

# THE CONSTRUCTION OF WELL-BEING INDICATORS: FROM DEFINITIONS TO MEASURES AND TO INTERPRETATION

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**Abstract:** In order to measure and monitor a country's well-being and progress, a particular path has to be followed, leading from *concept* to *measure*, to *interpretation*. The process requires:

- (a) defining the concepts to measure and monitor and their conceptual dimensions, together with the ambits (domains) in which the concepts are observed and monitored;
- (b) developing/selecting indicators; this requires the identification also of the appropriate techniques aimed at their synthesis;
- (c) defining the perspectives through which the indicators should be observed and the consistent organization of the monitoring process;
- (d) defining the interpretative/explanatory models, which actually link the obtained results to the previously defined concept.

The widely accepted main concepts defining the progress of a country (or community) are the well-being of individuals (*quality of life*), its fair distribution (*equity*), and sustainable promotion (*sustainability*). The paper aims at (a) clarifying different issues concerning the well-being of societies by providing a conceptual instrument allowing anyone to orient themselves among all the emerging proposals and to distinguish between serious and propagandistic ones; (b) unravelling the primary methodological aspects and issues that should be considered in constructing indicators.

**Keywords:** measurement of national well-being, well-being concepts, indicators' definition and construction.

## 1. Defining well-being

### 1.1. Attempts to classify the concepts

During the history of political philosophy, since Aristotle, the conceptual approaches trying to define what is well-being were, and are, many and it is quite impossible to examine all those definitions and

the following attempt to classify them has no intention to do that exhaustively.

### (A) Well-being declined in terms of “structures of values”

According to this criterion, the distinction between different definitions can be explained by the different structures of the adopted life values. In this sense, three different philosophical approaches can be identified [Diener, Suh 1997], synthesized Table 1.

**Table 1.** Well-being concepts declined in terms of “structures of values”

What is societal well-being related to?	What should be observed	Observational strategies?		What measures?
		What?	At what level?	
<b>Functioning and capability to select goods and services that one desires</b>	<b>Income</b> , considered the main mean to achieve an acceptable standard of living	Wealth (observed or estimated)	<ul style="list-style-type: none"> <li>individual (micro) → income</li> <li>community (macro) → GDP</li> </ul>	Economic indices
<b>Normative ideals</b>	Set of characteristics inspired by normative aims, grounded in moral <b>values</b> or policy <b>goals</b>	Living conditions	<ul style="list-style-type: none"> <li>individual (micro) → work, ...</li> <li>community (macro) → social cohesion, democracy</li> </ul>	Social indicators
<b>Subjective experiences</b>	Individual's cognitive and affective reactions to one's own life (or specific domains)	Subjective perceptions and attitudes	Individual (micro) → satisfaction	Subjective indicators

Source: own composition.

### (B) Well-being declined in terms of different observational perspectives

According to this criterion, the different conceptual approaches refer to one of the perspectives showed in Table 2.

**Table 2.** Well-being concepts declined in terms of “different observational perspectives”

<b>PROCESS</b>	<p>Societal well-being is seen as a function of concepts like:</p> <ul style="list-style-type: none"> <li>– <b>development</b> (often referring to qualitative dynamic change of an economic system)</li> <li>– <b>growth</b> (referring to quantitative expansion on the scale of physical dimensions of economic system).</li> </ul> <p>Both concepts refer to different but interactive components (economic, structural and technologic) that should be considered together [Horn 1993].</p> <p>A term that could unify the previous ones is <b>progress</b>, indicating generally “moving forward” (from Latin “<i>progressus</i>”, <i>going forward, advance</i>). As limits or potentialities of the process delineated in terms of “moving forward” is reached, the attention could be turned towards the reverse and opposite process, “de-development”, de-growth, recession, ... [Horn 1993].</p> <p>This approach assumes that a (more or less virtuous) process of economic growth leads almost automatically to individual and collective well-being.</p>
<b>CONDITIONS</b>	<p>Societal well-being is seen as a function of concepts like:</p> <ul style="list-style-type: none"> <li>• <b>availability of economic resources</b> (<i>manpower, equipment, budget</i>),</li> <li>• <b>income and wealth distribution</b> (and its social implications),</li> <li>• <b>national welfare</b> and its relationships and impacts on economics.</li> </ul> <p>This perspective requires that each individual:</p> <ul style="list-style-type: none"> <li>– identifies oneself in his/her own community,</li> <li>– acquires collectively the knowledge, values and skills to so that to share and expand the community’s resources for the benefit of all its members without being at the expense of other communities or of the environment [Horn 1993]. In other terms, the conditions should be sustainable.</li> </ul>
<b>GOALS</b>	<p>This perspective moves the attention from the process (development, progress, growth) to the goal:</p> <ul style="list-style-type: none"> <li>– sustainability,</li> <li>– quality of life,</li> <li>– well-being,</li> <li>– ...</li> </ul>

Source: own composition.

### (C) Well-being seen in terms of points of observation

According to this criterion [Berger-Schmitt, Noll 2000], the different conceptual approaches are distinguished with reference to the point of observation, which can be centred on:

- the individual dimension (**quality of life**): resources approach, capabilities approach, subjective well-being approach, basic needs approach, objective living conditions and subjective well-being approach;
- the community dimension (**quality of societies**): liveability and quality of nations, societal integration, solidarity and stability, sustainability, human development, social quality.

### (D) Well-being declined in terms of different theoretical views of Quality-of-Life

According to this criterion [Sirgy 2011], the different conceptual approaches to well-being are distinguished with reference to the different theoretical perspectives through which Quality of Life is seen:

- **Socio-economic development** (social development follows the achievement of a satisfactory level of economic development). Even though there is enough evidence to support the notion that economic development is strongly related to social development, the concept of socio-economic development is not able to capture the entire domain of the QOL construct, since it leaves out other important dimensions of well-being such as social well-being, health well-being, and environmental well-being.
- **Personal utility**. According to this approach, quality of life is related to the subjective experience of individuals, observed in terms of evaluations, perceptions, and expressions of satisfaction of their living conditions.
- **Just society**. According to this approach, the quality of life of a community is that in which its members enjoy a high level of social justice.
- **Human development**. Quality of Life is related to the satisfaction of people's developmental needs, which could be of lower-order (health, safety, and economic, and so on); and of higher-order (social, esteem, actualization, knowledge, and aesthetics needs). To achieve a high level of quality of life, community members have to satisfy both lower and higher-order developmental needs.
- **Sustainability**, defined by the World Commission on Environment and Development as the effort to meet the needs of the present without compromising the ability of future generations to meet their own needs. Two different perspectives of sustainability can be perceived: environmental sustainability (environmental well-being) and environmental and human sustainability (sustainable community, sustainable development, and sustainable growth).
- **Functionings**: individual life is a combination of doings and beings—referred to as *functionings* (activities and situations that people consider as important in their lives, e.g. health status, level

of education, and current employment status). Quality of life is assessed with reference to the individual freedom to choose among the various *functionings*. This freedom to choose is referred to as *capabilities*, defined as the ability to achieve *functionings*.

## 1.2. Towards a comprehensive definition

From the previous synthesis, it is easily deducible that each of the identified approaches is not able to fully describe what can be defined as *well-being*. In fact, they focus upon some aspects and do not consider the reality in its complexity.

In order to overcome partialities and incompleteness, the adopted conceptual framework should define and allow the **complexity** to be read, a **multidimensional** and **comprehensive** definition able to conciliate **micro** (individual) and **macro** (societal) level.

A possible multidimensional conceptual definition could be the following: a good and healthy society is that in which each individual has the possibility to:

- participate in the community life,
- develop skills, abilities, capabilities and independency,
- adequately choose and control his/her own life,
- be treated with respect in a healthy and safe environment and by respecting the opportunities of future generations.

This definition indicates the individual's well-being and its equitable distribution and their limits in the environmental and time perspective.

Consequently, it requires an articulated, structured and consistently complex observation of the reality, involving three concepts [Berger-Schmitt, Noll 2000]:

- (i) quality of life → individual (micro) level,
- (ii) economic and social cohesion → community (macro) level,
- (iii) sustainability → relationship between the two previous levels, the environment and the future.

### (i) “Quality of life” (individual level)

Recently, a large number of people expatiate on the quality of life, considered one of the main objectives to be pursued in order to obtain

a healthy society. Unfortunately, as often as not, at academic level but not only, this concept has been trivialized by reducing it (or making it dovetail with) a simple subjective expression; this is typically done by those who identify quality of life with happiness, which is considered, in other approaches, related to personality traits. Actually, the concept of quality of life is more complex and, in other words, multidimensional. Wolfgang Zapf [1975; 1984] proposed a quality-of-life model with two main dimensions:

- living conditions:
  - outcomes
  - resources and capabilities
  - external circumstances
  - subjective evaluations
- subjective well-being:
  - cognitive and affective components,
  - positive and negative components.

Many *aspects* are involved, like perceptions, attitudes, evaluations, satisfaction and subjective well-being expressions, and so on, and could be related to different life domains.

### **(ii) “Economic and social cohesion” (community level)**

Two different dimensions can be identified in order to define economic and social cohesion, respectively negative and positive:

- social exclusion, referring mainly to welfare distribution
  - inequalities among individuals, groups, societies (women and men, generations, social strata, disabled, races, citizenship groups, ...),
  - regional disparities;
- social inclusion / integration of individuals, groups and societies
  - social and political activities and engagements (associations, organizations, ...),
  - quality of relations (e.g. shared values, conflicts, solidarity),
  - social relations (informal networks),
  - trust in institutions.

### **(iii) “Sustainability”**

An important additional concept comes into the picture as represented by the relationship between the previous two conceptual dimensions and the limit in their development and promotion with reference to the

time and space perspective. Actually, the idea of **limit** can be seen as related to the concept of **sustainability**.<sup>1</sup> Sustainability can be defined by referring to the capitals which should be preserved (five dimensions) and two perspectives (Table 3).

**Table 3.** Dimensions and perspectives of sustainability

		Present generations' ...	Future generations' ...
Dimensions of sustainability	<b>physical</b>	individual level	...behaviours affecting individual health
	<b>social</b>	individual and community level	...behaviours affecting social relations and networks
	<b>economic</b>	individual and community level	...processes affecting welfare
	<b>human</b>	individual level	...processes affecting individual skills, training, education, health
	<b>natural</b>	community level	...processes affecting natural resources
<b>Perspectives of sustainability</b>			

Source: an additional (contextual) dimension: the socio-economic structure.

Besides the defined concepts, an additional dimension allowing the description of the whole society should be identified: the socio-economic structure, articulated in (i) demographic and socio-economic structures, and (ii) values and attitudes.

### 1.3. Key topics

Assessing quality of life and its equity and sustainability needs social and political consensus not only on the concepts (quality of life, equity and sustainability) but also on three key topics [Noll 2004]:

1. Thematic areas considered relevant (**domains/ambits**). The relevant concepts and their dimensions have to be assessed and observed within each *life domain* (ambit), life domains represent segments of the reality in which fundamental concepts should be observed and monitored. The thematic areas refer to the

<sup>1</sup> "Time" could represent an example: any attempt aimed at improving connections between cities (in terms of travelling time) should face a limit. Time spent going from one city to another can be reduced thanks to new technologies and improvements of territorial structures. However technology could be improved, the amount of time reduction would be shorter and shorter, while the price in terms of eroded capitals could improve more and more.

individual, family, territorial, societal ambits in which each individual lives. They typically are:

1	households and families	6	education	9	health
2	housing	7	labour market and	10	environment
3	transport		working condition	11	social security
4	leisure and culture	8	income and	12	crime and safety
5	participation		standard of living	13	total life situation

Actually, a shared list of ambits showing explicit priority does not exist, also because the list strictly depends on value judgments, valid and acceptable in a certain place or time. However, many scholars noticed that many ambits recur in empirical studies [Felce, Perry 1995; Nuvolati 1997; Johansson 2002; Stiglitz et al. 2009], highlighting how human conditions lead individuals to face challenges that are common all over the world and that require collective solutions<sup>2</sup>. Generally, the differences concern the importance assigned to each domain.

2. Good and bad living conditions to be identified (**criteria**). For each ambit, the related variables should be defined and the corresponding indicators should be identified. The consensus on what variables and what indicators, and on their interpretation, is lower. What should be clarified is that comparing different realities (represented by countries or by areas inside one country) does not necessarily imply using the same variables and – consequently – the same indicators but requires differentiated choices [Stiglitz et al. 2009]. In fact, the variables' choice depends on shared societal values, which are functions of time and place. Consequently, transferring a well-being concept developed in a certain context could be misleading.
3. Direction to be adopted by the society (**goals**). Goals are not only time and space dependent, but rely on political views. In this per-

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<sup>2</sup> According to Johansson [2002], human beings, in order to fulfil themselves, need:  
 “To be cared for, nurtured and fostered as a baby  
 To be trained or educated as a preparation for the adult roles  
 To find a job in the system of production  
 To find one’s own place to live and to form a family  
 To maintain health over the whole life cycle  
 To be protected against violence and crime  
 To find a societal identity in culture and as a citizen”.



spective, the role that international organizations can play is definitely important in defining the goals to be pursued.

As we will see, these topics are related to the indicators' definition, especially with reference to their benchmarks.

## 2. Developing and selecting indicators

The **indicators** represent the observable elements to be defined for each conceptual dimension and each ambit/domain.

Different issues need to be addressed in order to select and manage indicators, especially when this is carried out in a complex system allowing the accomplishment of functions like monitoring, reporting and accounting. Michalos (in [Sirgy et al. 2006]) identified 15 different issues related to the combination of social, economic and environmental indicators. As Michalos asserts, the issues collectively yield over 200,000 possible combinations representing at least that many different kinds of systems [Sirgy et al. 2006]:

- Settlement/aggregation area sizes: e.g. the best size to understand air pollution may be different from the best size to understand crime.
- Time frames: e.g. the optimal duration to understand resource depletion may be different from the optimal duration to understand the impact of sanitation changes.
- Population composition: e.g. analyses by language, sex, age, education, ethnic background, income, etc. may reveal or conceal different things.
- Domains of life composition: e.g. different domains like health, job, family life, housing, etc. give different views and suggest different agendas for action.
- Objective versus subjective indicators: e.g. relatively subjective appraisals of housing and neighbourhoods by actual dwellers may be very different from relatively objective appraisals by "experts".
- Positive versus negative indicators: negative indicators seem to be easier to craft for some domains, which may create a biased assessment, e.g. in the health domain measures of morbidity and mortality may crowd out positive measures of well-being.

- Input versus output indicators: e.g. expenditure on teachers and school facilities may give a very different view of the quality of an education system from that based on student performance on standardized tests.
- Benefits and costs: different measures of value or worth yield different overall evaluations as well as different evaluations for different people, e.g. the market value of child care is far below the personal, social or human value of having children well cared for.
- Measurement scales: e.g. different measures of well-being provide different views of people's well-being and relate differently to other measures.
- Report writers: e.g. different stakeholders often have very different views about what is important to monitor and how to evaluate whatever is monitored.
- Report readers: e.g. different target audiences need different reporting media and/or formats.
- Conceptual model: e.g. once indicators are selected, they must be combined or aggregated somehow in order to get a coherent story or view.
- Distributions: e.g. because average figures can conceal extraordinary and perhaps unacceptable variations, choices must be made about the appropriate representations of distributions.
- Distance impacts: e.g. people living in one place may access facilities (hospitals, schools, theatres, museums, libraries) in many other places at varying distances from their place of residence.
- Causal relations: before intervention, one must know what causes what, which requires relatively mainstream scientific research, which may not be available yet.

The choices and options selected for each issue have implications for the other issues. The issues are not mutually exclusive and are not expected to be exhaustive as others can be identified.

Dealing with these issues is merely a technical problem to be solved by statisticians or information scientists. On the other hand, the construction of indicators of well-being and quality of life is essentially a political and philosophical exercise, and its ultimate success or failure depends on the negotiations involved in creating and dissemi-

nating the indicators, or the reports or accounts that use those indicators (Michalos, in [Sirgy et al. 2006]).

Within a system, we also consider the difficulties related to the availability of indicators (across time and space) and in harmonizing different data sources and levels of observation.

## 2.1. Quality of indicators

Many international institutions, like the World Bank & UNESCO [Patel et al. 2003, Eurostat 2000], tried to identify the attributes of **quality** that indicators (and approaches aimed at their management) should possess and need to be considered in the process of developing new indicators or of selecting available indicators:

### (I) Methodological soundness

This characteristic refers to the idea that the methodological basis for the production of indicators should be attained by following internationally accepted standards, guidelines, and good practices. This dimension is necessarily dataset-specific, reflecting different methodologies for different datasets. The elements referring to this characteristic are (i) concepts and definitions, (ii) scope, (iii) classification/sectorization, and (iv) basis for recording. Particularly important is the characteristic of **accuracy and reliability**, referring to the idea that indicators should be based upon data sources and statistical techniques that are regularly assessed and validated, inclusive of revision studies. This allows the accuracy of estimates to be assessed. In this case, accuracy is defined as the closeness between the estimated value and the unknown true population value, but also between the observed individual value and the “true” individual value. This means that assessing the accuracy of an estimate involves analyzing the total error associated with the estimate: sampling error and measurement error.

### (II) Integrity

Integrity refers to the notion that the indicator systems should be based on adherence to the principle of objectivity in the collection, compilation, and dissemination of data, statistics, and results. This characteristic includes institutional

arrangements that ensure:

- (i) professionalism in statistical policies and practices,
- (ii) transparency, and
- (iii) ethical standards.

### **(III) Serviceability**

Comparability is a particular dimension of serviceability. It aims at measuring the impact of differences in applied concepts and measurement tools/procedures:

- over time, referring to comparison of results, derived normally from the same statistical operation, at different times,
- between geographical areas, emphasizing the comparison between countries and/or regions in order to ascertain, for instance, the meaning of aggregated indicators at the chosen level,
- between domains. This is particularly delicate when involving subjective measurement (e.g. cultural dimensions).

### **(IV) Accessibility**

Accessibility relates to the need to ensure

(i) clarity of presentations and documentations concerning data and metadata (with reference to information environment: data accompanied with appropriate illustrations, graphs, maps, and so on, with information on their quality, availability and – eventual – usage limitations):

(ii) impartiality of access,

(iii) pertinence of data,

(iv) prompt and knowledgeable support service and assistance to users.

In other words, it refers also to the physical conditions in which users can obtain data: where to go, how to order, delivery time, clear pricing policy, convenient marketing conditions (copyright, etc.), availability of micro or macro data, various formats (paper, files, CD-ROM, Internet...), etc.

### Prerequisites of quality

Although not representing a dimension of quality in itself, prerequisites of quality refer to all those (institutional or not) preconditions and background conditions allowing for the quality of statistics.

In other words, indicators' construction is not simply a technical problem, but should become part of a broader debate concerning how to construct indicators obtaining a larger legitimacy to promote. These prerequisites cover the following elements:

- (i) legal and institutional environment, allowing:
  - a) conceptual framework to be defined,
  - b) coordination power within and across different institutions to be framed,
  - c) data and resources to be available for statistical work,
- (ii) quality awareness informing statistical work.

### 2.2. Indicators' benchmarks

The identification of the indicators should be accompanied by the identification of the benchmark for each indicator or the point to be monitored.

A benchmark serves as a reference point in determining the current situation or position relative to the stated objective. In this perspective, a benchmark establishes the point from which measurements can be made. Indicators identify what will be measured.

The reference point could be represented by a specific best practice or by a comparison of the current performance with the previous performance and the desired norms.

Benchmarking is a systematic process which is useful for monitoring and securing continual improvement. It<sup>3</sup> allows:

- priorities to be established,
- better practices to be defined,
- impacts to be evaluated,
- awareness amongst the stakeholders to be aroused.

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<sup>3</sup> Using benchmarks plays an important role in the ambit of a program development. Used in combination with the program objectives, they provide the basis for program accountability.

The benchmark value is not always easy to be identified and requires a consensus, which is not easy to be reached.

Actually, the benchmark, interpreted in terms of reference point, can assume different shapes [ Śleszyński 2012]:

- genuine reference point (or critical value): represents a quantitative information established thanks to the scientific research;
- signpost arrow; represents a guideline/direction for actions (“*go this way*”);
- best practice, representing a model to be followed;
- goals, defined through a consensual process (policy level, public opinion, etc.), from cultural paradigms, normative demands, expert groups’ pressure, shared wishful thinking.

### 3. Organization and perspectives of the monitoring process

The whole process allows the monitoring process to be defined in terms of organization and perspectives. In particular, the indicators will be organized through a *monitoring matrix* (Table 4).

In that matrix, not every combination of conceptual dimension and ambit (→ cell) will be covered by indicators.

In order to respect the complexity of reality, through a comprehensive approach, developing and constructing quality-of-life indicators should take into account different **monitoring perspectives**. Each perspective requires a particular **monitoring organization** and allows comparisons made for:

- The same reality across time (years, months, ...) → time perspective. This perspective requires an organization in terms of cadence (rate) and continuity through which indicators are collected and updated; indicators will not have the same rate but will be updated with reference to the permanence of the measured phenomenon.

**Table 4.** The monitoring matrix, allowing indicators to be placed in the well-being model

CONCEPTS		DIMENSIONS		LIFE DOMAINS (AMBITS)												
↓		↓		↓												
				1	2	3	4	5	6	7	8	9	10	11	12	13
Quality of life	Living conditions															
	Subjective well-being															
Economic and social cohesion	Disparities, inequalities and social exclusion															
	Social relations and ties (social capital)															
Sustainability	Human capital															
	Natural capital															
	...															
Socio-economic structure	Demographic and socio-economic structures															
	Values and attitudes															

- The same dimensions between areas (regions, provinces, ...) → territorial perspective. This perspective requires an organization in terms of size of the monitored area; the size is related to the institutional/organizational level which the decisional system (policy) is sized on. The national level is certainly the most relevant. It should be taken into account that observing a wide territory does not entail that a lower level is necessarily covered. Beyond statistical representativeness, the conceptual model (in terms of dimensions and/or indicators) and the observation approach need to be reviewed and adapted in order to monitor the lower level (e.g. province, city, ...). Consequently, the approach aimed at reaching the smallest area estimations from the representative data collected in wider areas appears questionable. Projects calibrated on the smallest areas should be urged and encouraged.

- The time between groups (genders, generations, ...) → group perspective. This perspective requires an organization in terms of sample of observed individuals.

From the analytical point of view, the perspectives can be combined.

The perspectives help in understanding the relationship between the concepts and the different components, in order to understand what ambits can be related to policy actions (**system analysis**).

### 3.1. Managing indicators: instructions for use

Monitoring well-being through indicators puts forward some issues representing at the same time a **challenge** (given by the complexity), a **risk** (given by the over-reductionism) and a **need** (represented by the relativization).

The key allowing the proper identification of new measures lies in the players' (statisticians, researchers, analysts, policy makers, and so on) capacity and awareness in considering the complexity, avoiding over-reductionism and investigating relativization.

### Complexity

Changing a paradigm introduces several methodological implications in identifying and observing indicators:

- levels of observation, which can be (individuals, groups), and macro (communities, regions, countries, etc.): macro does not correspond necessarily to the sum of micros and micro does not necessarily reflect what emerges at macro level;
- times of observation, which will not be necessarily equal for all selected indicators according to their different dynamics; in fact, some phenomena show “fast” dynamics while others show an extended changing progression;
- objective and subjective levels, which represent two aspects of the reality integrating with each other;
- internal level and external level, duality sensitive to individual observation; in fact, at individual level the defined concepts should be observed at both “external” (e.g. objective living conditions, equity and sustainability of those conditions) and “internal”



- (e.g. subjective evaluations about the living conditions, subjective perceptions about equity and sustainability of living conditions) level;
- classifying indicators in terms of input and outcomes aspects is difficult to accomplish; in fact, some aspects could be classified at the same time (or in subsequent times) as input or output; families' lower expenses for foodstuffs could represent an output indicator related to a short-term situation, but could represent also an input indicator towards a change (worsening?) in family members' health status;
  - the transition from quantity to quality paradigm<sup>4</sup> implies a consistent choice of the indicators, this means, for example, turning an indicator of quantity like "life expectancy" to an indicator of quality like "healthy life expectancy".

### **Making relative**

The indicators selection implies a reflection about the objectives of their adoption (monitoring, comparing and benchmarking among territories, supporting and evaluating policy decisions, ...).

In particular, that reflection requires considering two related indicators' characteristics: consistency with reference to concepts and adequacy with reference to the territory (country, region, province, ...).

Well-being's definition, for example, finds a wide agreement (integration between living conditions and subjective well-being). Its operationalization (in terms of indicators) should take into account the definition's declension in the territorial ambit in which the observation is made. Consequently, different areas could adopt different indicators in order to measure the same concept.

This could introduce problems in the process of comparing different areas, by taking into account that they will be compared with reference to the concept, not with reference to single indicators (comparing synthetic indicators).

Relativization involves also the well-being concept, to measure and monitor, and should encourage better policies. Let us show a sim-

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<sup>4</sup> The dichotomy quality/quantity introduced here refers to the technical expression of indicators and not to their meaning.

ple and simplified example: how to interpret a region's high value produced by the ratio *number of hospital bed/size of population*? At first glance, a high level could reveal a region paying attention to the needs and requirements of the population's health. A later look could be alarming: does the high number of available hospital beds fit the real need of that territory? If so, the interpretation could lead to a particular evaluation of policy decisions. The territory's need, for example, could be related to particular pathologies: the policy action could have been directed towards other domains (e.g. environment). So, proposing city mobility compatible with a healthy environment allows air quality and life style to be improved, allowing a healthy life and hopefully a lower need of hospital beds.

### **Reductionism**

Reductionism cannot be avoided, since it is actually impossible to extract an image and a story from a pure observation of the reality and completely rely on it.

On the other hand, it is dangerous to concentrate on just a few elements and statistically infer from them the sufficiency of the reduced observation.

In fact, statistically, a high correlation between two indicators does not authorize doing it without one of them. This kind of decision implies the notion according to which indicators showing high correlation are actually measuring the same concept's component.

The range of such decisions is the reality: the relationship between two indicators (e.g. number of firemen and amount of fire damage) can be high but mediated by a third one (e.g. size of the fire). If the third indicator's nature changes, the relationship between the two others changes or disappears, even though they will continue to describe, autonomously, the reality. If, by observing the previous high correlation, we excluded one of the two indicators, doing without one of them could deny us valuable pieces of the whole picture (as represented by the indicators).

This means having a solid conceptual model, which allows indicators concepts' relationships to be identified and interpreted.

From the technical point of view, reductionism refers to the possibility of synthesizing the collected information.

The systematic identification of elementary indicators, identified in terms of concepts and domains, allows a clear “system of indicators” to be constructed (more complex than a simple “set of indicators”, which are not always related to a conceptual framework).

In some cases, it will be necessary to define syntheses. The synthesis concerns different aspects of the system [Maggino 2009] and needs analytical procedures to be defined.

- (i) **Synthesis of basic indicators at micro level.** This synthesis requires synthesising elementary indicators by creating synthetic scores. In the case of subjective indicators, this synthesis has been widely and deeply studied and found strengthened analytical techniques (coming from the psychometric statistics) along with other advanced techniques based upon discrete mathematics. Each synthetic score involves indicators referring to only one conceptual dimension (in other words, the indicators are conceptually and statistically homogeneous);
- (ii) **Aggregating units** (cases, subjects, ...). This aggregation aims at mainly comparing macro units (social groups, age groups, geographic areas), with reference to [synthetic or not] indicators, as defined in the monitoring perspectives. This kind of synthesis is generally accomplished by applying statistical instruments (e.g. average), very simple even though unsatisfying since they do not allow the phenomenon’s distribution to be correctly represented and synthesized. A possible (not necessarily the best) solution is to report, for example, the percentage of a subgroup or a dispersion index (standard deviation or interquartile range);
- (iii) **Synthesis at macro level.** This aggregation aims at creating complex indicators allowing the complexity to be managed. By drawing again from the previous table, we can identify different syntheses:
  - “by row” (R), when synthesis concerns each [multidimensional] concept (e.g. “subjective well-being”),
  - “by column” (C), when synthesis concerns each ambit/domain. This kind of aggregation, referring to

- different concepts, is hardly recommendable, since the scores eventually produced are not interpretable,
- “by sub-column” (RC), when the synthesis concerns one concept (or dimension) and one single ambit/domain. This kind of aggregation produces a meaningful and interpretable measure.

The obtained matrix is represented in Annex.

Subsequent “higher level” syntheses could lead to the construction of *super-indicators*, which would be difficult to interpret.

#### **4. The interpretative and explanatory models**

The frame described by the indicators should be aimed at extracting information and allowing explanations. Explanations are important, not only for understanding phenomena, but also for planning eventual policy intervention.

The conceptual models previously classified can be used, even though, as pointed out, in a complex perspective, including different perspectives of observation.

For example, each conceptual model allows the level of subjective well-being to be explained. However, in order to have a comprehensive interpretation of subjective well-being, the other models should also be considered.

That means that, for example, the level of satisfaction expressed with reference to work condition should be read by evaluating at the same time different explanatory dimensions, e.g. contextual conditions and individual dispositions.

#### **5. Challenges in measuring societal well-being**

As we have seen, measuring and monitoring the well-being of societies require a complex and comprehensive framework and approaches integrated at a conceptual and methodological level. This perspective is urged not only by academic researchers, but also by other organizations and institutions.

The present debate highlights the challenges to be faced, institutional, methodological, statistical and technical (including communication issues related to data – how to obtain understandable data – and results – how to correctly present them).

### **5.1. Institutional challenges: national statistical offices and the measurement of societal well-being**

Measuring and monitoring societal well-being creates a great need for statistics, but statistics needs to find how to elaborate new and shared working models.

Moreover, huge investment is required in order to accomplish survey projects (systematic or finalized) and systematic control of data quality.

Managing this complexity requires the involvement of different governance levels, which represents a new challenge for statistics and for the statistical offices.

Following the OECD Istanbul Declaration – signed by representatives of the European Commission, the Organisation for Economic Cooperation and Development, the Organisation of the Islamic Conference, the United Nations, the United Nations Development Programme and the World Bank, during the II OECD World Forum on “Statistics, Knowledge and Policy” (2007) – societies urged statistical offices, public and private organisations, and academic experts to work alongside representatives of their communities to produce high-quality, fact-based information that can be used by all of society to form a shared view of societal well-being and its evolution over time.<sup>5</sup>

A possible model could be one aimed at involving different public corporations operating in statistical ambits and interacting between them in order to define an organic system, operating as a coordinated network organization (*statistical offices network*). The network’s activities should be structured in nodes and needs to be:

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<sup>5</sup> This concept is presented and broadly examined by Enrico Giovannini (OECD – chief statistician) with reference to the spreading of statistical information – in the paper *The role of statistics in a globalised world: risks and challenges* presented at the DGINS (Directors-General of the National Statistical Institutes) Conference, 20–21 September 2007, Budapest, Hungary.

- aimed at defining clear statistical goals and programs,
- organized at different levels (national, regional or local),
- planned with special reference to data production, in order to avoid redundancies, to rationalize the network and to qualify the nodes,
- harmonized with reference to the statistical function, by overcoming fragmentations, diversities, superimpositions at different network levels,
- adjust forms of communication and involvement for the different actors.

These actions could be conceived at:

- general level, since they should define the norms concerning the statistical functions to be considered as a transversal service and a common and multifunctional wealth. Statistics should be considered in terms of knowledge and assessment;
- specific level, since they should promote i) increasing the production of data and indicators at local level; ii) interacting and integrating different data bases and data sources; iii) developing appropriate analytical methods.

Some risks could arise, related to the lack of coordination (the activities could turn out to be dispersed, fragmented, marginalized and excessively differentiated) and reciprocal knowledge of each node's activities.

In order to avoid that, the network requires:

- new professions to be defined,
- new competences to be developed,
- a system of statistical data certification to be implemented,
- the strong support from administrative sectors to be assured.

All these efforts should aim at shifting the role of official statisticians from “information providers” to “knowledge builders”.<sup>6</sup>

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<sup>6</sup> The issue has been pointed out by Enrico Giovannini on different occasions (e.g. seminar on “*New Techniques and Technologies for Statistics (NTTS)*” – EUROSTAT, February 18-20, 2009 – Brussels, Belgium).

## 5.2. Methodological challenges in indicators construction

Actually, even a quick survey of the academic literature allows us to notice the long tradition and extensive research work existing in the field of measuring societal well-being through complex approaches. Sometimes this tradition has been set against the hard economic perspective that considers the economic indicators as the main, and unique approach allowing progress to be measured.

The recent debates on different perspectives in measuring societal well-being have also led to different scenarios in academic research. Some challenges can be discerned:

- 1) concerning the conceptual model in terms of components, determinants and drivers of well-being by paying more attention and making greater effort in order to explore the relationship between:
  - **sustainability** and **quality of life**,
  - **sustainability** and **vulnerability**,<sup>7</sup>
  - **objective** and **subjective** measures and their integration;
- 2) concerning methodological issues:
  - by assessing the complexity of measurement through **systems of indicators** instead of single synthetic/composite indicators,
  - by improving measurement of **subjective indicators** (scaling techniques) and enhancing existing data sources,
  - by improving the **comparative capacity** of indicators among countries and across time;
- 3) concerning strategic issues: more attention should be paid in order to improve **quality** and **legitimacy** of indicators by allowing exchanges and dialogue between different actors (stakeholders, civil society organizations, experts, scientists) and within different research contexts.

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<sup>7</sup> The issue has been pointed out by Enrico Giovannini on different occasions (e.g. the oral communication at the conference “From GDP to Well-being”, December 3-5, 2009 – Ancona, Italy).

## 6. Final remarks

Dealing with societal well-being by taking into account its multidimensionality, not only involves philosophical/political issues, but concerns each individual's and community's real life. Consequently, these three concepts should be taken into account at both individual and community level. The family's decision to have or not a vacation, or the community's decision to have or not a new tram line should take into account issues related to quality of life, cohesion and sustainability.

The different levels (individual, family, local, national ...) interact and lead to fruitful and positive changes only if the decision-making process is supported by a **monitoring system**, seen as a continuous observation of the societal well-being allowing changes to be observed, effects of policies to be evaluated, and future activities to be planned.

However, the monitoring should be grounded on:

- a solid democratic system,
- a transparent media system,
- education of citizens,

in this, important roles are played by the education and research system (school, university, ...) and the official statistics, two strategic and institutional sectors, both meeting social consensus.

### Are indicators enough?

As has been said, a complex approach is needed in order to measure and monitor societal well-being.

Complexity requires many indicators, designed and organized in a consistent conceptual structure. The obtained system provides all the cognitive instruments allowing decisions to be taken more consciously. In any case, those decisions appertain to policy.

In this framework, we could imagine the policy maker like a pilot sitting at the flight desk [Maggino 2009].

Statistics have the task of defining, constructing and developing the instruments located in the cockpit. However, that activity needs:

- a clear definition of destination (→goals),



- a democratic process allowing the community to take a shared decision concerning destination (→ democracy),
- a deep knowledge of pre-conditions (→ resources, ...),
- a constant monitoring of flight conditions (→ monitoring),
- a continuous transmission and sharing of information on flight conditions (→ communication and information system),
- a cultural environment available to support scientific research (basic and applied) to improve the whole system's conditions,
- a system allowing the community to face and manage emergencies (→ welfare and social security, ...).

If even just one of these items is missing, the achievement of a good society is seriously damaged.

ANNEX

CONCEPTS		DIMENSIONS		LIFE DOMAINS (AMBITs)													Aggregation of indicators for each concept/ dimension	
↓		↓		↓													↓	
				1	2	3	4	5	6	7	8	9	10	11	12	13	↓	
Quality of life	Living conditions																→	R
	Subjective well-being																→	R
		<b>RC</b>	<b>RC</b>	<b>RC</b>	<b>RC</b>	<b>RC</b>	<b>RC</b>	<b>RC</b>	<b>RC</b>	<b>RC</b>	<b>RC</b>	<b>RC</b>	<b>RC</b>	<b>RC</b>	<b>RC</b>	<b>RC</b>		
Economic and social cohesion	Disparities, inequalities and social exclusion																→	R
	Social relations and ties (social capital)																→	R
		<b>RC</b>	<b>RC</b>	<b>RC</b>	<b>RC</b>	<b>RC</b>	<b>RC</b>	<b>RC</b>	<b>RC</b>	<b>RC</b>	<b>RC</b>	<b>RC</b>	<b>RC</b>	<b>RC</b>	<b>RC</b>	<b>RC</b>		
Sustainability	Human capital																→	R
	Natural capital																→	R
	...																	
		<b>RC</b>	<b>RC</b>	<b>RC</b>	<b>RC</b>	<b>RC</b>	<b>RC</b>	<b>RC</b>	<b>RC</b>	<b>RC</b>	<b>RC</b>	<b>RC</b>	<b>RC</b>	<b>RC</b>	<b>RC</b>	<b>RC</b>		
Aggregation of indicators for each ambit/domain →		↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓		
		<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>		

The monitoring matrix and the allowed aggregations of indicators.

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## KONSTRUKCJA WSKAŹNIKÓW DOBROBYTU: OD DEFINICJI DO POMIARU I INTERPRETACJI

**Streszczenie:** Pomiar i monitorowanie postępu i dobrobytu krajowego wymaga przeprowadzenia ściśle określonych etapów: od definicji, przez pomiar, do interpretacji. Proces realizacji tych etapów polega głównie na konceptualizacji, czyli określeniu niezbędnych pojęć wraz z dziedzinami, których te pojęcia dotyczą. Ważna jest odpowiednia interpretacja wyników pomiaru, którą mogą wspomóc odpowiednie modele eksploracyjne. Celem tego artykułu jest całościowe omówienie zagadnienia wraz z wyjaśnieniem podstawowych pojęć, takich jak: jakość życia, sprawiedliwość, trwały rozwój.

**Słowa kluczowe:** jakość życia, pomiar, monitorowanie, wskaźniki dobrobytu.