



Quality of Life: Issues and Challenges in Measurement

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Abstract

Questions have always been raised about the measurement of National Income and its use as an indicator of economic welfare. These questions were referred in 2008 by President of France to the commission on the Measurement of Economic Performance and Social Progress headed by Prof Stiglitz for their recommendations. Among many other issues, the commission did focus on a better measure of economic performance and well-being. It emphasized that it is important that measurement now shifts from economic production to people's well-being and recommended that both level and distribution of consumption and income and not production should be the main focus of well-being evaluation and care may be taken to also include non-market activities. The commission also looked at the definition and the importance of the measurement of quality of life, which was described to be broader than the concept of economic production and well-being. They discussed different approaches and different measures of quality of life including the objective features; e.g. health, education, political voice and governance, etc.

National Accounts then has to move away from its traditional role of measuring only production and has to evolve a methodology wherein some of the issues raised by the Stiglitz-Sen-Fitoussi report (2009) could be addressed. It has become all the more important as the focus of all

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policies in every country of the world is now more on improving the quality of life of its citizens. Therefore the questions related to the measurement of quality of life are very pertinent. The role of quality of life in measurement of economic performance is important and similar to the role of quality of labor and capital played in the role of productivity in production.

The issue of quality of life has also assumed importance due to the emergence of 'new consumerism' as a result of (i) rise in levels of incomes leading to 'affluence and luxury', (ii) increased inequalities of income and consumption, and (iii) decline of 'neighborhood's, all of which has contributed to causing 'aspirational gaps' thereby reducing savings; increasing debts; increase in working hands and hours. As a result there is an increase in 'work and spend' cycle causing stress and worry and adversely affecting the quality of life. The consumer up-scaling has also led to disastrous consequences for the natural environment. It is thus possible that despite increase in national income, the quality of life may have deteriorated.

The paper argues that since the objective of calculating National income is gradually shifting from a pure measure of production to a measure of well-being; there is thus a case for inclusion of those factors in National income measurement which affect the quality of life. The paper would examine the extent to which the recommendations of Stiglitz committee related to quality of life have been incorporated by some of the selected countries. It would also try to find out the underlying issues in the measurement of quality of life and the challenges in incorporating it in National income.

Key words: Quality of life, Well-being, SNA, GDP

Introduction

For many decades GDP as an appropriate measure of output has been in use by Governments and policy makers. Its measurement has been quite substantially standardized over the period so as to have cross country and across time comparisons. However, gradually questions were raised about the usefulness of GDP, especially as a measure of **well-being** of a nation. It was widely accepted that broader quality of life in a country cannot be explained just by material well-being. The issue of quality of life has also assumed importance due to the emergence of ‘new consumerism’ as a result of (i) rise in levels of incomes leading to ‘affluence and luxury’, (ii) increased inequalities of income and consumption, and (iii) decline of ‘neighborhood’s, all of which has contributed to causing ‘aspirational gaps’ thereby reducing savings; increasing debts; increase in working hands and hours. As a result there is an increase in ‘work and spend’ cycle causing stress and worry and adversely affecting the quality of life. The consumer up-scaling has also led to disastrous consequences for the natural environment. It is thus possible that despite increase in national income, the quality of life may have deteriorated.

While GDP has been used as a measure of output, questions have been raised about its usefulness as a measure of national wealth, development or well-being. Initially some of the suggestions which emerged to use some modified measure of GDP have been restricted to NDP, GNI, NNI, HHDI (household disposable income) and HHFCE (household final consumption expenditure). But all of these have been solely based on economic determinants and were found to be lacking in the inclusion of non-economic determinants. The attention of the Economists therefore shifted and focused on constructing a single index of social and economic well-being e.g. a Human development measure- which gave rise to the formation of HDI which gradually was available for almost all the countries of the world and thus was standardized and comparable - the two property any good indicator has to ultimately pass the test. HDI initially satisfied the need to include non-economic determinants and included health (life expectancy) and education (literacy rate) characteristics also. It was found that countries doing well economically need not necessarily be also doing well on HDI index and lot of divergence was found between the two. Countries and their Governments therefore not only focused on the growth of GDP but also improvements in their HDI score and ranking. Setting up the MDG put extra pressure on them. However, attention was focused on modifying HDI because of dissatisfaction with HDI as a

good measure of “well-being”, and further pressure was put on laggard countries on social indicators by bringing up SDG.

The quest for an appropriate measure of well-being gave rise to many new concepts and new indices, e.g. in the literature many now uses, almost as synonyms the concepts of ‘well-being’, ‘happiness’ and ‘quality of life’. However, quality of Life (QOL) has been perceived to be the overall well-being of people and societies. We thus came across few new indices; ‘World Happiness Index’, ‘The Happy Planet Index’, ‘Inclusive Wealth Index’, ‘Better Life Index’, ‘Quality of Life index’, etc. Some of these indices have become possible due to improved measurement of some of the non-economic determinants, e.g. components of human capital, natural capital, etc. While it is desired that for comparability over time and across countries, we have objective measurement of all indicators but some of the components for measurement of well-being are generally subjective- so a concept of ‘subjective well-being’ (SWB) has also emerged and thus requires careful measurement. The question which it raises is that how do we make measurement more objective and standardized which could ultimately be made part of the system of SNA or National Accounts for every country, as we have been successfully able to do for GDP. It might take few more years but a huge progress has been made in this direction by the recommendation of Stiglitz-Sen-Fitoussi (SSF) Report (2009), OECD’s ‘Better Life Initiative’[4] and How’s Life ? (2013) and second Inclusive Wealth Report (IWR) (2014). Thus, lot of recent literature is full of references to measurement of QOL and well-being and some of the authors have used them interchangeably.

Framework for measuring QOL- Some key Indices

While different approaches have been adopted to estimate non-economic components of QOL, there are some common issues raised and addressed by all the reports. The basic framework revolves around the choice of appropriate indicators to be selected and included in the index and its aggregation over individuals and countries.

Some reports (Scottish Report-2005) have made a distinction between QOL and well-being. The Scottish report concludes that while well-being is mainly subjective, QOL is both objective and subjective. The report summarizes the debates around the approaches towards QOL and the core

issues. Some of the debates have been around the QOL being a choice between objective versus subjective approaches; between a uni-dimensional versus multi-dimensional concept; and between a relative and an absolute concept.

Though different views have been expressed by authors about QOL being a subjective measure or an objective measure, but a consensus seems to be in favor of including both as lot of interdependence is found between the two. Similarly the agreement is also in favor of measuring QOL as a multi-dimensional concept which encompass many dimensions of one's life and as a relative concept because most measurements of QOL begin with normative goals or values.

The Scottish Report also emphasizes that the choice of the method, irrespective of the fact whether the QOL is assessed at individual or general population level, would depend upon the choice of domains and the respective indicators for each selected domain along with the weights given to the domains in aggregation. The weighting could be applied to both subjective and objective measurements (Felce and Perry, 1995) or only to subjective measurements (Cummins, 2000).

While Diener and Suh (1997) present *three* broad approaches for measuring QOL- Economic, social or normative and subjective indicators, the SSF report (2009) emphasizes on measuring both objective and subjective indicators of well-being for QOL by using *eight* domains. It has been suggested that National statistical agencies may incorporate relevant questions on subjective well-being in their standard surveys to capture people's response to their experiences and priorities.

Another QOL index was developed by The Economist Intelligence unit for 111 countries for 2005 and was based initially on subjective life satisfaction surveys using a four-point scale, which have been preferred by some over surveys related to the concept of happiness. Based on a multivariate analysis, it found that 80% of the variation in life satisfaction scores between countries could be explained by *nine* factors out of which the most important contributors have been health; material well-being; political stability and security. The next in importance have been family relations and community life; climate; job security; political freedom; and gender equality. It has been advocated that the same QOL framework could also be used to find the

sources of differences in QOL between countries and regions. A new set has now been released in 2013 for 80 countries and is known as ‘where to be born’ indices.

The framework documented by OECD in its second report on *How's Life* released in 2013 consists of two broad domains- quality of life and material conditions. While material conditions relate to *three* economic determinants and include i) income and wealth, ii) job and earnings, and iii) housing; the quality of life domain includes mainly *eight* non-economic determinants. Some of these are health, work-life balance, education and skills, social connections, environment quality, subjective well-being, etc. So OECD uses in all eleven dimensions which focus on people, concentrates on well-being outcomes, the distribution of well-being and ‘total-objective and subjective’ well-being. So in the process perhaps the underlying idea is to distinguish between ‘total’ human well-being and subjective well-being. It however does not aggregate them into one index over which countries may be compared.

The OECD approach of measuring well-being has been described by Durand (2015) as a ‘capability approach’ rather than ‘welfarist approach’ which is generally advocated by proponents of measuring subjective well-being as an indicator of QOL. The improvements in the formulation of *How's Life* (2013) report has been possible according to Durand (2015) due to vast improvements in data collection and conceptual clarity in some of the *eleven* domains. The guidelines issued by OECD in 2013 are expected to help the national statistical agencies in collection of some of the most important data for measuring well-being.

Though many authors have doubted the reliability of SWB because of (i) inter-personal comparability- as it may vary across individuals and across time and (ii) some external events which may influence individual moods, but Krueger & Schkade (2008) have found them statistically quite reliable.

Another framework used to measure QOL is through Happiness. Like well-being, happiness is also subjective and measures average life evaluations. It is believed that increase in Happiness may make people more productive and better citizens; so they may enjoy better QOL and live longer. Gross National Happiness (GNH) which was pioneered by Bhutan and later on adopted by many other countries has been based on four dimensions: (i) sustainable development promotion; (ii) cultural values promotion; (iii) natural environment conservation; and (iv) good

governance. It emphasized that high level of material well-being is not a pre requisite for high level of GNH, as well-being and happiness are more affected by non-economic wellness indicators. The second GNH Report (2006) has thus identified *seven* types of *wellness* that affect GNH: economic; environmental; physical; mental; workplace related; social; and political. Subsequently The World Happiness Report (2013), which is the result of efforts by UN, provided a World Happiness Index (WHI) for 150 countries based on a Survey by Gallop over the period 2010-12 which used the scale of 0 to 10 to find people's satisfaction with their life. It found that 75% of the variation in Happiness could be explained by *six* key variables - real GDP per capita; healthy life expectancy; having someone to count on; perceived freedom to make life choices; freedom from corruption; and generosity. It is evident that some of these variables are same as have been included for QOL by many authors but GNH is basically based on subjective responses and may not be comparable over countries. The report however found a strong positive correlation between HDI and life evaluations both when income is included in the two indices or when only non-income components are compared.

Another framework of sustainable or long term well-being has also been developed in which ecological footprint has been included and a Happy Planet Index was released in 2012. It calculates the number of Happy life years achieved per unit of resource used and is calculated as:

$$\text{HPI} = \text{experienced well-being} * \text{Life expectancy} / \text{Ecological footprint}.$$

Experienced well-being is assessed from “ladder of life” question from the Gallup World Poll, in which scale of 0 denotes ‘worst life’ and 10 denotes ‘best life’.

Another milestone which has been achieved in the literature is the release of Inclusive Wealth Report (IWR) both the first in 2012 and second in 2014. The first report was the outcome of the concerns of countries about the sustainability of growth. The underlying premise of the two reports is that GDP or income flow is not the right indicator of well-being as it ignores environmental externalities and scarcity of natural resources. Also GDP does not provide any information about the “inclusive wealth” or capital stock which is necessary to generate income. IWR 2014 provides status of capital stock of 3 assets for nations- produced capital, natural capital and human capital. While the report mainly focuses on human capital but supports that broader set of indicators are necessary to adequately measure the sustainability of nation's

economic performance and progress and to improve comprehensive well-being assessments. Prof Partha Dasgupta in IWR (2014) highlights that of the total wealth, only 18% is produced capital and 54% is human capital and 28% is natural capital. Therefore emphasis is laid on revisiting the SNA 2008, which despite widening the definition and scope of ‘work’ and extending the production boundaries does not include investment in natural capital and human capital but treats only investment in education as an expenditure flow and not as human capital. Based on four indicators each for the three broad domains of Basic Human Needs, Foundations of Wellbeing, and Opportunity, a Social development index (SPI), similar to QOL has been released by The Social Progress Imperative for 2014. It is also used as an indicator of QOL.

Another important framework and the report related to aspects of QOL was released in June 2014 namely: The Globe Natural Capital Accounting Study (2014) which focused mainly on natural capital. Natural capital is related to national wealth which is now perceived to be linked to well-being and well-being is related to QOL. Well-being, or welfare is therefore a broader concept and focus now is to regard it as the purpose of economic activity. Since IWR 2014 has already stressed on the importance of wealth as a better indicator of well-being than GDP, the current report has focused on the developments done in the field of accounting of only natural capital- its measurement and how countries have and could include it in SNA. The report summarizes the efforts and progress made by 21 countries including India to develop legal and policy framework for natural capital accounting. It shows how countries are making all efforts to include Natural capital in to SNA by overcoming some of the issues in its measurement. Based on country experiences, the report stresses² that international cooperation and support, along with efforts at National level are required to overcome some of the challenges in this direction. The role of some of the international initiatives by UN-SEEA; TEEB; WAVES etc. is also highlighted.

We thus find that though different indices do try to capture something ‘beyond GDP’ by including few of the relevant non-economic domains and may have few common features, but it is clear that countries do not occupy the same rank on these indices. Table1 summarizes some of these indices for the top 20 countries and India based on GDP per capita in 2014 at PPP \$. It is clear that for US, Australia, and other developed countries of Europe the rank on GDP per capita

² Report; chapter 5

and other indices is not much different except for Happy Planet Index because of high ecological footprint. For other countries like Qatar, UAE, and Kuwait we have very high GDP per capita index but very low QOL index. For India both the indices are low but HPI is relatively higher indicating a better ecological footprint. The table thus does indicate the need to go beyond GDP. However the relevant question is how much progress is made in this direction by different countries.

Table 1: Different Indices for top 20 countries and India

GDP Per Capita (PPP\$) 2014	Country	WHI(2013)	HPI(2012)	HDI(2013)	SPI(2014)	Economist's (Where to be born) QOL (2013)
1	Luxembourg	19	138	21	#N/A	#N/A
2	Norway	2	29	1	5	3
3	Qatar	27	149	31	#N/A	#N/A
4	Switzerland	3	34	3	2	1
5	Australia	10	76	2	10	2
6	Denmark	1	110	10	9	5
7	Sweden	5	52	12	6	4
8	Singapore	30	90	9	#N/A	6
9	United States	17	105	5	16	16
10	Netherlands	4	67	4	4	8
11	Austria	8	48	21	11	13
12	Ireland	18	73	11	15	12
13	Canada	6	65	8	7	9
14	Finland	7	70	24	8	11
15	Iceland	9	88	13	3	#N/A
16	Germany	26	46	6	12	16
17	Belgium	21	107	21	17	15
18	France	25	50	20	20	26
19	Kuwait	32	143	46	40	22
20	United Arab Emirates	14	130	40	37	18
144	India	N/A	32	135	102	66

Notes³: 1.WHI is World Happiness Index; HPI is Happiness Planet Index; HDI is Human Development Index; SPI is Social Progress Index; QOL is Economist's Quality of Life

2. Source is different Reports.

³ Refer to Appendix Table A1 for details about these indices.

Selected Country Experiences

Bhutan is the best-known example where the government is using Gross National Happiness (GNH)[3] Index as the tool for policy making and has adopted the objective of its maximization. The measure includes 124 different components and is thus quite broad. The GNH Index acts as a tool to identify the most needed areas for policy changes, which can then be implemented at any level- individual, community or country. With endorsement from UN and the release of Happiness Index for 150 countries in 2013, many more countries may also start using it for policy making and make it a part of their Statistical System.

Statistical offices of various European Countries have come up with their way of measuring QOL. But perhaps they are not using them as a tool for policy making; rather they are just measuring it for cross- country comparisons, eg: European Quality of Life Survey (2012).

Progress has been made in this direction of measuring QOL within European Union (Radermachier, 2015) which also realized that the countries have to go beyond GDP and supplement it with economic, environmental and social indicators for a complete picture about the conditions and progress. So the European commission decided in 2009 that additional indicators on QOL, Well-being and environmental sustainability may be added to GDP. A multidimensional approach including *nine* dimensions was adopted for QOL. These dimensions related to not only with the objective outcomes such as material living conditions; health; education; etc. but also with the people's subjective perceptions of life, e.g. leisure; natural and living environment; safety; overall experience of life, etc. Based on the data and its aggregation, Eurostat released a set of QOL indicators in 2013. But these are disaggregate for different indicators and are not aggregated in to a common index.

In France, the French national statistical institute (INSEE) has been involved in implementing the recommendations of the Stiglitz report. It has incorporated some more questions related to QOL in its surveys. It found that there are many factors which may influence people's QOL. Some of these are housing; environment; insecurity; social connections; health; emotional well-being and financial constraint. Some errors of measurement have however been pointed by Tavernier, et.al (2015) who believes that these can be corrected by statistical agencies.

In the UK, data on wellbeing in terms of happiness, life satisfaction and anxiety is now regularly

collecting by the Office for National Statistics (ONS). In 2014 the United Kingdom launched its own well-being and happiness statistics.[1] The statistics is now also being used to find out why some areas are so much better places to live than others or how happiness and life satisfaction changes with age and other demographic factors.

A report prepared by a team of researchers in 2012 at John F. Kennedy School of Government in Harvard University, US recommended that "the Congress should prescribe the broad parameters of new, carefully designed supplemental national indicators; it should launch a bipartisan commission of experts to address unresolved methodological issues, and include alternative indicators." The researchers proposed the use of the survey results by the government to allocate resources based on which well-being dimensions are least satisfied and which districts and demographic groups are most deficient. The report also supported the use of the Gross National Happiness Index as one of the main frameworks to consider.[2]

In Australia, The Tasmania Together project is an example of how the local authority and policy makers are using information which has a bearing on well-being to understand what makes for great places to live and how quality of lives of their people could be improved.

The National Government in New Zealand is making efforts to use well-being measures in policy analysis. It is involved in a Quality of Life Project to look at well-being in urban environments.

There are many other instances where countries have tried to go beyond GDP by launching their own versions of QOL indices. Many countries have not only updated their GDP estimates by adopting SNA 2008 but also have the satellite accounts SEEA. Also as reported by the report of The Globe Natural Capital Accounting Study, 21 countries including India have made considerable progress in measuring natural capital which may go a long way in measuring 'wealth' and QOL.

India is among the 21 countries who have been striving to have a better measure of 'wealth' and 'well-being'. Since 1997 India has been coming out with a compendium on Environment Statistics in line with Framework for the Development of Environmental Statistics (FDES) by

UNSD. The latest compendium, the 13th, which covers data up to 2011-2012, has been released in 2013. The Compendium of Environmental Statistics by CSO provides a general introduction to the state of the environment, their changing character, and the impact of health owing to their deterioration. Biodiversity, the atmosphere, land and soil, water, and human settlements have been its focus. India has been making efforts even to publish Natural Wealth Accounts through TEEB and was set to be the first country to do it. The focus of natural capital has been on land & soil; forest; agriculture & pastures; and minerals. The need for Green National Accounts was felt and an expert committee under the Chairmanship of Prof Partha Dasgupta was constituted, whose report on Green National Accounts in India was released by its PM in April 2013. The report (2013) recognizes that it is 'wealth' which is a better measure of economic evaluation rather than any other *ad-hoc* indicators of well-being. It argues that wealth per capita is able to exactly track well-being across the generations. Therefore the report advocates the use of wealth even for policy changes. The Report shows that by "economic growth" we should mean growth in per capita wealth, not growth in per capita GDP; and by "inclusive" economic growth we should mean "inclusive" growth in wealth. The report suggests a gradual transition in National Accounts to incorporate the changes and meanwhile try to get estimates of required shadow prices.

Measurement issues

Before QOL becomes as commonly used an indicator as GDP, all countries will first have to resolve some of the common measurement issues being faced by them. Some of these are:

- ❖ Which method and Indicators to be used for QOL measurement be identified: as we have internationally agreed framework for economic determinants (GDP, etc), we also have to evolve mutually agreed common measures of specific domains of human capital and social & environmental capital (both objective and subjective indicators) of QOL with its domains;
- ❖ Since the existing system only supports the methodology based on the System of National Accounts (SNA), we have to go beyond it and make SNA compatible with the new realities of QOL measurement;

- ❖ Standardization of concepts and definitions of all domains, guidelines for the data collection and methods are to be formulated;
- ❖ Since collection of data is demand driven, so efforts should be made to identify data gaps at country level for updated SNA and address it;
- ❖ Time series are to prepared for indicators where Data are already available;
- ❖ Some of the indicators may be interpolated and extrapolated with base year value
- ❖ Studies may be conducted to work out all prices- shadow prices wherever needed;

Challenges

Based on the measurement issues one may say that the biggest challenges the countries would face to integrate QOL in to their SNA would be related to:

- (i) What are the specific indicators for which estimations / predictions are required and how will it be integrated with the overall system?
- (ii) The translation of subjective or qualitative indicators into monetary values

The first challenge therefore is identification of common indicators, their estimation and aggregation for comparisons-both across time and across countries. Though lot of support exists for economic determinants in SNA, we have a long way to go for similar support for human capital and human welfare. Though UN-SEEA provides a framework for measurement of environmental capital but countries, especially developing do face lot of challenges in its measurement, e.g. there is insufficient data on land (its use and depletion); forest; Water (its quantity, its sources, its use, etc.); minerals (quantification, rate of extraction, etc.).

The second major challenge is that since many of the environmental and human welfare indicators are qualitative in nature and falls beyond the ambit of a market economy, therefore data on many items of significance will continue to remain missing and on many other items would appear only in physical terms for some time. So to estimate the monetary value of these

items we need to find the appropriate prices- hence is the role of estimation of Shadow prices⁴. While market prices are given, in contrast shadow prices have to be estimated. Because of the problems in estimating the shadow prices, especially of natural capital, there is a dearth of good estimates of shadow prices. So unless reliable estimates of shadow prices (which may differ among persons or groups unlike market prices) are obtained, problems of getting monetary values and of aggregation may not be resolved. However, another problem encountered during aggregation is that of assigning weights to its different components and till it is given attention and sorted out, no meaningful inter-personal or inter-country comparisons can be made.

Conclusion

Despite the awareness and efforts we have hardly any evidence of complete QOL being made a part of National Statistical framework by countries of the world. It is well accepted that SNA is important in a country for policy planning and implementation, so it is imperative that QOL be included in it. The main reasons we have not been able to incorporate it so far in SNA are the difficulties in measurement of QOL and there is no common consensus on a single accounting framework for QOL. Even the well-defined accounting frameworks such as UNSEEA (for Green Accounting) and SHA (for Health) have not been incorporated in SNA. So it might still take a long time to incorporate QOL measures in UN-SNA but we must include them. However some countries are trying to come up with alternative QOL measures as an alternative to GDP.

All the existing methods available for the measurement of QOL are having their own advantages and drawbacks but perhaps the alternative measures on which lot of progress has been made and can be used in future are IWI (Inclusive Wealth Index) or GNH (Gross National Happiness) or How's Life index the three robust measures of QOL. We can choose any one of them and use as an alternative to GDP.

As far as SNA is concerned, IWI seems to be most complete among all available QOL measures and it also has some sort of standard accounting involved in it. Out of its three components lot of measurement issues have been resolved especially about the objective indicators but more work

⁴ A resource's shadow price is defined as "the sum of its market price and the externalities that are associated with its use".

has to be still done on subjective indicators (Happiness, Safety and Security, Job Satisfaction). But for a smooth transition to the new SNA, we also need to concentrate on some of the other pressing measurement issues of estimation of shadow prices and the aggregation of indicators.

References

- Ben Milligan, Emma Terama, Rafael Jiménez–Aybar, Paul Ekins (June 2014). *GLOBE Natural Capital Accounting Study*, 2nd Edition (GLOBE International and University College London, London).
- Cummins, Robert A (2000) 'Objective and Subjective Quality of Life: an Interactive Model', *Social Indicators Research*, Vol. 52, No. 1, pp55-72
- Diener, Ed & Eunkook Suh (1997). Measuring quality of life: economic, social and subjective indicators. *Social Indicators Research*, 40:189-216.
- Durand, Martine (2015). The OECD better life initiative: how's life? And the measurement of well-being. *Review of Income and Wealth*. 61(1) 4-17.
- Eurofound (2012), Third European Quality of Life Survey - Quality of life in Europe: Impacts of the crisis, *Publications Office of the European Union*, Luxembourg.
- Felce, David and Perry, Jonathan (1995) 'Quality of Life: Its Definition and Measurement', *Research in Developmental Disabilities*, Vol. 16, No. 1, p. 51.
- Government of India (2013). Green National Accounts in India: A Framework, A Report by an Expert Group Convened by the *National Statistical Organization*, Ministry of Statistics and Programme Implementation
- Happy Planet Index (2012). A Global Index of sustainable well-being, *New Economics Foundation, UK*.
- Helliwell, John F., Richard Layard, and Jeffrey Sachs, eds. (2013). *World Happiness Report*. New York: UN Sustainable Development Solutions Network.
- Krueger, Alan B & David A Schkade (2008). The reliability of subjective well-being measures. *Journal of Public Economics*, 92, 1833-1845.
- OECD's (2013). *'Better Life Initiative' and How's Life?*
- Radermachier, Walter J (2015). Recent and future developments related to "GDP and Beyond". *Review of Income and Wealth*. 61(1). 18-24.
- Scottish Executive Social Research, (2005). *Quality of Life and Well-being: Measuring the Benefits of Culture and Sport: Literature Review and Thinkpiece*. Victoria Quay, Edinburgh, EH6 6QQ
- Stiglitz, Joseph E. , Amartya Sen, Jean-Paul Fitoussi (2009). *Report of the Commission on the Measurement of Economic Performance and Social Progress*.

The World in 2005, *The Economist Intelligence Unit's quality of life index*.

Tavernier, et.al (2015). Measurement of Quality of Life and Well-being in France: the drivers of subjective well-being. *Review of Income and Wealth*. 61(1). 25-33.

UNU-IHDP and UNEP (2012). *Inclusive Wealth Report*,

UNU-IHDP and UNEP (2014). *Inclusive Wealth Report, Measuring progress towards sustainability*, Delhi, India

Social Progress Initiative, (2014). *Social Progress Index*.

Links:

[1] ["National Well-Being Statistics"](#)

[2] ["National Indicators for a New Era, Ben, Beachy and Juston Zorn, of the John F Kennedy School of Government at Harvard University"](#)

[3] ["Bhutan GNH Index"](#)

[4] ["Better Life Index"](#)

Appendix Table A1

Abbreviation	WHI	HPI	HDI	SPI	QOL(Where to be born)
Full Name	World Happiness Index	Happiness Planet Index	Human Development Index	Social Progress Index	Where to be born
Organization	UN Sustainable Development Solutions Network	New Economics Foundation (NEF)	United Nations Development Program	Social Progress Imperative	The Economist Intelligence Unit
No. of Indicators	6	3	3	3	10
Indicators	Log GDP per capita	average subjective life satisfaction	A long and healthy life: Life expectancy at birth	Basic Human Needs	Material well-being
	Social support	life expectancy at birth	Education index: Mean years of schooling and Expected years of schooling	Foundations of Wellbeing	Life expectancy at birth
	Healthy life expectancy at birth	ecological footprint per capita	A decent standard of living: GNI per capita (PPP US\$)	Opportunity	The quality of family life based primarily on divorce rates
	Freedom to make life choices				The state of political freedoms
	Generosity				Job security (measured by the unemployment rate)
	Perceptions of corruption				Climate
					Personal physical security ratings
					Quality of community life
					Governance (measured by ratings for corruption)
					Gender equality (measured by the share of seats in parliament held by women)