Unclassified **STD/DOC(2010)5**

Organisation de Coopération et de Développement Économiques
Organisation for Economic Co-operation and Development **12-Jul-2010**

English - Or. English

STATISTICS DIRECTORATE

STD/DOC(2010)5
Unclassified

A FRAMEWORK TO MEASURE THE PROGRESS OF SOCIETIES

STATISTICS DIRECTORATE

WORKING PAPER No 34

This paper contributes to work on measuring well-being and progress.

It has been prepared by Jon Hall, Enrico Giovannini, Adolfo Morrone and Giulia Ranuzzi.

For further information please contact:
Katherine SCRIVENS
E-mail: Katherine.SCRIVENS@oecd.org

JT03286644

Document complet disponible sur OLIS dans son format d'origine
Complete document available on OLIS in its original format

English - Or. English

OECD STATISTICS WORKING PAPER SERIES

The OECD Statistics Working Paper Series - managed by the OECD Statistics Directorate - is designed to make available in a timely fashion and to a wider readership selected studies prepared by OECD staff or by outside consultants working on OECD projects. The papers included are of a technical, methodological or statistical policy nature and relate to statistical work relevant to the Organisation. The Working Papers are generally available only in their original language - English or French - with a summary in the other.

Comments on the papers are welcome and should be communicated to the authors or to the OECD Statistics Directorate, 2 rue André Pascal, 75775 Paris Cedex 16, France.

The opinions expressed in these papers are the sole responsibility of the authors and do not necessarily reflect those of the OECD or of the governments of its Member countries.

http://www.oecd.org/std/research

OECD/OCDE, 2010
Applications for permission to reproduce or translate all or part of this material should be made to: OECD Publications, 2 rue André-Pascal, 75775 Paris, Cedex 16, France; e-mail: rights@oecd.org

A FRAMEWORK TO MEASURE THE PROGRESS OF SOCIETIES

Jon Hall, Enrico Giovannini, Adolfo Morrone and Giulia Ranuzzi

ACKNOWLEDGEMENTS

Jon Hall was Project Leader for the OECD-hosted Global Project on "Measuring the Progress of Societies" until 2009 and is now Programme Officer for the Partnership in Statistics for Development in the 21st Century (PARIS21). Enrico Giovannini was OECD Chief Statistician until 2009 and is now President of the Italian National Statistical Institute (Istat). Adolfo Morrone is a senior researcher seconded from Istat to the OECD, where he works on how to measure particular dimensions of progress. Giulia Ranuzzi, who worked at the OECD until 2009, conducts research on how differences in risk-taking behaviour affect countries' performance.

The authors gratefully acknowledge the contributions to this proposed framework of Sabina Alkire, (Oxford Poverty and Human Development Initiative), Giovanni Barbieri (Istat), Stefan Bergheim (Center for Societal Progress), Pieter Everaers (Eurostat), Leigh Gatt (Gatt Consulting), Duncan Green (Oxfam), Miroslaw Izienicki (Fifth Capital), Paul Jelfs (Australian Bureau of Statistics), Eva Jespersen (UNDP), Urve Kask (Statistics Estonia), Richard Layard (London School of Economics and Political Science), Filomena Maggino (Florence University), Alex Michalos (University of Northern British Columbia), Marco Mira D'Ercole (OECD), Eszter Németh (Hungarian Central Statistical Office), Robert Prescott-Allen, Mariano Rojas (Foro Consultivo Científico y Tecnológico, Mexico), Ulla Rosenström (Finnish Prime Minister's Office), Paul Schreyer (OECD), Peter Simlinger (International Institute for Information for Design), Denis Trewin (former Australian Chief Statistician), Jiri Vopravil (Czech Statistical Office), and Denis Ward (formerly OECD).

ABSTRACT

Over the last three decades, a number of frameworks have been developed to promote and measure well-being, quality of life, human development and sustainable development. Some frameworks use a conceptual approach while others employ a consultative approach, and different initiatives to measure progress will require different frameworks. The aim of this paper is to present a proposed framework for measuring the progress of societies, and to compare it with other progress frameworks that are currently in use around the world. The framework does not aim to be definitive, but rather to suggest a common starting point that the authors believe is broad-based and flexible enough to be applied in many situations around the world. It is also the intention that the framework could be used to identify gaps in existing statistical standards and to guide work to fill these gaps.

RÉSUMÉ

Pendant les trois dernières décennies, un certain nombre de cadres ont été développés afin de promouvoir et mesurer le bien-être, la qualité de la vie, le développement humain et le développement durable. Quelques cadres se servent d'une approche conceptuelle tandis que d'autres emploient une approche consultative. Des initiatives différentes pour mesurer le progrès exigeront des cadres différents. Ce papier a pour objectif de présenter une proposition de cadre pour mesurer le progrès de sociétés et de le comparer avec d'autres cadres de progrès qui sont utilisés en ce moment à travers le monde. Le cadre n'aspire pas à être définitif, mais suggère plutôt un point de départ commun que les auteurs croient universel et assez flexible pour être appliqué dans un grand nombre de situations à travers le monde. L'intention est également que ce cadre puisse être utilisé pour identifier des lacunes dans les normes statistiques existantes et guider le travail afin de combler ces lacunes.

TABLE OF CONTENTS

1. INTRODUCTION 7

2. A BRIEF OVERVIEW OF THINKING ABOUT THE PROGRESS OF SOCIETIES..... 7

3. TOWARDS THE DEVELOPMENT OF A FRAMEWORK TO MEASURE PROGRESS 9

4. A PROPOSED FRAMEWORK TO MEASURE THE PROGRESS OF SOCIETIES: DOMAINS AND DIMENSIONS..... 13

5. HOW DOES THE PROPOSED FRAMEWORK COMPARE TO OTHER FRAMEWORKS?..... 18

6. CONCLUSION..... 21

Annex A - A comparison between the proposed framework and those adopted by some initiatives established to measure well-being and societal progress…….23

References……..25

Boxes

Box 1. Can National Accounts Represent the Framework for Measuring Progress?..... 14
Box 2. Is an Increase in Subjective Wellbeing or Happiness enough to Pronounce Progress? 16
Box 3. Dimensions of Progress in Proposed Framework..... 17

1. Introduction

> When we look at the human condition, it is not for us to laugh, or cry, or lament or curse, or pretend that it is different. It is for us to understand. That is our duty as human beings.
>
> Baruch de Spinoza, *Political Treatise*, 1676

1. There is general agreement that although the past cannot be changed, the future is ours to make. As Amartya Sen points out in *Development as Freedom* (1999), identifying and promoting better societies has always been a powerful motivation for people. Sen adds that in order to improve societies we need to base our choices on reason, and that an appropriate evaluative framework is essential for that. Without qualitative and quantitative frameworks, policies to promote progress and enhance people's well-being lack a solid foundation.

2. People have known, since the time of Aristotle, that the progress of a society depends on more than increases in income and wealth, but we are still struggling with how to define and measure progress. Developments in philosophy and social and political science, together with improvements in data collection and statistical analysis have led to extensive experimentation in developed and developing countries seeking to measure their own progress.

3. In order to measure progress though, one generally needs a conceptual framework, i.e. a basic structure that can be used to present a preferred and reliable approach to an idea or thought. Frameworks delineate the dimensions used to build up a particular concept and create a logical structure that illustrates how these dimensions relate to one another. Over the last three decades, a number of frameworks have been developed to promote and measure well-being, quality of life, human development and sustainable development. The United Nation's Universal Declaration of Human Rights (UDHR) urges member nations to promote a number of human, civil, economic and social rights; the Millennium Development Goals have galvanized unprecedented efforts to meet the needs of the world's poorest; and the Human Development Index, which ranks countries by level of "human development", are all important examples. They show that it is possible to agree on how to define and measure progress.

4. Some frameworks use a conceptual approach and are derived from a particular view of what progress means, while others use a consultative approach in which the components / dimensions of progress are selected through consultation (sometimes at a political level) and agreement. These approaches are not mutually exclusive and can be combined.

5. This paper discusses a conceptual approach for developing a framework to measure progress. It also proposes a concrete framework, built upon a series of key domains and dimensions, and compares it with other frameworks for progress that are currently in use around the world. The proposed framework has been developed with two main purposes in mind:

- As a starting point to be used by those who are interested in measuring progress in different societies around the world; and
- To identify gaps in existing statistical standards and build a research programme to fill these gaps.

2. A brief overview of thinking about the progress of societies

6. People have been thinking about what *progress* means for at least two millennia. The concept has taken a variety of directions and forms, with various notions gaining favour depending on prevailing

political regimes, cultural influences and environmental conditions. But, in all cases, the notion of 'progress' has been used to take account of those dimensions that are usually missed by more conventional and quantitative definitions of the development of a country/region/community simply based on economic growth. Progress, in other words, takes us back to a broad notion of well-being and welfare, and to how a country/region/community performs and changes over time.[1]

7. The suggestion that human advancement must not be seen only from an economic or a psychological perspective was already present in Aristotle's mind. He made a distinction between moral life, which was necessary to attain happiness, and material life, which was necessary to meet basic needs. Aristotle thought of well-being as multidimensional, with both material and immaterial dimensions. He also believed that successful communities must share common principles on what is important for well-being, and that consultation is an essential tool to develop consensus on what is important for the good life.

8. During the *Renaissance*, the notion of progress was associated with scientific advancement. The Illuminists started to ask various questions on progress: is it linear, or does it take multiple directions and forms? Is progress something physical or moral? Is it limited or infinite? In the 18th and 19th centuries, Jeremy Bentham and John Stuart Mill spoke about progress and well-being in terms of "utility", with happiness as the ultimate goal of humankind. Mill saw utility as comprising intellectual, spiritual and cultural pleasure, and regarded these as more important than physical pleasure. And so Mill emphasised the notion of *eudaimonia* (happiness), which sees the pursuit of happiness as associated with excellence in virtuous activities (ethical, intellectual and political).

9. After the Great Depression and World War Two, national accounting, measuring a nation's productive capacity, came to be seen by many as the main way of measuring progress. The movement towards sustainable development in the 1980s and the UNDP's efforts to measure human development have sought to restore balance by portraying economic growth as a supporting pillar of human well-being rather than as its sole goal.

10. One of the most influential contemporary contributions to thinking about progress is Sen's "capabilities approach". He spoke about the importance of human freedom and democracy. Sen supported the theory of human agency, according to which people should be free to make choices influencing their own lives and the lives of others. "Capability" refers to the freedom to promote or achieve valuable functioning. Therefore Sen sees well-being as involving much more than material possessions: relationships, political freedom and a supportive work environment are all important. Sen too sees progress as multidimensional and as including both material and immaterial aspects: good health, personal safety, education and knowledge all increase our capability to achieve well-being.

11. So, as this short review demonstrates, debates around – and popular interpretations of – progress have been underway for a long time. While notions of progress differ, they are united in the philosophy that "progress" comprises both material and immaterial components. Many people are working to define and measure concepts such as well-being, quality of life, life satisfaction and sustainable development. All these concepts are related to each other, but they have different connotations: for example, while "life satisfaction" focuses on the subjective assessment of different elements that affect individual lives, "well-being" has been used by some authors to refer to objective living conditions. While both concepts refer to the condition of the current generation, "sustainable development" tries to take into consideration the well-being of future generations, introducing an intergenerational dimension in assessing current well-being that is often absent in other frameworks.

---

[1] This paper does not try to provide a comprehensive and rigorous classification of authors who addressed these issues.

12. As explained in section 4 below, we consider that societal progress occurs when there is an improvement in the "sustainable and equitable well-being of a society". As such, this concept is broad enough to encompass most of the alternative views mentioned above.

3. Towards the development of a framework to measure progress

3.1. What should a framework to measure progress look like?

> The ancients, who wished to illustrate illustrious virtue throughout the kingdom, first ordered well their own states. Wishing to order well their states, they first regulated their families. Wishing to regulate their families, they first cultivated their persons. Wishing to cultivate their persons, they first rectified their hearts. Wishing to rectify their hearts, they first sought to be sincere in their thoughts. Wishing to be sincere in their thoughts, they first extended to the utmost their knowledge. Such extension of knowledge lay in the investigation of things.
>
> Things being investigated, knowledge became complete. Their knowledge being complete, their thoughts were sincere. Their thoughts being sincere, their hearts were then rectified. Their hearts being rectified, their persons were cultivated. Their persons being cultivated, their families were regulated. Their families being regulated, their states were rightly governed. Their states being rightly governed, the whole kingdom was made tranquil and happy.
>
> Confucius, *The Great Learning*, 500 B.C.

13. Although most people would agree that progress is multidimensional, there are many different opinions on what those dimensions are and how to label them. These differences come from the fact that a wide variety of societies and organisations with different cultures, histories, landscapes and statistical capacities have tried to measure progress. Often they have worked from first principles, and the lack of a common starting point – that sets out in general terms what progress looks like - can lead to long, and not necessarily fruitful, discussions and a duplication of effort. Different societies will have different views about what constitutes progress, and it is important that people in each society arrives at that view for themselves. It follows therefore that different societies will inevitably want to use different indicators to measure their own progress. While this approach might hinder comparisons between countries, it does reflect the fact that we are not all the same.

14. By proposing a framework, this paper does not want to suggest there should be just a single view of what progress is. But it does aim to provide a head start to future initiatives wanting to measure the progress of a society. The proposed framework, which draws on many contributions from around the world, offers a broad description of the many dimensions (components) of societal progress, and establishes a common language for them. It is primarily meant to help those who want to debate what progress means for their society and to help them identify which components should be measured.

15. While some key dimensions are common to most views of societal progress, the notion of progress differs between people and it changes over time. It is often the relative importance of each dimension of societal progress that determines whether – for any particular individual – there has been improvement overall: two people can use the same set of facts to make different overall assessments about the progress of their society, because of different views on the relative merits of an increase in longevity versus a decrease in biodiversity, say. However, there are some elements that seem incontestable:

- First, it is important to recognise, as Aristotle did, that progress has both a material and an immaterial component. According to Fogel (1999), although material assistance is an important element in the struggle to improve people's well-being, such assistance will not be fully effective if one assumes that improvement in material conditions naturally leads to improvements in well-being.

- Second, progress is about change. Further, to properly assess progress one needs to look not only at the past and the present, but also to the future: any serious assessment of the current well-being of society should pay attention to what might happen to societal well-being in the future given current trends, as some development paths may not be sustainable.

16. All in all, the "progress of a society":

- Is a multidimensional concept, encompassing both material and immaterial aspects of well-being;
- Is a dynamic concept, which requires both looking back at the past and considering future paths (and particular emphasis is placed on the future when one considers the sustainability of the current level of well-being);
- Refers to the experiences of people, and what they value as important for their lives and societies. Taking the individual as a point of departure for analysis does not imply neglecting communities, but it requires evaluating them by virtue of what they bring to the people living in them.

3.2. Can we reach agreement on a framework?

17. A diversity of core values, processes, and languages have led to the development and application of different frameworks to describe and structure the notion of progress. The differences among frameworks arise from several factors including:

- The different ways progress has been conceptualised (as "quality of life", "life satisfaction", "sustainable development" or "well-being");
- The choice of dimensions to include (e.g. democracy, education, safety);
- The ways in which dimensions are operationalised (e.g. should we assess "work" by measuring the number of jobs in a society or the degree to which people are satisfied with their labour market experience?);
- The relationships between dimensions (e.g. is human well-being a subset of the well-being of our ecosystem, or is it a separate aspect?);
- The weight to attribute to each dimension, or whether to weight at all, when seeking to arrive at an overall assessment of progress.

18. There is a considerable literature about the feasibility of developing a framework for progress. For example:

- The celebrated Roman poet Horace wrote that "there are as many preferences as there are people". With that in mind, one may doubt the possibility of reaching agreement across a society. But, as Sen (1999) suggests, if we have enough information and do not aim for too much precision, we can take into account the diversity of the preferences, interests, concerns and predicaments of different members of society in order to produce a reasoned and democratic social choice.
- Others have argued that the concept of progress is too abstract to measure. This may be true, to the extent that 'progress' encompasses many dimensions of people's lives, some of which are quite abstract. But that does not mean that it cannot be measured with valid and reliable indicators. Poverty and sustainability are just two examples of abstract multi-dimensional concepts that have been measured using well-defined indicators.

- Some argue that, as the various dimensions of progress lack a common metric, it makes little sense to try to assess progress overall. While it is true that the use of a single metric (for example market prices) is not appropriate to describe the many facets of progress, we can still aim to provide a more comprehensive (even if less parsimonious) description of progress by using a set of indicators, albeit with different measurement units.

19. People will continue to debate whether we can measure progress. But many people around the world are convinced that this is feasible and important. Experience from all over the globe shows that approaches to measure progress work best when they engage a cross section of society in debating what measures to use. While it is true that a bottom-up approach can be cumbersome and may take time to deliver results, the difficulties in building consensus can provide the legitimacy that is necessary to developing a shared view of societal goals that resonate with the whole community.[2]

3.3. Frameworks to measure societal progress: key characteristics

"Everything in this world has to have structure, otherwise it is chaos."

Schumacher (1973)

20. A framework for measuring societal progress is usually composed of some broad domains of progress, each partitioned into a number of dimensions. Therefore, the first step for developing a framework for progress is to define the broad domains (e.g. the environment or the economy), where each of them represents a cluster of aspects that we might want to measure. The second step is to divide the domains into dimensions of societal progress. These dimensions are the fundamental building blocks of societal progress (e.g. the environment domain may include various dimensions such as land, air, water and biodiversity). The final aim is to choose a minimum set of dimensions that, taken together, capture the main elements of societal progress but are few enough in number to be digestible.

21. According to Alkire (2002), when identifying dimensions for measuring a complex concept like societal progress it is necessary to follow some rules:

- First, dimensions should be based on values or "reasons for action". This means that dimensions should represent human ends (rather than means) that are recognised as intrinsically valuable by people from different societies. This helps avoid problems of cultural relativism that could arise if the framework were not anchored to some broad and common values.[3]
- Second, the dimensions should combine scope with specificity. In other terms, each dimension should be defined clearly enough to avoid ambiguity, but defined broadly enough to allow users to adjust it according to their own perspectives.

22. It is obviously a challenge to find a set of dimensions which provide the most parsimonious description of progress: a set broad enough to cover the key facets, without being so large as to be difficult to interpret. Alkire (2002) argued that a set of dimensions should be *incommensurable* – none of the qualities of one dimension should be present in another; *irreducible* – it should not be possible to make the

---

[2] Indeed one could begin by constructing a framework rooted in academic research and existing experiences. One could then develop a *folksonomy* using the web to investigate which dimensions of progress are important to citizens and stakeholders and then try to use their feedback to reshape the initial framework.

[3] For instance the dimensions should be anchored to general and universal principles like those set by the Universal Declaration of Human Rights (UDHR) or the Millennium Declaration.

list any shorter; and *non-hierarchical* – it should not attempt to set a permanent hierarchy to the list of dimensions, as no such hierarchy could hold under all circumstances in a changing world.

23. It is also important to seek dimensions that are relevant to progress in their own right – that is, they should affect people and society directly. A focus on outcomes (rather than measuring outputs or inputs) is important to ensure that the dimensions and indicators focus on things that matter directly to people. Moreover, a useful framework for societal progress should be developed "in a way that respects the insights and aspirations of women and men of all races, classes, and political orientations" (Alkire, 2002).[4]

24. To conclude, a framework should have the following characteristics:

- Be built on solid conceptual ground;
- Contain broad domains and dimensions that must be incommensurable, irreducible, non-hierarchical and valuable;
- Do not require too much precision (Sen, 1999), nor be too prescriptive;
- Focus on outcomes (or ends) rather than outputs (or means);
- The process that leads to the development of this framework should involve consulting relevant stakeholders for greater legitimacy.

25. At this point, we could ask ourselves whether such a framework already exists. Unfortunately, the answer is negative. As described in Box 1 below, the most solid and comprehensive statistical framework ever developed, the System of National Accounts (SNA), does not provide a satisfactory tool for measuring progress and well-being. Although it is possible to derive useful measures that affect societal progress, the SNA does not cover some aspects of well-being that are important for achieving societal progress (such as health, personal relationships, etc.).[5]

26. Over the last forty years several attempts have been made to build composite indicators or other statistical frameworks to measure progress, to overcome one of the key difficulties in the practical implementation of the different frameworks, i.e. the lack of a single metric that can bring together indicators of various phenomena expressed in different units of measurement. The European Parliament (2007) published a study on alternative progress indicators, where the different approaches are evaluated using SWOT analysis showing strong and weak points of each one.[6] They concluded that in order to achieve sustainable development, human wealth and well-being, multidimensional indicators are needed to supplement GDP and to set GDP in an appropriate socio-ecological contest. Until now, however, the

[4] To make this point clear, inflation (and its mirror image, deflation) impacts economic activity and welfare -- i.e., disposable income and real wages -- in several ways. When an external shock occurs, for example, a moderate rate of inflation can have a positive effect on aggregate demand, since it facilitates a smooth adjustment to the new price equilibrium. Deflation, on the other hand, can have a negative effect on aggregate demand, since it can lead people to wait for lower prices before purchasing goods and services. But deflation also raises real disposable income as the cost of goods and services decreases, which may be beneficial for people's welfare. Thus inflation or deflation can affect people's wellbeing by impacting on their resources and on the level of economic activity. But it is not the level of inflation *per se* that affects people's welfare. Welfare is affected by the change in real national income. And so, when measuring progress, we would look at real national income rather than inflation as a dimension of progress. More generally, dimensions of progress should be selected according to the *ceteris paribus* condition. In other words, if the proposed dimension changes while everything else remains equal, has progress been affected? Inflation/deflation fails this test. Real national income does not.

[5] See the report of the Commission on the Measurement of Economic Performance and Social Progress, http://www.stiglitz-sen-fitoussi.fr

[6] On the same topic see also Costanza et al., 2009.

existing approaches lack public understanding and political support. Notwithstanding some good ideas, the "Holy Grail" has not yet been found: none of the proposed frameworks has been recognised as fully satisfactory and none has emerged as a worldwide reference.[7]

4. A proposed framework to measure the progress of societies: domains and dimensions

4.1. The point of departure

27. In this paper we will not discuss the actual construction of measures of societal progress, but only identify the dimensions that such measures should represent. Before turning to the dimensions included in the framework, it is important to remind ourselves about why a framework is needed in the first place. We are seeking a way to select and present the key measures of societal progress. We are not seeking to construct a model of how the world works[8]. Many aspects of life affect societal progress and the proposed framework does not seek to account for all of them. Instead, we seek to select a set of dimensions of societal progress that can be influenced by human beings. For example, earthquakes have an impact on both people and the environment. But societies cannot influence the number of earthquakes, even if they can provide safer houses in earthquake zones or choose not to build there in the first place, thereby reducing people's vulnerability to earthquakes. Such changes could therefore be picked up in measures of societal progress, rather than the number of earthquakes per se.

28. As we are seeking a framework that is both broad and flexible, something that will provide a solid foundation for others to adapt to their own purposes, several leading frameworks have been analysed to formulate the framework presented in Figure 1. This framework considers that societies are based on two systems: the Human system and the Ecosystem.[9] They are linked through two different channels, "Resource management" and "Ecosystem services". Resources management represents the effects of the human system on the ecosystem, through resource depletion and pollution. Ecosystem services link the two systems in both directions. The ecosystem benefits the human system through positives services like food, clean water. But it can also do damage through earthquakes and floods. The human system may also provide positive services to the ecosystem (or its capacity for supporting life) through providing food and water for wild animals in times of hardship, tackling invasive species and so on.

29. Within this framework, Human well-being is the key domain. Its dimensions represent Alkire's "reasons for action": therefore, in our framework, they comprise the core human ends that societies pursue. An increase in human well-being is the final goal of progress.

---

7 The Human Development Index is one very widely used composite indicator, but only covers three dimensions of societal progress: income, education and health.

8 According to Richardson et al. (2000) a complex system can be described as comprising a large number of entities or agents that display a high level of interactivity. The nature of this interactivity is mostly non-linear and contains feedback loops. A number of basic observations about the properties of complex systems are made: i) system history/experience plays an important role in defining the state of the system and its evolution; ii) diversity of behaviour exists (and its agents can employ quantitative methods in an effort to support decision making); iii) system evolution is potentially very sensitive to small disturbances (including the development of chaotic behaviour) and insensitive to large disturbances; iv) complex systems are incompressible (i.e. it is impossible to account for the system in a manner that is less complex than the system itself).

9 The proposed framework draws on the Robert Prescott-Allen's model for a wellbeing index (2006), presented at a Conference on "Measuring Wellbeing and Societal Progress" organised in 2006 by the OECD, the Joint Research Centre of the European Commission and the Centre for Research on Lifelong Learning. See: http://crell.jrc.ec.europa.eu/Well-being.htm

Box 1. Can National Accounts Represent the Framework for Measuring Progress?

The recognition of the national accounts is a testimony not only to Nobel laureate Simon Kuznets and the other economists who participated in their early development, but also to the staff of the Bureau of Economic Analysis and its predecessor organisations, who — working with academics, business persons, policy officials, and others — have continually updated and improved the accounts over the years to make them as accurate, useful, and relevant today as they have been since their creation over 60 years ago.

Steven Landefeld, 2000

The most developed conceptual and measurement framework available to describe the functioning of the economic system of each country is the System of National Accounts (SNA). Why do we need something else?

In the 1930's, in response to the information gap revealed by the Great Depression, Simon Kuznets developed a set of national income and product accounts. In the 1940's, World War II planning needs stimulated the development of product estimates and the accounts evolved into a set of income and product accounts. During the second half of the 20th century, other events (such as accelerating inflation in the 1960's and 1970's or the growing internationalisation of trade in the 1980's) caused national accountants to change their framework to meet the needs of policy makers and citizens who wanted to monitor how the economy was evolving.

There is no doubt that national accounts represent a milestone in our measurement systems. They helped in achieving economic stability and in fostering economic growth by serving as the mainstay of macroeconomic analysis.

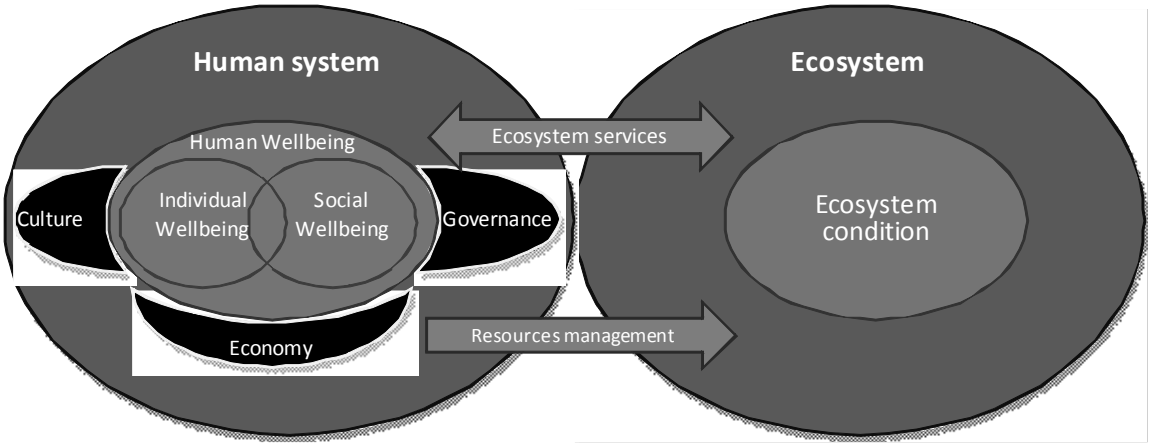
Shortcomings of the official national accounts as a measure of economic well-being include an incomplete coverage of non-market activities (many services produced in households do not enter measures of production), a restricted coverage of assets and depreciation (for instance, environmental damage is not accounted as depreciation) and an absence of information on how the income that is generated in the economy is distributed among citizens. Nor does the SNA provide information on life-cycle and intergenerational features that are essential for appropriate forecasting.

This may be true, but then the SNA has never pretended to be a comprehensive measure of human well-being. This is clear if we look at the historical events that determined its origin and development. What we want to emphasise is that it is not so much the fault of national accountants who promote a limited index, but more of policy makers and citizens who use too much and too often the SNA to assess the well-being of a nation and determine policy priorities. As Schumacher pointed out almost forty years ago, economic growth should be seen as a means to human well-being, and not as the ultimate goal.

30. Human well-being can be considered as comprising individual and social outcomes. In fact, human well-being may be conceived as a collection of attributes that characterise the kind of life that each person pursues, and their level of freedom (with 'freedom' used in the sense of Sen who takes it to be the range of opportunities open to people). Some of these attributes will be specific to each person (one's own state of health, knowledge, etc.) and can be clustered together as attributes of "individual well-being". Other attributes are shared with other people (those living within the same family or neighbourhood), or reflect the relations between them (e.g. the extent and quality of relationships with others), or how a society is peaceful, resilient, cohesive; all of these factors can be clustered together as "social well-being".

31. Human well-being is supported by three domains: economy, culture and governance. These are seen as important insofar as they are key supporting pillars to human well-being, rather than seen important for their own sake. Having a strong economy, effective governance and vibrant culture is not well-being in itself, but these factors do – typically – provide an enabling environment in which human well-being will improve. Therefore, they are considered as "intermediate goals".

Fig. 1. The Framework of the Progress of Societies



32. The ecosystem has only one domain (ecosystem condition), which represent the well-being of the ecosystem. Ecosystem well-being is equally important if one sees the ecosystem as important in its own right or if one takes a more anthropocentric view (where one sees the ecosystem as important simply because it provides the human system with resources and services which contribute to human well-being).[10]

33. At this point, one could define:

- The "well-being of a society" (or societal well-being) as the sum of the human well-being and the ecosystem condition; and
- "progress of a society" (or societal progress) as the improvement in human well-being and the ecosystem condition.

34. But it is also important to recognise the role played by inequalities in human well-being and ecosystem condition across and within societies or geographical regions and between generations. Consider, for instance, an average increase of the material well-being of a society, but an increase which goes solely to the richest 10% of people, while the material well-being of the poorest 10% declines. The average level of material well-being may have risen, but has their really been progress in the society? Similar arguments can be applied to the sustainability dimension, i.e. the distribution of well-being between generations. Therefore, we believe that the well-being of a society also depends on the way in which the various items that shape people's lives are distributed in society[11]; and that it cannot be assessed without considering its sustainability over time, i.e. the well-being of the future generations.

35. Putting the first two and second two pairs of points together we define societal progress as occurring when there is an improvement in the "sustainable and equitable well-being of a society".

[10] One alternative way to represent the framework is to show the Human System within the Ecosphere, to underline how much the former is strictly embedded in the latter.

[11] Of course, the relative importance attributed to these two aspects will depend on alternative concepts of social justice.

Box 2. Is an Increase in Subjective Wellbeing or Happiness enough to Pronounce Progress?

Some experts believe that when considering progress people's subjective well-being – how they feel about their lives, their overall levels of happiness (broadly defined) and also their subjective assessment of specific aspects (i.e. work satisfaction) - are all that is important to progress. They argue that happiness may be seen as a 'super dominant' concept; and that if we were able to judge that happiness had indeed increased, we might conclude that there had been progress almost regardless of what had happened in the other dimensions of the framework.

Although some believe that subjective well-being is difficult to measure precisely and reliably, several studies in recent years have demonstrated that there are reliable measures that could be used to complement the objective ones (Veenhoven, 2007). Moreover, subjective measures of well-being and happiness are important and should be taken into account alongside objective measures when trying to assess progress or well-being. Consider people's fear of crime, for example. It is their perception that influences their day-to-day behaviour (and well-being) rather than the objective crime rate.

It seems reasonable to argue that people's overall life satisfaction and happiness are mainly influenced by the objective facts about what is happening in their society. Indeed this is one reason why those producing a set of progress measures want to disseminate them widely. It is also a case for using subjective well-being measures to validate objective measures. However, it is also self evident that people's subjective opinion can change only if they are aware of the objective state of their society. This could be possible in theory, but in practice it seems that few people know the facts about what is happening in their society (Blinder and Krueger, 2004). Perhaps fewer yet know what could happen in future, to assess sustainability. Therefore, until we live in a society of "perfectly informed" citizens, whose own happiness is influenced by a sufficient understanding of the progress of their societies, it would seem unwise to rely on measures of happiness alone to assess societal progress. Both objective and subjective measures have to be used.

36. The framework we propose does not equate progress to an increase in individuals' evaluations of happiness/life satisfaction, though this as an important element (see Box 2 above). Rather, it underlines the importance of objective conditions and economic, social and environmental achievements. It puts emphasis on the importance of the well-being of the current generation, but also defines progress as an increase in equitable and sustainable well-being, thereby recognising that not all individuals are properly equipped or informed to take a long-term perspective. Finally, it is compatible with Sen's capabilities approach stressing the fact that, to enhance human well-being, the intermediate goals of the human system (economy, governance and culture) should provide conditions under which individuals can make use of their potentials. The proposed framework could be, thus, defined as "eclectic".

4.2. Proposed dimensions of societal progress

37. Of course, a framework based on these broad domains of progress is not immediately operational. To become useful for those who want to measure societal progress, more precise dimensions need to be defined, within the domains contained in Figure 1. To define these dimensions, we have looked at work from around the world. The result of this analysis led us to a set of "final goals for progress" (covering human well-being and ecosystem condition) and a set of "intermediate goals" (covering economy, culture and governance). The "final goals" are direct measures of human and environmental well-being, while the "intermediate goals" are those elements that are key inputs into human and environmental well-being. Finally, the links between the two sets of goals need to be considered, as well as two key "cross-cutting perspectives", i.e. the intra-generational (equity) and the inter-generational (sustainability) perspectives. See Box 3 for an overview of the dimensions or progress in the proposed framework.

Box 3. Dimensions of Progress in Proposed Framework

FINAL GOALS

Ecosystem Condition: outcomes for the environment

- land (geosphere)
- freshwater, oceans and seas (hydrosphere)
- biodiversity (biosphere)
- air (atmosphere)

Human well-being: outcomes for people

- physical and mental health
- knowledge and understanding
- work
- material well-being
- freedom and self-determination
- interpersonal relationships

INTERMEDIATE GOALS

Economy

- national income
- national wealth

Governance

- human rights
- civic and political engagement
- security and violence
- trust
- access to services

Culture

- cultural heritage
- arts and leisure

LINKS BETWEEN THE TWO SETS OF GOALS

Resource management, use, development and protection

- resource extraction and consumption
- pollution
- protection and conservation of economic and environmental assets

Ecosystem services

- resources and processes provided
- impact of natural events

CROSS-CUTTING PERSPECTIVES

- Intra-generational aspects: equity/inequality
- Inter-generational aspects: sustainability/vulnerability/resilience

38. The importance of inequality for people's well-being is widely recognised by theories of welfare, empirical research and social norms. For example, recent literature on subjective well-being has found

some correlation between life satisfaction (i.e. subjective well-being) and income inequality and insecurity. These areas are not included as separate "dimensions" of social progress because they cut across multiple dimensions of progress.[12] We recognise that an equitable (however defined) distribution of resources and social outcomes between individuals, population groups (for instance, gender equality) and generations is an important societal goal.[13] Such considerations need to apply throughout the framework, and to analyse the conditions of specific population groups (children, women, etc.).

39. Similar considerations apply to sustainability/vulnerability/resilience. A person can be healthy, educated and have a job today, but be at risk tomorrow because of poor investment decisions, or a weak social security system. Vulnerability has an inter-temporal dimension and can be important for individuals, as well as for specific social groups (e.g. farmers who live in regions subject to drought). Such inter-temporal considerations can be taken throughout the framework.

5. How does the proposed framework compare to other frameworks?

40. As already mentioned, there are many different frameworks for progress and it is interesting to see how this proposed framework for societal progress compares with some of them.

5.1. Maslow's Hierarchy of Needs

41. In 1954, the humanistic psychologist Abraham Maslow developed a hierarchy of needs (see Figure 2 below) which ranks physiological and psychological motives by their priority, with the most basic needs at the bottom. According to Maslow, people must first satisfy their basic physiological needs, such as the need for water and sleep, before being motivated to meet their need for safety and security, and so on up the hierarchy.

42. Although some of the key dimensions are present in our framework, Maslow's approach is different from what we propose. In particular, we follow Alkire's suggestion that dimensions should not follow a fixed hierarchy and that, depending on the circumstances, any one dimension could be considered more important than any other. This position finds confirmation in some studies (Goebel and Brown, 1981; Pettijohn and Pettijohn, 1996) which suggest that people do not always place higher priority on lower level needs (consider Mahatma Gandhi for example who starved himself for the sake of others).

---

[12] Poverty, for example, can be defined in several ways: one could use the term to mean a lack of financial resources; some consider that it crosses multiple dimensions (Sen, 1999). Therefore, some might turn to indicators of income and wealth distribution to measure poverty. Others might look more broadly. It is the basket of these measures that would be used to assess multidimensional poverty.

[13] As "progress" is a dynamic concept, its measurement can be made looking at the temporal movements of aggregate indicators, based on averages or other summary measures. However, as questions about people's wellbeing are ultimately about the lives of individuals in society, we cannot really evaluate a distributional change without knowing, for example, if the formerly underprivileged remain at the bottom of the heap or have exchanged places with the more privileged. While it is unrealistic to obtain indices of every individual's views about progress, it could be useful to conduct longitudinal studies to understand whether and under what circumstances people experience different outcomes — e.g., do the same individuals remain poor over the years, or is poverty transient?

Figure 2. Maslow's Hierarchy of Needs

Source: Maslow, A. (1954)

5.2. Capability approach

43. Freedom in all its dimensions is both "the primary end and the principal means of development" (Sen, 1999). With his five freedoms, Sen covers a wide spectrum of variables: i) Economic facilities such as material resources and income as well as companies' access to finance; ii) Political freedom; iii) Social opportunities, among which he encompasses education, healthcare and other institutions that are important in themselves but also to facilitate participation in economic and political activities; iv) Transparency, which allows trust and prevents corruption; and v) Protective security, i.e. a social safety net that prevents people from falling into abject misery if material changes adversely affect their lives on a massive scale.

44. The dimensions taken into account in Sen's capability approach are encompassed in the proposed framework. The main difference with respect to Sen's approach is that our progress framework measures outcomes not people's capabilities. Indeed many applications of Sen's capability approach to measure individual well-being have ended up measuring outcomes (or functionings, in Sen's language) because it is extremely difficult to measure what people might choose to do, while their choices are more readily observable (Klasen, 2007).

5.3. Sustainable development

45. Several sets of indicators have been proposed over time to measure sustainable development. In most cases, the classical "three-pillar" approach has been used. More recently, a working group on sustainable development statistics, established with the joint efforts of the United Nations Economic Commission for Europe, OECD and EUROSTAT, defined a broad conceptual framework for sustainable development measurement focused on capital.

46. Capital assets in the System of National Accounts (SNA) framework include financial and non-financial assets, with the latter broken down into produced and non-produced assets. National accounts provide estimates of depreciation for produced non-financial assets and this provides the basis for calculating net domestic product, which opens the way to estimates of sustainable income. The capital approach to measure sustainability aims at accounting for a broader set of assets. In particular, a full set of environmental assets and human capital are included, as well as those assets already recognised in the current SNA. The group proposed a set of sustainable development indicators that might serve as the basis

for international comparisons, and is consistent with both the capital approach and common elements of existing policy-based indicator sets. The set takes into account monetary indicators of economic wealth and physical indicators of climate, air quality, water quantity/quality, ecological integrity, biological diversity, educational attainment and health status. The non-market benefits of social capital are also included.

47. The main difference between this approach and the framework is that the former focuses on elements that can be expressed as "capital" (which is anyway included in our framework) but excludes elements relevant for the assessment of societal progress that cannot be reduced to the notion of capital.

48. The European Union's Sustainable Development Indicators (SDI) are a set of indicators organised using a theme-oriented framework, which is conceived to provide a clear and easily communicable structure, relevant to political decision-making. The framework reflects the renewed EU Sustainable Development Strategy (SDS).[14] It encompasses: i) socioeconomic development; ii) sustainable consumption and production; iii) social inclusion; iv) demographic changes; v) public health; vi) climate change and energy; vii) sustainable transport; viii) natural resources; ix) global partnership; and x) good governance. The framework follows a hierarchical approach where indicators are ranked in three levels (headline indicators, used to monitor the overall objectives of the strategy; a second level of indicators used to monitor the operational objectives of the strategy and a third level consisting of indicators related to actions outlined in the strategy or to other issues which are useful to analyse progress towards the SDS strategy, European Commission, 2007).

49. The SDI framework follows the same approach of the proposed framework in adopting a set of indicators and not a single composite index. But it focuses on sustainability and not on the progress of human well-being and so doesn't take into account dimensions which are not directly related to sustainability (like culture for instance).

5.4. Gross National Happiness

50. In 1972, the King of Bhutan introduced the concept of 'Gross national Happiness' (GNH) as the driving force of Bhutan's development. GNH is based on four pillars: i) sustainable and equitable socio-economic development; ii) the conservation of the environment; iii) preservation and promotion of culture; and iv) promotion of good governance. GNH aims to embody both the physical and mental well-being of individuals, with happiness as the ultimate goal. Similar to the framework, the GNH combines subjective and objective well-being. It includes many components like subjective happiness, mental health, emotional balance, spirituality, culture, human rights, trust, social support, education, health, living standards and ecology. While conventional development models stress economic growth as our ultimate objective, GNH is based on the premise that true development takes place when material and spiritual development occur side by side, complementing and reinforcing each other. Bhutan wants to ensure that increases in material prosperity are shared across society and are balanced with preserving cultural traditions, protecting the environment and maintaining a responsive government.

51. The GNH framework is similar to the proposed framework, but while the GNH is strongly rooted in the Bhutanese culture, the framework has a more general approach that could be adopted by countries with very different cultures.

5.5. National Accounts of Well-being

52. 'National Accounts of Well-being' (NAW) is a framework for the measurement of well-being developed by the New Economics Foundation. It focuses on the subjective measurement of human well-

[14] See http://register.consilium.europa.eu/pdf/en/06/st10/st10117.en06.pdf

being and is made up of five main components: i) emotional well-being; ii) satisfying lives; iii) vitality; iv) resilience and self-esteem; and v) positive functioning. It sees social well-being as made up of two main components: supportive relationships; and trust and belonging.

53. Although both the NAW and the framework recognise the fact that well-being is multidimensional and dynamic, there are some differences. First of all the framework presented in this paper allows for both objective and subjective measures, while the NAW uses only subjective measures. Second, the framework aims at assessing both human and ecosystem well-being, while the NAW focuses only on the human aspects. Finally, the framework also provides measurements for input domains such as the economy and governance, not covered by the NAW.

5.6. Commission on the Measurement of Economic Performance and Social Progress

54. In February 2008, French President Nicolas Sarkozy launched the Commission on the Measurement of Economic Performance and Social Progress (CMEPSP), chaired by Joseph Stiglitz, Amartya Sen and Jean-Paul Fitoussi. The aims of the CMEPSP were to identify the limits of GDP as an indicator of economic performance and social progress, to consider what additional information might be required for the production of more relevant indicators of social progress, and to assess the feasibility of alternative measurement tools.

55. Over a period of 18 months, the Commission – comprising 25 leading experts from around the world – worked on these issues, focussing the discussions around three main streams of measurement: classical GDP issues; quality of life; and sustainable development and the environment. In September 2009, the Commission released a 300-page report with its findings (Stiglitz et al., 2009).

56. The report is very explicit on the need to look beyond factors of production to measure economic performance and people's actual well-being. Similar to the framework presented in this paper, the CMEPSP report conceptualises 'well-being' as being multidimensional, comprising: i) material living standards; ii) subjective features such as people's evaluations and affects; iii) health; iv) education; v) personal activities, including work; vi) political voice and governance; vii) social connections and relationships; and viii) insecurity, of an economic as well as physical nature.

5.7. Other approaches

57. As already mentioned, a growing number of initiatives aims at measuring progress at the national or local level. Each of these initiatives uses its own framework as well as its own set of statistical measures. In the annex, a comparison between the dimensions that appear in some of these different frameworks and those proposed in the framework is presented. The comparison suggests that, although the frameworks were designed in different continents, the main dimensions of progress they use are not so different and most of them are anyway covered by our framework.

6. Conclusion

58. There are many initiatives to develop frameworks for progress and well-being at the community, national and international levels. A bottom-up approach is important in developing a framework to ensure that it is relevant for the society whose progress it purports to measure. We recognise that there are elements of subjectivity in evaluations of progress, and that unanimity is difficult to reach. But we think that measuring societal progress, in all its dimensions, is vital for improving the functioning of a modern democracy and for balanced policy-making.

59. The framework proposed in this paper can provide a common starting point for those who want to establish new initiatives around the world, as it:

- draws on the work of an international community of researchers and practitioners;
- respects the key principles proposed to design measurement frameworks;
- is broad enough to be adaptable to different cultures and societies; and
- encompasses most of the alternative frameworks proposed so far.

ANNEX - A COMPARISON BETWEEN THE PROPOSED FRAMEWORK AND THOSE ADOPTED BY SOME INITIATIVES ESTABLISHED TO MEASURE WELL-BEING AND SOCIETAL PROGRESS

In this annex we compare broadly the proposed framewoek with four other frameworks for progress. As the reader will see, although the frameworks come from different continents, they could fit — with some adjustments — into the framework presented in this paper. To make the presentation simple, we have made several arbitrary choices in this process. This table is meant just to demonstrate that there is a considerable degree of overlap in how the different initiatives view progress and well-being. It is not meant to provide a detailed correspondence.

	The proposed framework	Measures of Australia's Progress	Canadian Index of Well-being	Measuring Ireland's Progress	Indicators of Social Progress, Hungary
OUTCOMES	Physical and mental health	Health	Healthy populations	Life expectancy; Health care expenditure; Fertility; Age of population; Population distribution	Health
	Knowledge and understanding	Education and training	Educated Populace	Science and technology graduates; Research and development expenditure; Early school leavers; Literacy; Third level education; Pupil-teacher ratio; Patent applications;	Education
	Work and leisure	Work	Time use	Labor productivity; Older workers; Unemployment rate; Migration	Labour market
	Material well-being	Housing; Financial hardship		Risk of poverty; Jobless households; Lone parent families; Dwelling completions;	Situation of young people; Situation of older people; Financial situation, consumption, poverty; Housing
	Interpersonal relationships	Family, community and social cohesion	Community Vitality	Living alone	Population, family
	Freedom and self-determination				
	Land	The natural landscape	Ecosystem health		Natural resources
	Freshwater	The natural landscape		River water quality; Acid rain precursors	
	Oceans and seas	Oceans and estuaries			
	Biodiversity	The natural landscape			
	Atmosphere	Air and atmosphere		Urban air quality;	

INPUTS

The proposed framework	Measuring Australian Progress	Canadian Index of Well-being	Measuring Ireland's Progress	Indicators of Social Progress, Hungary
National income	National income; Productivity; Competitiveness and openness; Inflation		Gross Domestic Product; International transactions; International trade; Exchange rates; Interest rates; Harmonized Index of Consumer prices; Price levels; Regional income	Level of development and growth; Efficiency, competitiveness, stability; Knowledge-based economy
National wealth	National wealth		Gross fixed capital formation	
Human rights and civic engagement	Democracy, governance and citizenship	Civic engagement	Voter turnout; Official development assistance; Gender pay gap	
Security and crime	Crime		Government debt; Public balance; Murders; Headline offences; Social protection expenditure	Social protection net
Access to services	Communication; Transport		Transport; Education expenditure; Mortgages; Household internet access	
Cultural heritage, arts and leisure	Culture and leisure	Arts and Culture		Culture
Resource extraction and consumption	The human environment; International environmental concerns		Greenhouse gases; Energy intensity of economy; Waste management	Sustainable production and consumption; Climate change and energy
Pollution				

Legend:

- Un-shaded boxes represent dimensions of progress that correspond to the framework presented in this paper without distortion.
- The pale blue shading cover dimensions that fit broadly into the framework proposed here but with some distortion.
- The dark blue shading represents dimensions from our framework that are not included in the other initiatives.

REFERENCES

Alkire, S., (2002), "Dimensions of Human Development", *World Development,* 30(2), pp. 181-205.

Blinder, A. S., Krueger A. B., (2004), "What does the public know about economic policy and how does it know it?", *Working Paper 10787,* National Bureau of Economic Research.

Confucius, (ca.500BC), *The Great Learning*, translated and reprinted by Kessinger Publishing, Llc, Whitefish, MT.

Costanza, R., Hart, M., Posner, S. and J. Talberth, (2009), "Beyond GDP: The Need for New Measures of Progress", *The Pardee Papers,* N. 4, Boston University.

De Spinoza, B., (1676), *A Theologico-Political Treatise,* translated by Elwes, R., Dodo Press, London.

European Commission, (2007), "Measuring progress towards a more sustainable Europe", *The EU sustainable development strategy,* Eurostat Statistical Books, Luxembourg.

European Parliament (2007), Alternative Progress Indicators to Gross Domestic Product (GDP) as a means towards Sustainable Development, Policy Department Economic and Scientific Policy Study.

Fogel, R.W., (1999), "Catching up with the Economy", *The American Economic Review*, 89(1), pp. 1-21.

Goebel, B. L., Brown D. R., (1981), "Age differences in motivation related to Maslow's need hierarchy", *Developmental Psychology,* 17, 809-815.

Günther, I. and Klasen, S. (2007), *Measuring Chronic Non-Income Poverty*, Chronic Poverty Research Centre Working Paper 79, www.chronicpoverty.org.

Landefeld, S., 2000. *GDP: One of the Great Inventions of the 20th Century.* United States Department of Commerce: Bureau of Economic Analysis.

Maslow, A. (1954), *Motivation and Personality,* New York, Harper.

Méda, D., (2009), « Quel progrès faut-il mesurer? », *Esprit*, Juin 2009, pp. 86-120.

Pettijohn, T. F. II, and Pettijohn, T.F., (1996), "Perceived Happiness of College Students Measured by Maslow's Hierarchy of Needs", *Psychological Reports*, 79, 759-62.

Prescott-Allen, R., (2006), "The structure of a well-being index", presented at *JRC/OECD Workshop on "Measuring Well-being and Societal Progress"*, June 2006, Milan: http://crell.jrc.ec.europa.eu/Well-being/papers/Prescott-Allen_Structure%20of%20a%20well-being%20index%20rev1.pdf

Richardson, K. A., Cilliers, P. and Lissack, M. (2001), "Complexity Science: A 'Gray' Science for the 'Stuff in Between', *Emergence,* 3:2, pp.6-18.

Schumacher, E.F., (1973), *Small is Beautiful: Economics as if People Mattered*, Harper and Row, New York.

Sen, A., (1999), *Development as Freedom,* University Press, Oxford.

Stiglitz, J., Sen. A, Fitoussi, J-P. (2009), *Report by the Commission on the Measurement of Economic Performance and Social Progress*, available at: www.stiglitz-sen-fitoussi.fr

Veenhoven, R. (2007) "Quality-of-Life Research", in Peck, D.L. and Bryant, C.D. (Eds.) *21st Century Sociology: A Reference Handbook*, Sage, Thousand Oaks, California USA.