attempt to unite forces in order to cope with the yet known and future challenges at all levels, including the global.

However, it is important to notify, that in spite of constructive efforts from the UN system and from many nations and interest groups among the stakeholders, the basic thinking on how to involve practically all nations as well as local and global actors in future tasks - as e.g. developing means of implementation – is unfolded on the premises of a *green economy framework*. This is due to the fact, as earlier mentioned, that almost all international organizations, most of the UN system, and in practice all business representatives find the green economy concept as an adequate tool for defining in detail the problems and the solutions.

Referring to the conclusion of the examination of the green economy (cf. section 2.2) this is an alarming perspective, not the least for our grandchildren, since we – and they - all live on a fragile planet.

3. Concluding remarks

As stated earlier, it seems to be an almost impossible task to provide some relevant or useful thoughts on the conditions anno 2100, other than perspectives, that are threatening for us - and for our grandchildren - if the 'world society' is unable to come up with sustainable solutions and turn them into practical results in due time.

The new challenges related to world order of today, require an entirely new approach to economy and economic analysis. However, whereas the considerations made in the previous sections do not lead to a long list of prudent recommendations, they might suggest some modest statements, that could contribute to a continued debate on the future role of economy in society.

Four suggestions concerning steps towards new economic thinking

* there is a need for a new role of economy as a tool for society, not vice versa
* the narrow focus on economic growth should be replaced by a focus on human lives
* economists should be trained in trans-disciplinary work on common issues
* institutional innovation has to secure a pluralistic approaches to problem solving

ANNEX 1

LISBON PRINCIPLES OF SUSTAINABLE GOVERNANCE [18]

Principle 1: **Responsibility**. *Access to environmental resources carries attendant responsibilities to use them in an ecologically sustainable, economically efficient, and socially fair manner. Individual and corporate responsibilities and incentives should be aligned with each other and with broad social and ecological goals.*

Principle 2: **Scale-matching**. *Ecological problems are rarely confined to a single scale. Decision-making on environmental resources should (i) be assigned to institutional levels that maximize ecological input, (ii) ensure the flow of ecological information between institutional levels, (iii) take ownership and actors into account, and (iv) internalize costs and benefits. Appropriate scales of governance will be those that have the most relevant information, can respond quickly and efficiently, and are able to integrate across scale boundaries.*

Principle 3: **Precaution**. *In the face of uncertainty about potentially irreversible environmental impacts, decisions concerning their use should err on the side of caution. The burden of proof should shift to those whose activities potentially damage the environment.*

Principle 4: **Adaptive management**. *Given that some level of uncertainty always exists in environmental resource management, decision-makers should continuously gather and integrate appropriate ecological, social, and economic information with the goal of adaptive improvement.*

Principle 5: **Full cost allocation**. *All of the internal and external costs and benefits, including social and ecological, of alternative decisions concerning the use of environmental resources should be identified and allocated. When appropriate, markets should be adjusted to reflect full costs.*

Principle 6: **Participation**. *All stakeholders should be engaged in the formulation and implementation of decisions concerning environmental resources. Full stakeholder awareness and participation contributes to credible, accepted rules that identify and assign the corresponding responsibilities appropriately.*

[18] Based on Costanza et al. (2007)

ANNEX 2

PRELIMINARY LIST OF FOCUS AREAS FOR SDGs

(excerpts from a working document: Summary of statements. - 11th Session of the UN Open Working Group on Sustainable Development Goals. New York 5-9 May 2014).

1. Poverty eradication, building shared prosperity and promoting equality
2. Sustainable agriculture, food security and nutrition
3. Health and population dynamics
4. Education and life-long learning
5. Gender equality and women's empowerment
6. Water and sanitation
7. Energy
8. Economic growth, employment and infrastructure
9. Industrialization and promoting equality among nations
10. Sustainable cities and human settlements
11. Sustainable consumption and production
12. Climate change
13. Conservation and sustainable uses of marine resources, oceans and seas
14. Ecosystems and biodiversity
15. Means of implementation/Global partnership for sustainable development
16. Peaceful and inclusive societies, rule of law and capable institutions

During the meetings it was emphasized that the issue 'equality' should be given more attention in the future work

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