ARTICLE

A GLOWING footprint: Developing an index of wellbeing for low to middle income countries

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Abstract: Our world faces unprecedented, intense and rapid change. As such, it is difficult to fathom how we might monitor related impacts on the wellbeing of population(s) affected. In the past, the world has typically relied upon measures of economic health or wellbeing such as gross domestic product (GDP). As the world ends its commitment to the Millennium Development Goals (MDGs), and embarks on a commitment to the Sustainable Development Goals, questions about where we as a global society should continue our investments in wellbeing and efforts to measure those outcomes are now up for debate. These questions are particularly poignant for those populations most vulnerable to change: low to middle income countries (LMICs). This paper reviews existing "beyond GDP" measures of population wellbeing as a foundation for developing a truly global index of wellbeing (GLOWING) that can be used by LMICs to document change, and measure the impact of policy, across space and over time. The paper describes a proposed index of wellbeing that is simple, meaningful, and built on the use of available secondary data at the ecological level. It is built on the foundation of the innovative Canadian Index of Wellbeing, and hinges on plans for a proof of concept in East Africa followed by a scaling up, all of which is founded on the twin pillars of capacity building and empowerment.

Keywords: wellbeing, beyond GDP, GLOWING, measurement tools, low and middle income countries, capacity building

1. Understanding how the world works

We live in a world faced by unprecedented change (Deaton 2013; Gallup World Poll, 2015; World Economic Forum, 2015). According to Klaus Schwab, CEO of the World Economic Forum (2015: iii):

> In the coming decade … our lives will be even more intensely shaped by transformative forces than are under way already. The effects of climate change are accelerating and the uncertainty about the global geopolitical context and the effects it will have on international collaboration will remain. At the same time, societies are increasingly under pressure from economic, political and social development including rising income inequality.

Indeed, in the most recent annual assessment of global risks, the World Economic Forum uses a *Global Risks Perception Survey*, administered to over 900 stakeholders, to produce metrics to measure both likelihood and impact of a range of global risks (Figure 1).

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Figure 1. The global risks landscape (World Economic Forum, 2015)

These risks are organized by category (economic, geopolitical, environmental, societal and technological) and situated on the graph according to the intersecting constructs of perceived likelihood and perceived impact. According to the data, the top ten risks over the next decade are as follows (Table 1):

Table 1. The likelihood and impact of the top ten global risks

	Likelihood	Impact
1	Interstate conflict	Water crises
2	Extreme weather events	Spread of infectious diseases
3	Failure of national governance	Weapons of mass destruction
4	State collapse or crisis	Interstate conflict
5	Under & unemployment	Failure of climate change adaptation
6	Natural catastrophe	Energy price shock
7	Failure of climate change adaptation	Critical information infrastructure breakdown
8	Water crises	Fiscal crises
9	Data fraud or theft	Under & unemployment
10	Cyber attacks	Biodiversity loss and ecosystem collapse

In the face of such intense and rapid change, it is difficult to fathom how we might monitor related impacts on the wellbeing of population(s) affected. In the past, the world has typically relied upon measures of economic health or wellbeing such as gross domestic product (GDP). As the world ends its commitment to the Millennium Development Goals, and embarks on a commitment to the Sustainable Development Goals (www.sustainabledevelopment.un.org/), questions about where we as a global society should continue our investments in wellbeing and efforts to measure those outcomes are now up for debate. These questions are most poignant for those populations most vulnerable to change: low to middle income countries (LMICs). To date, this has proven a significant challenge (Tiliouine et al., 2006).

This paper discusses the limitations of using GDP-type tools in measuring the wellbeing of populations, reviews the recent development of alternative measures, and suggests a metric going forward – the Global Index of Wellbeing (GLOWING), based upon the Canadian Index of Wellbeing (see Appendix A), that can be used to measure the impacts of rapid change – economic, climatic, demographic, health, cultural, social – strongest felt by low to middle income countries. The paper then describes the research agenda for the development, piloting and scale up of GLOWING.

1.1 Measuring how the world works: GDP as a measure of population wellbeing?

GDP represents the market value of all goods produced within a country over a period of time, based on the simple assumption that the higher the GDP, the better off the population of the country that produced said goods. The concept was developed by Simon Kuznets for a US Congress Report in 1934 (Kuznets, 1934), and, subsequent to the Bretton Woods conference in 1944, became the measure of a country's economic health (that is, for all UN member states) (Costanza et al., 2009). Interestingly, however, even Simon Kuznets was aware of the limitations of GDP:

Economic welfare cannot be adequately measured unless the personal distribution of income is known. And no income measurement undertakes to estimate the reverse side of income, that is, the intensity and unpleasantness of effort going into the earning of income. The welfare of a nation can, therefore, scarcely be inferred from a measurement of national income… (Kuznets, 1934, pp. 6-7).

Approximately 30 years later, Robert F. Kennedy (1968) shared similar sentiments:

> … the gross national product does not allow for the health of our children, the quality of their education or the joy of their play. It does not include the beauty of our poetry or the strength of our marriages, the intelligence of our public debate or the integrity of our public officials … It measures neither our wit nor our courage, neither our wisdom nor our learning, neither our compassion nor our devotion to our country, it measures everything in short, except that which makes life worthwhile …

To illustrate, if we measure the progress of countries solely by growth in wealth and consumer spending, we might conclude that many countries are indeed doing well – but there's more to wellbeing than wealth (Smits & Steendijk, 2015). However, if we broaden our measurement of progress to include social and economic inequalities; environmental, cultural, and governance issues that perhaps matter more to citizens, then our results might be quite different. For example, the Canadian Index of Wellbeing illustrates that Canada experienced impressive growth in GDP between 1994 and 2010; concomitantly, however, Canadians' confidence in their federal parliament, as well as voter turnout in federal elections, were at their lowest (Canadian Index of Wellbeing, 2012). Treating GDP as a measure of economic wellbeing can, for a number of reasons, provide misleading indications about how well-off people are. First, non-market values and benefits such as volunteer work are often excluded from GDP calculations, though they form an important part of how well society fares. Second, it fails to account for depletion of natural resources or the state of the natural environment. Third, it is difficult to capture inequalities in the distribution of wealth, resources and opportunities in society. Finally, GDP does not distinguish between economic productions that are beneficial to societal wellbeing and those that are harmful:

> Too much and for too long, we seemed to have surrendered personal excellence and community values in the mere accumulation of material things … Gross National Product counts air pollution and cigarette advertising, and ambulances to clear our highways of carnage. It counts special locks for our doors and the jails for the people who break them. It counts the destruction of the redwood and the loss of our natural wonder in chaotic sprawl (Kennedy, 1968).

The notion of questioning the validity of GDP for measuring global progress is not new (see the insightful commentary by Costanza and colleagues (2014) in *Nature* as the concept applies to the development of the Sustainable Development Goals). The key issue is: what do we do about it? In response, many countries are beginning to explore alternative mechanisms to measure the wellbeing of national populations. Indeed, the Istanbul World Forum (27-30 June, 2007) concluded with international organizations (including the European Commission, Organization for Economic Co-operation and Development (OECD), Organization of the Islamic Conference, United Nations, United Nations Development Program (UNDP), World Bank and many more) all affirming in a declaration their commitment to measuring and fostering the progress of societies in all dimensions, with the ultimate goal of improving policy making, democracy and citizen wellbeing.[1] This does not entail throwing the baby out with the bath water; rather, it moves us toward a broader depth of understanding and breadth of knowledge for policy makers to make evidence-informed decisions, centered on what matters most to the citizens of the nation and the sustainability of our common future (Canadian Index of Wellbeing, 2012; Stiglitz, Sen & Fitoussi, 2009).

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[1] A copy of this declaration can be found at http://www.oecd.org/newsroom/38883774.pdf

1.2 Toward a definition of wellbeing

Although the phrase "wellbeing" is widely used both in the literature and in common speech, there is no commonly agreed upon definition for the term (Matthews, 2012). It has often been used interchangeably with "quality of life," "happiness" and "life satisfaction" (Hall et al., 2010; Matthews, 2012), and these definitions are underpinned by diverse philosophical and competing traditions of inquiry ranging from the behavioral, social, economic, and health sciences (Wiseman & Brasher, 2008; Hall et al., 2010). Further, some have eschewed formal definitions for a list of key characteristics. For example, the OECD (2011) argues that defining wellbeing must focus on four key pillars:

1) The wellbeing of people in each country, rather than on the macro-economic conditions of economies;
2) The wellbeing of different groups of the population, in addition to average conditions;
3) Wellbeing achievements, measured by outcome indicators, as opposed to wellbeing drivers measured by input or output indicators; and,
4) Objective and subjective aspects of people's wellbeing, as both living conditions and their appreciation by individuals are important.

As we will see below, a number of global initiatives have adopted wellbeing as an outcome worth measuring and have variously informed its development through existing frameworks or through a consultative approach, in which the components, dimensions or domains of wellbeing are developed through citizen consultation, dialogues and/or political processes (Hall et al., 2010; Kroll, 2011). Regardless of the route, we see a great deal of similarity in the cross-cutting themes used in these measurement tools: issues of material living conditions, quality of life and socio-economic performance, and sustainability of natural systems are some examples. From our perspective, we feel – going forward – that simplicity is and should be a key characteristic of the definition and measurement of wellbeing; if it is not simple, people will not understand it nor will it be measureable. As such, our proposed Global Index of Wellbeing (GLOWING) adopts Angus Deaton's notion of wellbeing:

I use the term *wellbeing* to refer to all of the things that are good for a person, that make for a good life. Wellbeing includes material wellbeing, such as income and wealth; physical and psychological wellbeing, represented by health and happiness; and education and the ability to participate in civil society through democracy and the rule of law (2013: 24).

We add to this the *context* within which wellbeing happens, for example, the characteristics of the physical and built environments, and the level of vitality attached to one's community. Indeed, others have shown repeatedly how important context is to our understanding of the wellbeing of populations (Matthews, 2012). Further, we intend to employ a fully consultative mechanism for informing the domains and indicators for measurement used within GLOWING; more on this below.

2. Progress in measuring wellbeing

Prior to embarking upon the development of yet another "index of wellbeing," it behoved the researchers to undertake a systematic environmental scan of existing measures, reviewed in this section. Twenty-three "beyond GDP" measures of wellbeing (see Appendix B) were selected, based on three primary inclusion criteria. First, measures had to be focused on societal level wellbeing (that is to say, made some attempt to discuss how society as a whole is doing, not

solely focused on individuals[2]), second, measures had to be conducted at the national or international scale, and third, measures had to have some empirical grounding. The resulting measures identified are categorized below (Table 2).

Table 2. A classification of existing wellbeing measures

Classification	Meaning
GDP	Gross Domestic Product (or Gross National Product)
GDP+	GDP *plus* other basic indices (e.g., education, health)
GDP++	GDP+ *plus* broader economic welfare indicators that combine wealth distribution adjustments, and natural, social, and human capital adjustments
Objective Wellbeing	Derived from a broad range of domains and indices that rely on objective measures of wellbeing typically sourced from secondary data sources
Subjective Wellbeing	Derived from domains and indices that require an individual to reflect on and evaluate their overall wellbeing, happiness or life satisfaction; these indices are typically based on the collection of primary data

Note: Two measures (State of the USA Key National Indicator system & Gallup-Healthways Well-Being Index, UK) were deemed to be either incomplete or too early in their development to be assessed and therefore not included in the analysis.
Adapted from Vemuri & Costanza, 2006.

Since the intent of this exercise is to evaluate measures that look "beyond GDP," we have not included measures that would fit exclusively into the "GDP" category; rather, it remains as a point of reference. In some cases, the measure did not fit neatly within a single category and was therefore coded as belonging to primary and secondary (a/b) categories. With this, we end up with seven separate clusters (Appendix B). In addition to providing key aspects regarding each measurement tool (scale, type, year of first publication, domains, indicators, data sources, countries applied), we assess the usefulness of these existing tools in developing an index of wellbeing that can be used in LMICs to measure the impacts of rapid change (economic, demographic, environmental, health, social, cultural) on population wellbeing.

As a quick summary, we see – at the international level – the Organization for Economic Cooperation and Development (OECD) and the United Nations Development Program (UNDP) have been the major stakeholder organizations leading efforts toward measuring global wellbeing and social progress. Since 2007, the OECD has been leading international wellbeing initiatives and supporting processes towards measuring wellbeing in their member countries. Prior to the OECD's wellbeing initiatives, the UNDP launched (1990) the Human Development Report, together with the Human Development Index (see Appendix A), with the single goal of putting people at the centre of economic growth and development in terms of debate, policy, advocacy and decision-making. The Human Development Index, along with other indices such

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[2] Though not the concern of our review, there is a large body of literature that focuses on individual wellbeing and the inputs that determine individual wellbeing. For example, the highly cited work of Helliwell & Putnam (2004) finds that an individual's income, family-level social capital, marital status, religious beliefs, etc. all influence how that individual perceives their wellbeing. Thus, individuals within a society are expected to have varying levels of wellbeing, and we are left with a poor understanding of how this reflects on society as a whole.

as the Multidimensional Poverty Index (MPI), the Gender Inequality Index (GII) and the Inequality Adjusted Human Development Index (IHDI) (see Appendix A), continue to influence many regional and country focused UN reports and initiatives on development and progress.

At the regional level, the European Union has been the only body with a clear initiative aimed at measuring progress "beyond GDP" in its member countries. In 2007, the European Commission, together with other stakeholders including the European Parliament, the Club of Rome and the OECD, held a high-level conference on "Beyond GDP" to shed light on the most appropriate indices for measuring progress, and how best to integrate such indices into public policy and decision making (Kroll, 2011). Further to this conference, the Commission in 2009 issued a roadmap with key actions to improve indicators of progress in ways that meet citizens' concerns, as well as address global challenges of the 21st century, such as climate change, resource management and depletion, human health and quality of life.

Several countries have since launched similar progress and wellbeing related initiatives. There are common approaches in terms of how countries develop their thematic areas, frameworks for measuring – as well as reporting – the wellbeing and progress of citizens. Most notable examples include the Canadian Index of Wellbeing (CIW), Measures of Australia's Progress, the New Zealand Social Report, the Taiwan National Well-being Index, and the UK Measures of National Well-being (see Appendix A). Further, Bhutan has often been cited for leading the way in terms of measuring the wellbeing and happiness of its citizens. Bhutan's Gross National Happiness Index (see Appendix A) was introduced in 1972 as an alternative method of measuring progress, and it has since been a central philosophy in the country's development process.

2.1 Limitations of "beyond GDP" measures

In principle, all the "beyond GDP" approaches report some information about the wellbeing of populations, albeit with some limitations. First, the GDP+ and GDP++ measures make adjustments to GDP only to reflect other common aspirations of society and social outcomes (e.g., health, education, natural resource depletion, etc.). Though these measures mark some kind of progress from GDP as an index of wellbeing, their foundations are rooted in wealth and capital as key indicators of wellbeing. Two GDP ++ measures that move a step away by excluding GDP as an indicator of wellbeing (the Gender Inequality Index and the Multidimensional Poverty Index) are also limited to gender inequalities and individual deprivations that affect human development. Notwithstanding the limitations of these measures, reporting them in addition to other wellbeing measures gives a more comprehensive story about how populations are faring, especially given the ease with which they can be incorporated into national statistical systems.

A second set of wellbeing measures are those based on subjective wellbeing or a combination of subjective and objective measures of wellbeing. These measures focus on *subjective* wellbeing as experienced by individuals (or a combination of subjective experiences and objective output indicators of wellbeing) and how that experience informs the society as a whole. Examples of purely subjective measures include the Australian Unity Wellbeing Index and the World Happiness Report (see Appendix A). These have been criticized for producing differing outcomes, depending upon the measurement instrument chosen (Cramm & Nieboer, 2012). Aside from narrowly focusing on happiness and subjective feelings to measure wellbeing, these measures rely on primary data or sources such as the Gallup World Poll that are not consistently collected in LMICs. Their application and relevance for timely policy making therefore remain limited in resource-poor settings, especially at sub-national levels. Further, objective/subjective

and subjective/objective measures offer some opportunities to address the limitations of purely subjective measures, and are strongly supported by some mainstream wellbeing researchers (see, for example, La Placa et al., 2013) but remain conceptually difficult for policy application in LMICs for two reasons. The first relates simply to the cost and complexity of collecting primary data in LMICs; thus GLOWING will be built – as is the Canadian Index of Wellbeing – on the sole use of objective indicators. Secondly, there is empirical evidence that subjective wellbeing has a direct impact across a broad range of objective wellbeing and life outcomes such as health, productivity and education (De Neve et al., 2013). The value of subjective measures of wellbeing for policy making thus lies primarily with empirically determining objective outcomes that emanate from happiness/life satisfaction/flourishing in different cultural contexts. Subjective indicators of wellbeing may be important for evaluation of policy measures (Kroll, 2011) but remain difficult to apply in LMICs due to data constraints and complex social and economic challenges that face populations in these countries.

A third group of measures that are useful for the LMIC context are objective measures of wellbeing. These include the Australian National Development Index (ANDI), the Measures of Australia's Progress (MAP), the New Zealand Social Report (NZSR), the OECD Better Life Index (BLI), the Sustainable Society Index (SSI), the Well-Being of Nations (WBN) and the Social Progress Index (SPI). However, measures such as the SSI and the WBN are centered on sustainable development and the wellbeing of ecosystems and the environment, which limits their focus as compared to the other objective wellbeing measures. Though these "environmentally focused" measures remain helpful for assessing the state of the environment and progress towards sustainable development in countries, moving beyond GDP requires thinking broadly about what matters to individuals and the opportunities available for people to express their full capabilities. Further, the Sustainable Society Index includes GDP per capita as an indicator in the final index, which draws it closer to other GDP ++ measures.

With the limitations discussed above, we consider the broad frameworks used to develop the following country specific measures – the Canadian Index of Wellbeing, the Australian National Development Index (currently under development), the Measures of Australia's Progress and the New Zealand Social Report – as appropriate for LMICs for two primary reasons. First, they largely use domains and indicators that people value as important for their daily life *beyond GDP*: domains and indicators developed based on broad consultations among major stakeholders and citizen groups. The final indices thus become relevant for local policy making and highlight important gaps in the wellbeing of citizens and other identifiable populations (such as indigenous peoples) in these countries. For example, unlike the Social Progress Index that uses the same domains and indicators for all countries, the MAP and the NZSR are developed to suit the aspirations and what matters to Australian and New Zealand citizens respectively. Thus, an important step in developing wellbeing measures for any LMIC is to use a set of indicators to measure what people value as important for their daily life, and the environments in which they live, grow and work. This consideration is currently missing in the Social Progress Index, as researchers and citizens in LMICs have little input into the domains and indicators used to measure their wellbeing. Second, the country specific measures rely on secondary data that is readily available without any significant extra burden or sampling issues that arise in the case of primary data. With regard to LMICs, our proposed global index – GLOWING – could and should rely on secondary data from national statistics offices, relevant ministries and other publicly available databanks from UN agencies, the World Bank, Multiple Indicator Cluster Surveys, and regional agencies such the African Development Bank and the African Union.

3. Preparing to define and measure wellbeing in an LMIC context

While there is growing recognition for wellbeing of societies to be measured, issues about how it should be defined and measured remain unresolved and contested (McAllister, 2005; Forgeard et al., 2011, Allin & Hand, 2014). Also of critical importance is the question of whether the constituents of these alternative measurements represent what really matters to people in their specific contexts (Matthews, 2012; Allin & Hand, 2014). Going forward, the logical next step is to ground the truth of GLOWING in a proof of concept. As such, we have begun a pilot of GLOWING in East Africa with a trans-disciplinary team of researchers that includes geographers, economists, epidemiologists, ethicists and psychologists. The East Africa Community (http://www.au.int/en/recs/eac) is poised to develop economically and is experiencing rapid environmental, social, cultural, and health changes as a result. Kenya's GDP has virtually doubled between 1990 and 2012. The Lake Victoria Basin Commission is doing well to document the impacts of these changes (http://www.lvbcom.org) and is keen to partner in the development of measures of the impacts of growth and change. Working with partners on the ground in Kenya and other parts of East Africa, we have discerned through reconnaissance that it is feasible to develop socially, culturally, and geographically relevant indicators across the existing domains (Appendix C), but this must be done in consultation with local partners, using a mixed-methods approach (Matthews, 2012).

In this regard, a team of researchers will conduct key informant interviews with policy makers and focus group discussions with communities to understand what wellbeing means in their specific contexts and the indicators that can be used to capture its essence (Trewin & Hall, 2005). This will enable us to, first of all, state, define or at least describe what wellbeing is, before exploring how best to measure it, a process that may require several iterations (Allin & Hand, 2014). It also involves interacting with politicians, civil society, media, individuals, communities and special interest groups within LMICs, all of whom may have an interest in how wellbeing is defined and measured. This will be done through focus group discussions, key informant interviews and stakeholders' conferences that will bring policy makers, development practitioners and citizens to interact. Through this, we will begin to be able to "measure what matters" and reach agreements about what we are measuring and what the measurement procedures are (Allin & Hand, 2014). Including citizens in the entire process will ensure transparency and strengthen their capacity to influence the goals of their societies through public debates and consensus building about wellbeing and its indicators (Istanbul World Forum, 2007; Allin & Hand, 2014). This is echoed in both the Istanbul Declaration (2007) as well as the report by Stiglitz et al. (2009). These reports encourage communities to consider for themselves what progress means, and also highlight areas of significant change or inadequate knowledge (Istanbul Declaration, 2007: Stiglitz et al., 2009). Thus, people have to be actively involved and given the opportunity in shaping their own destiny (Sen, 1999). In essence, what really matters are the capabilities of people, the extent of their opportunity set and of their freedom to choose the life that they deem valuable, and desire for themselves (Sen, 1999; Stiglitz et al., 2009; Nussbaum, 2011). Such a participatory processes will enable ordinary citizens to influence what matters most to them through consultation, debates and consensus building through the tools of dignity, self-respect, adequate attention to indigenous knowledge, and common sense. It will also imbibe in citizens a sense of duty and responsibility towards improving wellbeing. Citizen participation will empower communities to combine resources-leveraging on their social capital to safeguard their communities and to improve the indicators that contribute to wellbeing. It will also enhance the confidence, capability and resolve of communities to demand accountability

from their local representatives, as well as district, municipal and national leaders. The participation of stakeholders, including local people and communities, in the design and development of a measure of wellbeing will ensure that GLOWING meets local needs and is transparent, empowering, sustainable and effective. Moreover, grassroots participation will bring issues of social justice and emancipation into focus, which may lead to empowerment or conscientization of individuals and communities.

Citizen engagement is useful for capturing user needs and requirements of wellbeing, such as whether measures of wellbeing are necessary in the context of LMICs and what the measures will be used for, as well as who will use them (Allin & Hand, 2014). Media and political engagement is also necessary to ensure a wide acceptance of these measures, and for national statistical and planning offices to buy into them. The main objective in undertaking these processes is to recognize the way people see things rather than seek to identify the way things are (Allin & Hand, 2014). These engagements and consultations are also necessary to identify partners and collaborators to actively define, measure and ensure the sustainability of wellbeing. This will involve consensus building rather than full agreement, ensuring transparency all through the process. The second process of capturing what matters will be done through an environmental scan of government policy documents, media stories and parliamentary Hansards or political party manifestoes. These sources shape what wellbeing means in particular country, even though much detailed work will be needed to move from these data sources to a more comprehensive and actionable specification based on what matters to people (Allin & Hand, 2014). We anticipate wellbeing will be multidimensional and may have a number of domains.

Once the proof of concept has been assessed and the indicators identified, we will undertake comparative analyses in other parts of Africa (west and south) and then head to the Caribbean to assess the reliability and validity of the tool in a substantially different context. In so doing, a critical task will be to identify key indicators that highlight the ways in which life and wellbeing are getting better or worse with regards to poverty, access to basic services and environmental sustainability. Further, an important recommendation of the Stiglitz-Sen-Fitoussi Commission is the need for indicators to highlight inequalities in individual experiences. This is important, as progress depends both on the average conditions in society, as well as inequalities in people's conditions (Stiglitz et al., 2013). Thus, GLOWING will highlight how individual communities, regions and groups within these countries are faring. Further, while it is important to highlight inequalities across domains, certain inequalities may be mutually reinforcing (income and gender), and as such, their combined effect must be assessed.

Since the effects of societal characteristics cannot be ignored in the empirical analysis and measurement of wellbeing, giving due consideration to the interactions between individual and societal characteristics in constructing indicators and measurements is an important area for consideration. Further, exploration of the inter-connections and relationships among indicators within and outside the same domain through targeted in-depth qualitative studies remains important for the Canadian Index of Wellbeing and will form a central aspect of GLOWING. As noted by Stiglitz et al. (2009), some of the most important policy questions for quality of life (and wellbeing) relate to how achievements or failures in one area or domain affect others, and how developments in various domains are related to improvements in people's incomes. Answering these questions will require the use of sophisticated methodologies and tools, coupled with improved data and a rigorous conceptual framework.

3.1 Using the Canadian Index of Wellbeing framework for GLOWING

The framework of the Canadian Index of Wellbeing (Appendix C), recognized as a global leader at the forefront of wellbeing initiatives (Canadian Index of Wellbeing, 2011), remains attractive and particularly useful among the other national objective wellbeing measures for application to LMICs for a number of reasons. First, though all the national objective wellbeing measures use multiple domains to provide a holistic picture of wellbeing, there are significant differences in how these domains and their indicators are presented. While the Canadian Index of Wellbeing aggregates domains and their indicators into a composite index, others, such as the Measures of Australia's Progress and the New Zealand Social Report, are presented in the form of a "dashboard" that reflects diverse domains/indicators and their performances as a visual spread. There are those who would strongly support the dashboard model of presenting wellbeing measures (Forgeard et al., 2011; Matthews, 2012); however, as others have noted, (Stiglitz et al., 2009; Kroll, 2011), a common advantage of a composite index is the ability to provide information on wellbeing with a single value, which can easily be communicated, interpreted, and compared across space and time. The wellbeing of a society can thus easily be compared over time.

Whether wellbeing is presented as a dashboard or index, the decision of what to include is paramount, that is, incorporating indices that reflect the society, and striking a balance between information and parsimony. That this will exclude some aspects of a society's aspiration, or include unimportant ones, remains a challenge. Moreover, the domains and indicators of wellbeing are not static but continue to change, as more becomes known about society's aspirations, how to measure them, and more sources of data become available (Canadian Index of Wellbeing, 2011). Furthermore, compiling social, economic and environmental indicators into a single measure involves making decisions on appropriate weights. These decisions are value laden and difficult to justify. The CIW argues that the absence of such a clear justification is enough reason to treat all indicators equally at the present time (Canadian Index of Wellbeing, 2012). As progress is made on measuring wellbeing on both national and international fronts, sufficient reason for different weights may become apparent as new knowledge and greater understanding of the relationships among indicators, domains and thematic areas is developed (Canadian Index of Wellbeing, 2012). Using a composite index within GLOWING will facilitate comparison between wellbeing vis-à-vis GDP performance in any chosen LMIC – or group of countries in a region (e.g. the East African Region) – over a period of time, as well as give a comprehensive picture of performance on each indicator and domain over time, across space, and in the face of global environmental change, broadly defined. While we agree that making a choice between an index and dashboard is subordinate to the establishment of a broad statistical system that captures as many relevant dimensions of wellbeing as possible in any country (Stiglitz et al., 2009), the usefulness of a single headline composite index vis-a-vis GDP as a communication instrument to policy makers cannot be ignored (Kroll, 2011).

Another strength of the Canadian Index of Wellbeing is that its framework, domains and indicators were created through combined efforts of national and international organizations, experts, community groups and citizens after several years of extensive consultation and research. Many of the country level initiatives have a great deal of public involvement and stakeholder participation and there are significant similarities in the ways political leaders, experts, community groups and civil society organizations have combined efforts, with extensive public consultations, dialogues and national roundtables to achieve some form of general consensus on wellbeing domains/indicators, their measurement and monitoring. However, there are some notable differences regarding who leads the process of measuring and reporting. For

example, the Canadian Index of Wellbeing and Australian National Development Index are both led by collaborations between universities and NGOs, while national statistics offices and agencies lead other initiatives such as the Measures of Australia's Progress, the New Zealand Social Progress Report, and the UK Index of Wellbeing. Arguably, there are issues of legitimacy and citizen acceptance associated with government institutions (i.e. national statistics offices) leading the process of measuring wellbeing in some jurisdictions (Kroll, 2011). Further, the extent and depth of citizen participation and engagement, and the ability of indicators to adequately reflect citizen aspirations may also influence legitimacy and acceptance of reporting. As in the case of many LMICs where governance issues remain an ongoing challenge, it is important to adapt the Canadian Index of Wellbeing approach where local researchers and experts use publicly available data to report the wellbeing of citizens. As noted by Noll (2011), many of the principles and approaches suggested by social indicators researchers have been incorporated into statistical information systems of international agencies and national statistical offices which can provide aggregate level information to other bodies and research institutions interested in measuring and monitoring wellbeing and social progress.

Finally, in developing GLOWING, two important global initiatives and their core dimensions remain central and form the overarching perspective for developing country level domains. These are 1) the OECD's Better Life Initiative core domains: quality of life, material living conditions, and sustainability, and 2) the Stiglitz-Sen-Fitoussi Commission core domains: revised economic indicators, quality of life and sustainability. Though specific country level domains and indicators differ from country to country in order to reflect different cultural aspirations, identity and differences in data availability, the framework behind the Canadian Index of Wellbeing and its domains/indicators broadly reflects these recommendations and guidelines. As mentioned earlier, the OECD (2011) proposed two important focus areas for constructing domains that serve as a guide for other initiatives. The first is that economic indicators should focus on the wellbeing of people, rather than on the macro-economic conditions in a country. For example, efforts should focus on measuring and reporting progress in incomes, jobs, and living standards (as in the case of the Canadian Index of Wellbeing) instead of standard indicators of macro-economic performance such as GDP, productivity, innovation, and extraction. Second, wellbeing should be measured by outcome indicators, as opposed to input indicators, that only measure drivers of wellbeing. For example, instead of using spending or investment in education, the Canadian Index of Wellbeing uses indicators such as childcare spaces, student to educator ratio in public schools, basic knowledge and skills, and high school and university completion to measure progress in education (Canadian Index of Wellbeing, 2012).

4. Conclusion – the way forward

This paper has made the case for a need for a composite measure of wellbeing useful in LMICs as they face unprecedented global environmental change (broadly defined) over the next decade and beyond. In so doing, we have provided a (brief) overview of contemporary progress in wellbeing initiatives with potential use in LMICs, along with their associated strengths and limitations, highlighting the strengths of the Canadian Index of Wellbeing as a model for adaptation to measure wellbeing in LMICs. Though questions around progress in wellbeing vis-à-vis GDP growth have assumed global importance, it is obvious that most of the country initiatives are based in high income countries. The time to transfer them from their comfort zone to LMICs – where wellbeing also matters and populations are most vulnerable to the impacts of

global environmental change – is long overdue. This becomes especially important as LMICs enter the post-MDG world.

A major prerequisite for measuring both objective and subjective wellbeing is to build the capacity of official statistical agencies to meet the demand for data. These sets of data, including data in areas related to economic performance and environmental sustainability, are needed in high, middle and low-income countries in order to build comprehensive and comparable measures of wellbeing for policy-making. Looking into the future, measuring a complex and multifaceted concept such as wellbeing is not an end in itself but a means for informed policy making. Thus, the challenge is not only how to create and share knowledge about how communities, groups, and countries are flourishing, thriving, and using their capabilities to achieve their full human potential, but how such knowledge is used to create healthy, just, and sustainable communities and nations (Wiseman & Brasher, 2008; Krishnakumar & Nogales, 2015; Hone et al., 2014). As the world struggles to pin down the Sustainable Development Goals and their measures, we learn from the recent Addis Ababa Action Agenda (AAAA, 2015), that it's all about building capacity in LMICs – through the incentivization of science, investment in education, and knowledge sharing – in order to make good decisions to support strong and healthy global populations (*The Lancet*, 2015). As Matthews (2012: 99) points out: "Following Stiglitz's advice, scientists can help governments 'do the right thing' by assisting them in measuring the right thing."

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Appendix A: Websites

Adjusted Net Savings (ANS)
http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/ENVIRONMENT/EXTEEI/0,,contentMDK:20502388~menuPK:1187778~pagePK:210058~piPK:210062~theSitePK:408050,00.html

Australian National Development Index (ANDI) http://www.andi.org.au/

Australian Unity Well-Being Index http://www.australianunity.com.au/about-us/Well-being

Canadian Index of Well-being (CIW) https://uwaterloo.ca/canadian-index-well-being/

Gallup-Healthways Well-Being Index (UK) http://well-being.healthways.com/overviewUk.asp

Gallup-Healthways Well-Being Index (USA)
http://www.healthways.com/solution/default.aspx?id=1125

Gender Inequality Index (GII) http://hdr.undp.org/en/statistics/gii

Gross National Happiness (GNH) http://www.grossnationalhappiness.com/articles/

Happy Planet Index (HPI) http://www.happyplanetindex.org/about/

Human Development Index http://hdr.undp.org/en/statistics/hdi

Inequality Adjusted HDI (IHDI) http://hdr.undp.org/en/statistics/ihdi

Measures of Australia's Progress http://www.abs.gov.au/ausstats/abs@.nsf/mf/1370.0

Multidimensional Poverty Index (MPI) http://hdr.undp.org/en/statistics/mpi

New Zealand Social Report http://socialreport.msd.govt.nz/documents/the-social-report-2010.pdf

OECD Better Life Index (BLI) http://www.oecdbetterlifeindex.org/

Social Progress Index http://www.socialprogressimperative.org/data/spi

State of the USA Key National Indicator System (KNIS)
http://www.gao.gov/assets/320/317346.pdf

Sustainable Society Index (SSI) http://www.ssfindex.com/ssi/framework/

Taiwan National Well-being Index http://eng.stat.gov.tw/ct.asp?xItem=33831&ctNode=3274

The Genuine Progress Indicator (GPI) http://genuineprogress.net/genuine-progress-indicator/

UK Index of Well-Being
https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/bulletins/measuringnationalwellbeing/localauthorityupdate2015to2016

Wellbeing of Nations http://sedac.ciesin.columbia.edu/data/set/cesic-wellbeing-of-nations

World Happiness Report http://unsdsn.org/resources/publications/world-happiness-report-2013/

World Values Survey http://www.worldvaluessurvey.org/wvs.jsp

Appendix B: Wellbeing measures[3]

MEASURES OF WELLBEING	DESCRIPTION	TYPE[4]	DOMAINS AND INDICATORS	APPLICATION
GDP+ Measures of Wellbeing				
1. Human Development Index (HDI) Scale: International Year: 1990 Data: Secondary	The HDI was created by UNDP as a summary measure of average achievement in key dimensions of human development: a long and healthy life, being knowledgeable and have a decent standard of living. The HDI is the geometric mean of normalized indices for each of the three dimensions.	Index	Health • Life expectancy at birth Knowledge • Mean years of schooling • Expected years of schooling Standard of living • GNI per capita (PPP $)	187 countries were included in the 2013 index
2. Inclusive Wealth Index (IWI) Scale: International Year: 2012 Data: Secondary	The IWI is joint initiative of the United Nations University International Human Dimensions Programme (UNU-IHDP) and the United Nations Environment Programme (UNEP) in collaboration with the United Nations Educational, Scientific and Cultural Organization (UNESCO). It is based on the assumption that other key inputs are important components of the productive base of the economy, such as natural capital, human capital and social capital.	Index	Domains: • Manufactured • Capital human capital • Natural capital	20 countries with different levels of income

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[3] Indicators for most wellbeing measures are not included in order to tighten the matrix. Please refer to relevant websites in Appendix A for comprehensive lists of indicators for each wellbeing measure.

[4] Measures that utilize an index approach present results as a single numerical value, while measures that utilize a dashboard approach present a spread of results simultaneously (i.e. does not integrate domains).

MEASURES OF WELLBEING	DESCRIPTION	TYPE	DOMAINS AND INDICATORS	APPLICATION
GDP++ Measures of Wellbeing				
1.Adjusted Net Savings (ANS) Scale: International Year: 2011 Data Source: Secondary	ANS measures the true difference between production and consumption, taking into account investments in human capital, depreciation of fixed capital, depletion of natural resources, and damages caused by pollution.	Index	Adjusted Net Savings = gross savings – consumption of fixed capital + education expenditures – energy depletion, mineral depletion, net forest depletion, and particulate emissions and carbon dioxide damage	150 countries
2. The Genuine Progress Indicator (GPI) Scale: Sub-national, National, International Year: 1995 Data Source: Secondary	The GPI uses the same personal consumption data as GDP but makes deductions to account for income inequality and costs of crime, environmental degradation, and loss of leisure and additions to account for the services from consumer durables and public infrastructure as well as the benefits of volunteering and housework.	Index	The GPI has 3 domains and 26 indicators Domains: • Economy • Social • Environment	Australia, Austria, Canada, Chile, Germany, Italy, the Netherlands, Scotland, Sweden, and the United Kingdom
3. Inequality Adjusted Human Development Index (IHDI) Scale: International Year: 2010 Data Source: Secondary	The IHDI is the HDI adjusted for inequalities in the distribution of achievements in each of the three dimensions of the HDI (health, education and income). The IHDI will be equal to the HDI value when there is no inequality, but falls below the HDI value as inequality rises.	Index	The same HDI domains (with adjustment for inequality) are used in calculating the IHDI	145 countries

MEASURES OF WELLBEING	DESCRIPTION	TYPE	DOMAINS AND INDICATORS	APPLICATION
4. Gender Inequality Index (GII) Scale: International Year: 2011 Data Source: Secondary	The GII shows loss in potential human development due to inequality between female and male achievements in three dimensions: reproductive health, empowerment and the labour market.	Index	Health • Maternal mortality ratio • Adolescent fertility rate Empowerment • Female and male population with at least secondary education • Female and male shares of parliamentary seats Labour market • Female and male labour force participation rates	The 2012 Human Development Report contains the GII for 186 countries
5. Multidimensional Poverty Index (MPI) Scale: International Year: 2010 Data Source: Secondary	The MPI identifies multiple deprivations at the individual level in education, health and standard of living that affect human development.	Index	Health • Nutrition • Child mortality Education • Years of schooling • Children enrolled Standard of living • Cooking fuel • Toilet • Water • Electricity • Floor • Assets	91 countries

MEASURES OF WELLBEING	DESCRIPTION	TYPE	DOMAINS AND INDICATORS	APPLICATION
Objective Wellbeing Measures				
1. *Australian National Development Index (ANDI)* Scale: National Year: In progress Data Source: Primary	ANDI is guided by a conceptual framework that shifts the focus solely from the economy to include critical domains of people's lives that lead to enhanced wellbeing. The ANDI composite index is a single number that moves up or down, giving a quick snapshot of whether the overall quality of life of Australians is getting better or worse.	Index	ANDI is based on 12 domains with 12 headline indicators, each measuring specific factors directly contributing to wellbeing Domains: • Children and young people's wellbeing • Community and regional life • Culture, recreation and leisure • Governance and democracy • Economic life and prosperity • Education, knowledge and creativity • Environment and sustainability • Justice, fairness and human rights • Health • Indigenous wellbeing • Work and work-life balance • Subjective wellbeing and life satisfaction	Australia
2. *Measures of Australia's Progress (MAP)* Scale: Sub-national, National Year: 2002 Data Source: Secondary	The MAP is published by the Australian Statistical Service and provides evidence about whether life in Australia is getting better.	Dashboard	MAP based on 4 domains and 26 themes and headline indicators Domains: • Society • Economy • Environment • Governance	Australia

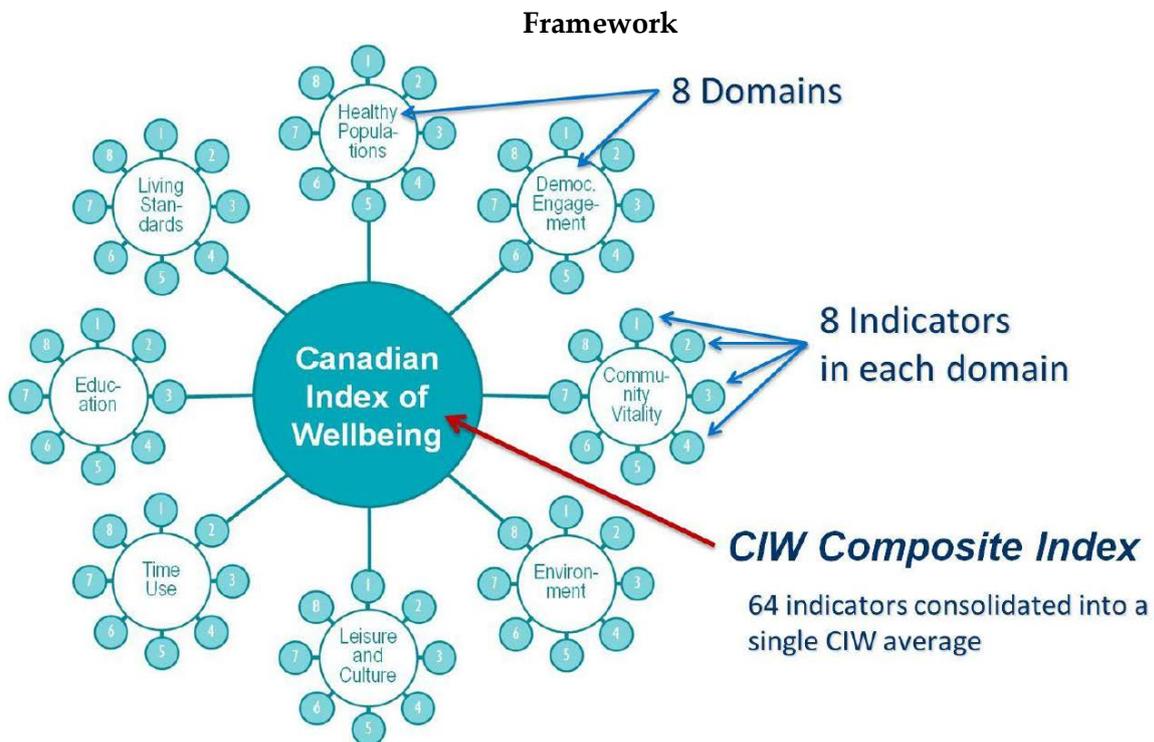| MEASURES OF WELLBEING	DESCRIPTION	TYPE	DOMAINS AND INDICATORS	APPLICATION
3. New Zealand Social Report (NZSR) Scale : Sub-National, National Year: 2001 Data Source: Secondary data and surveys	The report shows how people are faring in New Zealand over time and how social outcomes vary for different groups (women, minorities, and indigenous people) in the population.	Dashboard	The 2010 NZSR was based on 10 domains and 43 indicators Domains: health, education, standard of living, safety, leisure and recreation, cultural identity, paid work, life satisfaction, social connectedness, civil and political rights	New Zealand
4. OECD Better Life Index (BLI) Scale: International Year: 2011 Data Source: Secondary and Gallup Polls	This is an initiative of the OECD that measures people's material conditions and quality of life in the member countries.	Index	The 2014 OECD's BLI has 10 domains and 24 indicators Domains: housing, income, jobs, community, education, environment, governance, health, life satisfaction, safety and work-life balance	34 countries of the OECD plus other "key partners" such as Brazil and Russia
5. Sustainable Society Index (SSI) Scale: International Year: 2006 Data Source: Secondary	The SSI was developed by the Sustainable Society Foundation, a non-profit organization based in the Netherlands, with the objective of stimulating and assisting societies in their development towards sustainability.	Index	The 2012 SSI comprises 3 levels: 3 wellbeing dimensions (economic wellbeing, environmental wellbeing, human wellbeing), 7 categories, 21 indicators	151 countries
6. Wellbeing of Nations (WBN) Scale: International Year Authored: 2001 Data: Secondary	The Wellbeing of Nations portion of the Compendium of Environmental Sustainability Indicator Collections contains a subset of 123 variables assembled from the Wellbeing of Nations, which assesses human and ecosystem wellbeing. The data are distributed by the Columbia University Center for International Earth Science Information Network (CIESIN).	Dashboard	The WBN is comprised of 2 equally weighted indices (Human Well-being Index and Ecosystem Well-being Index) with 9 domains each and 58 indicators in total	180 countries grouped into 14 regions

MEASURES OF WELLBEING	DESCRIPTION	TYPE	DOMAINS AND INDICATORS	APPLICATION
7. Social Progress Index (SPI) Scale: International Year: 2012 Data Source: Secondary	The SPI was developed by the Social Progress Imperative, a nongovernmental organization in the USA. It offers a framework for measuring the multiple dimensions of social progress and benchmarking success over a period of time.	Index	The SPI is based on 3 social progress dimensions. Each dimension, in turn, has the 4 components and each component is made of between 3 and 6 indicators Dimensions: • Basic needs • Foundations of Wellbeing • Opportunity	132 countries are included in the 2014 SPI
8. Canadian Index of Wellbeing (CIW) Scale: National Year: 2011 Data: Secondary	The first CIW was published in 2012 by the University of Waterloo.	Index	The CIW has 8 domains and 64 indicators Domains: community vitality, democratic engagement, education, environment, healthy populations, leisure and culture, living standards, and time use	Canada
Objective/Subjective Measures of Wellbeing				
1.UK Index of Well-being Scale: National Year: 2012 Data Source: Surveys and Secondary	The UK Index of Well-being is headed by the Office of National Statistic which has released 2 "Life in the UK" reports that highlight snapshots of the UK's wellbeing.	Index	The UK Index of Wellbeing is based on 10 domains and 41 indicators Domains: personal wellbeing, relationships, health, what we do, where we live, personal finance, economy, education and skills, governance, natural environment	United Kingdom

MEASURES OF WELLBEING	DESCRIPTION	TYPE	DOMAINS AND INDICATORS	APPLICATION
2. *Gross National Happiness (GNH)* Scale: National Year: 1972 Data Source: Survey	The GNH considers happiness as multidimensional – not measured only by subjective wellbeing and "not focused narrowly on happiness that begins and ends with oneself and is concerned for and with oneself." GNH has often been explained by its four pillars: good governance, sustainable socio-economic development, cultural preservation, and environmental conservation.	Index	GNH has 9 domains and 33 indicators Domains: psychological wellbeing, standard of living, good governance, health, education, community vitality, cultural diversity and resilience, time use, ecological diversity and resilience	Bhutan
3. *Taiwan National Well-being Index* Scale : National Year: 2012 Data Source: Primary and Secondary	The Taiwan National Well-being Index is based on the OECD's Better Life Index (BLI) but *also* runs a parallel set of indicators that are domestic in focus.	Index	Based on OECD's BLI domains but has 38 local indicators	Taiwan
4.Gallup-Healthways Well-Being Index (USA) Scale: National (USA) Year: 2008 Data Source: Primary	The analysis is based on data from the Gallup-Healthways Well-Being Index, a definitive measure and empirical database of real-time changes in wellbeing throughout the world.	Index	The Gallup-Healthways Well-Being Index is calculated from 6 indices: Life Evaluation Index, Emotional Health Index, Physical Health Index, The Healthy Behavior Index, Work Environment Index, and Basic Access Index. Each of these indices is based on several indicators	USA

MEASURES OF WELLBEING	DESCRIPTION	TYPE	DOMAINS AND INDICATORS	APPLICATION
Subjective Wellbeing /Objective Wellbeing				
1. Happy Planet Index (HPI) Scale: International Year: 2006 Data Source: Secondary and Gallup polls	The HPI was created by Nic Marks, Founder of the Centre for Wellbeing at NEF (the New Economics Foundation) and uses data from the HDI and the Ecological Footprint by the World Wildlife Fund together with other primary data.	Index	The HPI is constructed from 3 indices: experienced wellbeing, life expectancy and ecological footprint	The 2012 HPI report ranks 151 countries
2. National Well-Being Index Scale: International Year: 2006 Data Source: World Values Survey and other secondary sources	Based on Vemuri & Costanza, 2006, which "aims to combine data on national levels of mean Subjective Wellbeing (SWB) with data on objective measures of built, human, social, and natural capital in order to better explain the determinants of national SWB."	Index	Domains: social capital, natural capital, subjective wellbeing	56 countries included in the regression model, 172 countries included in the life satisfaction values
Subjective Wellbeing				
1. Australian Unity Well-Being Index Scale: Sub-national, National Year: 2001 Data Source: Surveys	The Australian Unity Well-being Index regularly measures the "subjective wellbeing" of the Australian population by asking people to rate their satisfaction with aspects of their lives.	Index	The Personal Wellbeing Index is created based on responses to questions about: • Personal health • Personal relationships • Safety • Standard of living • Achievement in life • Feeling part of the community • Future security	Australia
2. World Happiness Report Scale: International Year: 2012 Data Source: Gallup World Survey	The WHR is published by the Sustainable Development Solutions Network (SDSN).	Indices	The WHR has 3 elements: positive affect, negative affect and happiness (yesterday) with several indicators	The 2013 report covers 150 countries

Appendix C: Canadian Index of Wellbeing Framework

The CIW, recognized as a global leader at the forefront of wellbeing international movements and efforts to measure progress in society, has eight domains and 64 indicators. The CIW tracks alternative measures of wellbeing over time in relation to economic progress in Canada. The CIW has published two national reports, with many provincial and municipal initiatives in progress.

Framework

Source: Canadian Index of Wellbeing, 2012:13

IJW

Domains and Indicators

Community Vitality	Education	Health	Standard of Living
1) property crime rate per 100,000 population 2) % reporting participation in organized activities 3) % who provide unpaid help to others on their own 4) % reporting very or somewhat strong sense of belonging to a community 5) % who feel safe walking alone after dark 6) violent crime rate per 100,000 population 7) % with 6 or more close friends 8) % who feel that most or many people can be trusted	1) ratio of childcare spaces to children aged 0 to 5 years of age 2) % of 35-65-year-olds with a university degree 3) % of PISA scores explained by socioeconomic background 4) ratio of students to educators in public schools 5) % of 20-34-year-olds in population completing high school 6) % of children doing well on five developmental domains 7) average of five social and emotion competence scores for 12-13-year-olds 8) basic knowledge and skills index for 13-15-year-olds	1) % of daily or occasional smokers among 12-19-year-olds 2) % of adults getting influenza immunizations 3) % rating patient health services as excellent or good 4) life expectancy at birth 5) % with self reported diabetes 6) % self rated health as excellent or very good 7) average remaining years expect to be lived in good health, HALE +15 8) % with probable depression	1) % of persons in low income jobs 2) % of labour force with long-term unemployment 3) after-tax median income of economic families 4) % of labour force employed 5) Royal Bank of Canada housing affordability index 6) scaled value of Centre for the Study of Living Standards (CSLS) economic security index 7) ratio of top to bottom quintile of economic families after tax 8) CIBC index of employment quality

Democratic Engagement	Environment	Leisure and Culture	Time Use
1) % that are not interested in politics at all 2) % of women in parliament 3) % reporting being very/fairly satisfied with the way democracy works in Canada 4) % that strongly agree it is every citizen's duty to vote in federal elections 5) ratio of registered to eligible voters	1) primary energy production 2) water yield in southern Canada 3) viable metal reserves index 4) Canadian Living Planet Index 5) ecological footprint 6) absolute greenhouse gas emissions 7) ground level ozone (population weighted in ppb)	1) average monthly frequency of participation in physical activity over 15 minutes 2) average number of nights away per trip in past year on vacations or 80km from home 3) average visitation per site in past year to all national parks and national historic sites	1) % of labour force participants working more than 50 hours per week 2) % of individuals working for pay with flexible work hours 3) % of 65 years and older reporting annual formal volunteering activities 4) % 3-5-year-olds read to daily by parents 5) mean workday commute time for individuals working for pay

Democratic Engagement	Environment	Leisure and Culture	Time Use
6) net official development aid as a percentage of gross national income 7) % of voter turnout at federal elections 8) % with a great deal or quite a lot of confidence in federal parliament	8) marine trophic index	4) average number of hours in past year spent volunteering for culture and recreation organizations 5) average % of time spent on previous day in social leisure activities 6) average attendance per performance in past year at all performing arts 7) average % of time spend on previous day in arts and culture activities 8) expenditure in past year on culture and recreation as a % of total expenditure	6) % of 65 years and older reporting daily active leisure activities 7) % of 20-64-year-olds giving unpaid care to seniors 8) % of 20-64-year-olds reporting high levels of time pressure