

Review

Rethinking What Counts. Perspectives on Wellbeing and Genuine Progress Indicator Metrics from a Canadian Viewpoint

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Abstract: A prevailing undercurrent of doubt regarding the merits of economic growth has motivated efforts to rethink how we measure the success of economic policy and societal wellbeing. This article comments on efforts to better account for impacts of economic activity emphasizing genuine progress indicator (GPI) and wellbeing metrics from a Canadian viewpoint. The authors caution that GPI and related metrics are measures of human and social welfare and not adequate to account for the ecological costs associated with economic growth. In addition, the article discusses the suitability of wellbeing models and metrics for local scale applications, recognizing growing interest in these techniques at the urban and local level. The article concludes with a reflection on the uptake of GPI and wellbeing measures highlighting the Canadian experience.

Keywords: genuine progress indicators; sustainability indicators; wellbeing; community; economic growth

1. Introduction

A growing body of scientific evidence suggests that at a global level the magnitude of economic activity is disrupting critical ecosystem function and services and contributing to social decline [1–4]. The intended welfare benefits of economic growth are negated by the costs in terms of deteriorating natural capital, increasing pollution, and contributing to social problems. A disconnect between an economic growth agenda and lived experience has motivated efforts to reconsider how we direct our economies so they work better for people and the planet. A critical starting point has been rethinking how we measure the impacts of economic activity. What we count, measure, and track matters. Basing development decisions solely on economic indicators promotes policies, priorities and investment decisions that may make sense from a Gross Domestic Product (GDP) perspective but often come with human and environmental costs sending misleading signals to planners, policy makers and the public about what fosters wellbeing. Critics argue that growth-based economic policies have failed “the development project” [5–9].

Efforts to design more relevant metrics have focused on integrating social, environmental and human-welfare criteria as a way to ensure potential costs of economic growth are properly factored into decision making processes. In 2007, the European Commission, the Organization for Economic Cooperation and Development, the Organization of the Islamic Conference, the United Nations, the United Nations Development Programme and the World Bank signed the Istanbul Declaration [10]. This important symbolic gesture confirms the growing recognition among global institutions that measurement of societal wellbeing must go beyond traditional economic measures.

This paper comments on efforts to improve macroeconomic metrics and indicators from a Canadian viewpoint in the context of better counting the social and environmental costs associated with economic growth. The Istanbul Declaration and recent traction in Europe to advance new measures of wellbeing stands in sharp contrast to stalled efforts in Canada, an early pioneer in advancing alternative frameworks of progress and wellbeing. As much of the motivation to design new metrics centres on the failings of GDP as a measure of societal welfare, section two begins with a brief overview of the widely acknowledged shortcomings of GDP. Section 3 reviews efforts to better account for societal welfare by providing historical context and citing Canadian examples. Section 4 identifies limitations of genuine progress indicators (GPI) noted in the literature and cautions that GPI initiatives as currently constructed are not suitable proxies of ecological sustainability. Section 5 discusses the suitability of wellbeing models and metrics for local scale applications highlighted in the literature recognizing growing interest at the urban and local level within Canada. Section 6 comments on the Canadian experience and limited uptake of GPI type metrics. The paper concludes more broadly with reflections on efforts to go beyond GDP and the need to complement GPI metrics with biophysical based metrics to account for the ecological impacts associated with economic activity.

2. Growth Metrics and Community Wellbeing

Community wellbeing or progress has traditionally been inferred from a narrow set of economic indicators. The underlying premise assumes that a strong economy signals a society is doing well. In part, the premise is logical. Data demonstrates a correlation between economic indicators such as

GDP per capita and employment, educational attainment, health outcomes, life expectancy and crime rates, to name a few [11–14]. At the macro-level, GDP per capita is the principal indicator of ‘economic health’ and by extension, societal welfare [15–17]. Having one ‘all encompassing metric’ offers policy makers a simple directional tool to inform decision-making and communicate the apparent success or failings of an economy.

The GDP, however, measures progress solely in terms of what is being bought and sold. Cobb, Halstead and Rowe state in their landmark article, *if the GDP is Up, Why is America Down*, “*The GDP is simply a gross measure of market activity, of money changing hands. It makes no distinction whatsoever between desirables and undesirables, or costs and gains*” [18, p.160]. While the GDP guides major societal policy direction and development choices, it is an extremely poor proxy for social welfare and environmental sustainability. Simon Kuznets, the architect of GDP/GNP (Gross National Product) accounting, devised the national accounts system to better direct the economy following the Great Depression [19]. The system was never intended as a measure of societal wellbeing. Kuznets, whose efforts would evolve into the current framework for measuring GDP, even cautioned against using it as an overall barometer of welfare, arguing that it includes no criteria of social productivity [20,21].

Shortcomings of the GDP as a wellbeing indicator are well documented [15,22–24] and include:

- GDP regards all expenditures as contributing to wellbeing regardless of what that expenditure is for and its effects. For example, money spent on pollution clean-up, addictions treatment, crime and car accidents contribute to the GDP and therefore are counted as contributing to wellbeing.
- GDP devalues goods and services that do not involve monetary exchange. For example, taking care of a child or a parent, housework and volunteer work are not factored in.
- The GDP is not forward thinking. It excludes the inherent value of natural resource capital and ecosystem services. For example, a forest has no value unless you cut it down. Furthermore, the GDP minimizes the value of expenditures on education, preventive healthcare, and environmental protection because it counts only the immediate expenditure and not the potential return on investment.
- The GDP does not account for the distribution of income within a society. GDP counts any increase in income as positive, overlooking the social costs of income inequality and poverty.

3. Alternative Measures of Wellbeing

3.1. A Note of Caution

The terminology and methods underlying proposed metrics such as the genuine progress indicator (GPI), community wellbeing measures, and quality of life indicators are loosely applied, particularly in the grey literature. Concepts such as wellbeing, health, good life, progress and societal welfare are frequently used interchangeably and are rarely defined. Michalos and colleagues [25] suggest that the inherent fuzziness of many of these terms reflects their long history (some dating back to antiquity) of being used freely in discourse. Consequently, since GPI, quality of life and community wellbeing

metrics are new and evolving concepts, the lines that circumscribe their terminology and application tend to be blurred. GPI measures, when compared to quality of life and community wellbeing measures have a more formal methodological and theoretical underpinning [26]. Measures of community wellbeing and quality of life are frequently a collection of indicators organized around domains, which are believed to contribute to wellbeing or life satisfaction. A review by Cummins [27] of over 1,500 articles providing data on life satisfaction found little consensus in the literature around domains, and an even wider range of suggested indicators to consider. A further challenge is to decipher between a group of indicators loosely organized under a theme for a specific project and frameworks to be reported in place of or along-side traditional economic measures. For that reason, this paper focuses more heavily on GPI initiatives, recognizing that most of the measurement challenges and limitations extend generally to other quality of life and wellbeing metrics.

3.2. *Genuine Progress Indicators*

Efforts to develop alternative measures of wellbeing are, in part, a direct response to the misuse of GDP as a barometer of welfare. More profoundly, however, these measures challenge the validity of an economic growth agenda in an era of increasing social and environmental concerns. Critics argue that basing the direction of society on GDP fosters a socio-economic climate that emphasizes economic growth often at the expense of the environment, health and wellbeing of many people [15–17,28,29]. Proposed alternative metrics attempt to measure a broader range of environmental, social and economic criteria. However, these efforts are not intended to simply represent a shift to improve our accounting, but also to alter perceptions about human values and what makes life worthwhile. Twist [30] argues that the movement to redefine what indicators we track and use is part of a global effort to change the myth that more growth, more production, and more consumption are good for our lives.

Daly and Cobb's pioneering index of Sustainable Economic Welfare [15] and the suite of related genuine progress indicators are a category of measurement tools that adjust the GDP model so to better account for the benefits and costs of economic growth. While methods vary slightly between applications and have been refined over time, major adjustments include: deducting social and environmental costs and other 'regrettable' expenditures normally included in GDP estimations, adding the value of goods and services rendered outside the marketplace, and factoring in the costs of income inequality. Proponents of various GPI initiatives argue their results offer a more complete measure of societal wellbeing and qualify the impacts of economic growth [15,16,22,24].

Efforts to improve macroeconomic indicators date back to the 1970s. Nordhaus and Tobin [31] proposed the Measure of Economic Welfare to evaluate if the benefits of growth as a policy directive to improve social welfare were obsolete. In short, based on research covering the period 1929–1965, they observed that while GNP and other national income aggregates are imperfect measures of welfare, the broad message they convey holds correct. Nordhaus and Tobin's results affirmed the economic growth doctrine and existing means of measuring welfare. The impetus of their research, however, highlighted increasing skepticism regarding the merits of simply counting market-based economic activity. Given Nordhaus and Tobin's conclusion, efforts to revise measures of aggregate output waned. By the late 1980s, however, Daly and Cobb [15] reinvigorated the debate, questioning the validity of

Nordhaus and Tobin's earlier findings. Daly and Cobb observed that while Nordhaus and Tobin's conclusions held true for the early years of their research period, increases in welfare per increase in GDP declined significantly over the latter period. Daly and Cobb undertook a new analysis for the years 1950–1985. They suggested additional adjustments reflecting a broader set of social and environmental criteria. Their proposed model, referred to as the Index of Sustainable Economic Welfare (ISEW), indicated that starting in the 1970s the benefits of economic growth were offset by rising social and environmental costs [15].

Cobb and colleagues [18] working for an economic think tank based in California, used Daly and Cobb's research to advance public policy efforts challenging a growth based economic agenda. In addition to revising the ISEW methodology slightly, they renamed the model the Genuine Progress Indicator (GPI). Since 1995, well over 40 GPI initiatives have been conducted following their general framework. Specific calculation methods have varied slightly among studies due to several factors: limited data availability; place specific adjustments; novel adjustment categories, and differing valuation methods of non-market goods and services [22]. Similar to when calculating GDP, Cobb and colleagues [18] started with personal consumption expenditures and factored in 23 adjustments to derive a GPI value. Table 1 summarizes adjustments made by Cobb and colleagues [18]. What is critical throughout their GPI analyses is that all values are fully commensurate and expressible in monetary units. The resulting metrics report an aggregated monetary value similar to GDP.

Table 1. Genuine progress indicator (GPI) adjustment categories as implemented by Cobb and colleagues [18].

Additions	Subtractions
value of volunteer work	cost of crime
value of non-paid household work	cost of family breakdown
services of consumer durables	cost of automobile accidents
services of highways and streets	cost of consumer durables
net capital investment	cost of household pollution abatement
net foreign lending and borrowing	loss of leisure time
income distribution adjustment	cost of underemployment
	cost of commuting
	cost of water pollution
	cost of air pollution
	cost of noise pollution
	loss of wetlands
	loss of farmland
	cost of resource depletion
	cost of long-term environmental damage
	cost of ozone depletion
	loss of old-growth forests

A consistent finding from GPI studies is that while GPI measures parallel GDP over earlier time periods, at some point the indices diverge and GPI either levels off, increases at a much slower rate, or in some cases declines [22]. The Alberta, Canada GPI per capita, for example, rose in parallel with real

GDP per capita until about 1960 when the GPI leveled and began to decline slightly. Between 1961 and 2003, Alberta's GPI per capita decreased by 19% while Alberta's GDP per capita over that same period increased by almost 500% [32]. Posner and Costanza [22], in a review of over 40 national and sub-national GPI studies, confirm that in all cases, while GDP rises over the course of decades, there is a leveling, falling or slow rise of the GPI. Earlier reviews of GPI and related studies support these findings [8,25]. The general relationships between GPI and GDP curves support the "threshold hypothesis" [25] or "uneconomic growth" [14], terms used to suggest that beyond a certain point, the resulting environmental and social costs of economic growth outweigh the benefits. In these cases, additional growth in the scale of the economy no longer improves quality of life and may undermine environmental sustainability and societal welfare [26,29]. Measures of GPI affirm that expanding economic capital beyond a certain point can erode social capital and natural capital. The concept of a threshold is context specific and surpassing that threshold depends on total aggregate economic activity but also on what aspect of the economy is growing and how the benefits are distributed.

4. Challenges and Limitations of Using a GPI Approach

GPI and related metrics have some limitations. The most significant critiques focus on inconsistent and questionable monetary valuation methods used to estimate the value of non-market goods [26,22,33]. Neumayer [33] contends that the widening gap between GPI related metrics and GDP is not a result of the threshold hypothesis but is due to questionable valuation techniques especially in regard to valuing the depletion of non-renewable resources and the costs of long-term environmental damage. Neumayer's criticism is less applicable within a study if the focus is on comparing trend change in GDP per capita and GPI per capita over time as opposed to absolute values. To avoid challenges of converting costs and benefits into monetary values and the associated criticisms, a growing number of wellbeing metrics avoid monetization altogether. Results typically communicate progress (or lack thereof) against time, a target value, or by comparing results against other jurisdictions. Notable Canadian examples include the Genuine Wealth Model [24] and the Canadian Index of Wellbeing (CIW) [25]. Both models index indicators against a base year. Evaluating progress over time is still problematic, however, as perceptions of progress (or lack thereof) depend heavily on the base year selected.

Critics also suggest the lack of a standard calculation methodology and differing adjustment categories limits comparability and consistency in results across studies, weakening the approach [22,26]. For this reason, Posner and Costanza [22] argue that any hope of mainstream political adoption of the GPI depends upon an accepted standardized methodology. Anielski [34] cites the lack of a standard set of guidelines for both the selection of indicators in the GPI framework and full cost accounting protocols as a barrier preventing formal government uptake of GPI in Canada.

Another critique focuses on using personal consumption expenditures as the basis of GPI calculations. Personal consumption expenditures include several questionable categories that count positively toward the GPI including, tobacco, alcohol products, and processed foods, which arguably do not contribute to wellbeing [26]. It is possible for studies to omit these categories. An argument can be made however, that moderate use of products in these categories may contribute some wellbeing suggesting that only partial allocation of expenditure should be omitted. In defense of starting with

personal consumption, GPI accounting adds undesirable effects of consumption such as defensive and rehabilitative health expenditures.

A common critique of the GPI approach lies in the concern that many diverse aspects of wellbeing are lost in reporting a single aggregate value [20,35,36]. For example, the CIW which reports a single aggregate result noted an 11% rise in the index between 1994 and 2008. Two domains, however, saw a decrease in wellbeing. Further, 25 of the 64 indicators reported that individuals were worse off. Also, reporting a single value masks that indicators can potentially conflict with another. While this may seem obvious between domains (living standards and environment), conflict occurs within the same domains. For example, in the environment domain, increases in absolute greenhouse gas emissions count negatively whereas increases in primary energy production counts positively [25].

Several authors take a stronger stance arguing that reporting diverse, complex, and significant amounts of information in a single metric is absurd to begin with [37–40]. The Alberta GPI, Nova Scotia GPI and CIW report an aggregate finding but also report results by domain and indicator. Users of the data have access to the information at different levels of aggregation to support decision-making. Calculating a complex measure presents practical challenges. For example, it requires significant time, expertise and resource demands, which clearly limits uptake for resource-constrained jurisdictions. Given the reliance of the GPI on a few categories, Bleys [41] proposes a simplified calculation approach to enable wider adoption of the metric. Bleys [41] notes that a few categories: value of household work, depletion of non-renewable resources, cost of income inequality, and the cost of consumer durables dominate the index. Posner and Costanza [22], however, argue a major strength of the GPI methodology is the underlying detail and that simplifying the metric would undermine its value.

Increasingly, studies estimate GPI values in combination with sustainability or other human welfare based metrics to highlight issues such as ecological sustainability, and happiness. For example, the Alberta GPI and Nova Scotia GPI both reported the ecological footprint as an indicator [32,42]. Studies using multi-tool approaches suggest the increased information supports decision-making and highlights the multiple dimensions of what constitutes sustainability and wellbeing [43–45]. In some cases, the various metrics convey conflicting messages reinforcing that what we count and how we count matters [46]. A pluralistic approach corrects for the deficiencies inherent in using a single metric [43].

From a sustainability perspective, the GPI ignores the spatial and societal distribution of costs and benefits. Those receiving the benefits of economic growth may not be those who bear the costs. The GPI, therefore creates an indicator bias favouring jurisdictions which export the costs of economic growth to other regions [22,47]. Makino [48], for example, notes the likely overestimation of Japan's GPI because of Japan's significant reliance on imports of raw material and energy resources. Makino calls for an "open economy GPI" to capture the environmental costs of Japan's consumption outside of its borders [48].

Lawn [26], Wen [35] and Dietz and Neumayer [49] argue that GPI measures are a weak sustainability indicator. The GPI does not indicate if natural capital is being used or substituted at an unsustainable rate or if rates of economic activity jeopardize critical ecosystem functions. Genuine progress indicator metrics account for ecological costs in terms of monetizing natural resources and pollution costs. They provide no indication if natural capital and critical ecosystems are declining in quantity or quality. Relying on monetary valuation to compare and aggregate adjustment categories into a single monetary amount implies trade-offs between the various indicator categories

and a high level of substitutability between forms of capital [35,49]. Further, monetization of ecosystems goods and services reveals nothing about the sustainability of energy and material throughput driving the economic system. More generally, valuation techniques to price ecosystem goods and services are inherently limited [39,50–52]. GPI and community wellbeing metrics tackle one facet of improving how we measure the impacts of economic activity. To account for environmental sustainability, GPI measures need to be supplemented with natural capital stock based indicators or measures of energy and material throughput. GPI metrics look to correct for flaws in current income based approaches to account for societal welfare. GPI metrics may endorse a weak sustainability view; the pertinent point is that they are not proxies of sustainability, especially ecological sustainability [49]. In terms of rethinking measurement, GPI and related metrics improve upon the GDP as a surrogate of human welfare; biophysical metrics, however, are needed to account for the ecological impacts associated with economic growth.

5. Adapting Metrics to Local Scale Applications

GPI and related wellbeing metrics have been designed primarily for macro-scale applications. Demand and interest, however, to rethink measurement has surged at the local level [53,54]. Rightly so, the signals conveyed by macro-economic metrics do not resonate with many people's day-to-day experience. In addition, a growing number of community leaders, planners and policy makers are looking to explore different development pathways and projects and want evidence to validate their positions [53]. Despite the demand, few GPI and community wellbeing metrics have been adapted to the local level. Wilson and Grant [53] overview major barriers including lack of data, high resource demands to complete studies (time, money, skill set), limited ability of local authority to influence results and difficulties translating results into action plans.

A review of GPI studies conducted by Posner and Costanza identify six urban level GPI analyzes with results for ten cities [22]. With the exception of the GPI of four Chinese cities by Wen and colleagues [35], the remaining studies were conducted as part of larger regional studies or drew on previous regional work. The calculation method for all studies, with the exception of the Edmonton, Canada study, follow the framework suggested by Cobb, Halstead and Rowe [18] with consideration of potential adjustments made in subsequent GPI analyzes (see for example, [55–57]). The Edmonton study [58] reports results by wellbeing domain and does not attempt to monetize indicators. The study may be better labeled a wellbeing assessment, raising the question of whether monetization is a requirement of the GPI methodology. The City of Edmonton GPI reports 51 wellbeing indicators for the period 1981–2007. Edmonton is using the comprehensive indicator system to inform the City's long-range strategic plan, budgeting and decision-making [34]. Anielski [34] notes the strength of the Edmonton GPI is the city's ability to compare long-term trends in well-being conditions relative to GDP growth. According to the Edmonton GPI report, real GDP per capita increased by 22% between 1981 and 2008 while the GPI index decreased by 5% [58].

Adapting macro-measures of wellbeing to local scale applications raises several challenges. The availability of local data is a significant concern. Studies typically rely on extrapolating regional and national data, and adopting proxy methods given large data gaps at the local level [16,58,59]. Using regional and national data compromises the ability of results to inform specific planning decisions

bringing into question the utility of results [53]. Boundary issues pose a further challenge, limiting local scale calculations. For example, it is difficult at the city level to track imports and exports of market goods and services, and even more so resource and waste flows. Urban centres rely on vast regions outside of their physical borders for material and energy inputs and waste outputs [60]. Local GPI studies are intended to support decisions around community wellbeing. Many factors that drive the GPI, however, do not fall under local jurisdictional authority [22,44]. Real change in GPI values require a coalescing in policy changes at different levels of government. Given the challenges, Posner and Costanza [22] conclude in a review of GPI studies at multiple scales that the national level is the most useful and reliable spatial scale of analysis.

The strength of local studies is that they stimulate discussion about what constitutes community wellbeing and how to achieve it. More importantly, such studies highlight the broad importance of basing public policy and community decision making on social, environmental and economic criteria [16,61]. Local context can be incorporated by inviting community input into the process. For example, Anielski and Wilson [61], in an assessment of community wellbeing for Leduc, Alberta, engaged community members to discuss wellbeing and community values as a basis for defining what indicators to track. As a result of the engagement process, the project identified 120 indicators organized into 23 different wellbeing domains. The domains are grouped and reported by capital accounts: human, social, natural, built and financial assets. The model offers an approach to bridge GPI type metrics with community concerns [24]. The City of Guelph has adopted the CIW framework to advance a Social Wellbeing Plan. The wellbeing domains and priorities were informed by community engagement events [54]. Any success, however, in widely reporting GPI and other community wellbeing metrics at the local scale depends on access to community-derived data. Communities must begin tracking information related to sustainability and wellbeing themselves [22,53]. Adapting existing metrics will not be perfect for local applications. Communities must understand limitations of approaches and fit efforts within a larger decision-making support framework. Including the GPI or related metrics as part of a basket of indices, however, will contribute to a more nuanced understanding of community wellbeing [53,62].

6. Reflections on the Canadian Experience

The pioneering work of GPI Atlantic, and the Alberta GPI established Canada as a leader in advancing early GPI accounting and indicator frameworks at the turn of the millennium. The climate was optimistic. In 2000, former Finance Minister, Paul Martin, dedicated nine million dollars to the National Round Table on the Environment and the Economy to develop national sustainable development indicators. Mr. Martin noted that this initiative might well be one of the most important elements of his 2000 budget [63]. The Pembina Institute released the Alberta GPI in April 2001: it included a replication of the original US GPI monetary measure of progress as an alternative to the GDP as well as non-monetary indicators of wellbeing that comprised a 51-indicator composite index [64]. In the autumn of that year, the Atkinson Foundation formed the Canadian Index of Wellbeing, which brought together Canada's leading quality of life, wellbeing and sustainable development indicator experts to construct the world's first index of wellbeing. The process championed by the Honourable Roy Romanow, former Premier of Saskatchewan, brought substantial political influence. The hope of

the respective pioneering organizations from the onset was formal government adoption of a GPI type framework leading to a standardized approach for use by federal and provincial governments across the country.

Over a decade later, no government (either federal or provincial) has adopted GPI related metrics, nor appear to be engaged to do so at any point in the immediate future. The National Round Table on the Environment and the Economy will be wrapping up operations in 2013 after having had its federal funding cut. Efforts to advance an Alberta GPI framework have not resulted in any formal adoption of GPI by the Provincial government. Pembina, the lead organization behind the Alberta GPI, has no plans to update the metric. In Nova Scotia, the New Democratic Party (NDP) government has not signaled a commitment to report GPI despite calling for the adoption of GPI measures as opposition party prior to the last election in 2009 [65]. The CIW currently maintained by the University of Waterloo was formally released in 2011, an important success. With the current focus on the economy in Canada, however, the index has not been able to initiate the necessary national dialogue to support political adoption [34,54]. The architects of the CIW do not see any immediate uptake by the federal government [54]. Statistics Canada has discontinued many environmental surveys and the mandatory long form census, key data sources to support wellbeing indicator work.

Within Canada, non-government organizations and academics led the development of early GPI efforts. Their motivations were, in part, a response to doubts regarding the contribution of an economic growth agenda to human wellbeing [66,67]. GPI metrics were put forth to replace the GDP as a measure of societal welfare. The federal government and provincial governments appear reluctant to support non-economic growth based measures based on the assumption that they may convey messages that undermine economic growth and job creation or raise doubts regarding key economic priorities. Federal examples include oil sands development, the Keystone Pipeline and resource development more generally. Disbanding the NRTEE and ending reporting on key environmental indicators imply a strategic interest to restrict tracking and reporting data that may contradict the current federal Conservative government's economic priorities.

The CIW has attempted to shift the focus from challenging the economic growth paradigm toward better accounting for wellbeing. It explicitly states that the CIW composite index and GDP (proxy for economic growth) are not in conflict and encourages reporting the metrics in tandem. Further, the notion that CIW should replace GDP outright as Canada's benchmark indicator of progress is absent in their messaging [25]. The position follows what is happening in the United Kingdom, where the David Cameron Conservative government is explicit that new wellbeing measures will not replace traditional economic growth indicators [68,69]. The focus has changed from using alternative metrics to question failings of the GDP and economic growth toward promoting a growth platform with fewer associated environmental and social costs.

Speaking about the Alberta GPI, Anielski [34] notes government economists supported the idea of correcting for some societal and environmental costs that were otherwise counted as additions to the GDP. They were more reluctant, however, to endorse the GPI as an alternate composite index or replace GDP. Costanza and colleagues [15] and Anielski [34] cite an entrenched familiarity and reliance on traditional economic indicators among established organizations as a barrier preventing wider adoption of GPI metrics. The System of National Accounts has been in use and evolving since WWII. Coming up with an international standard for GPI-type accounting and protocols is a daunting

task. Critics of the Alberta GPI accused the work of indicator selection bias (i.e. picking indicators that would make Alberta's progress look poor) and giving equal weight to each of the 51 indicators in the Alberta GPI. The sentiment was that economic indicators should be prioritized [34]. Stiglitz argues that in the United States (we presume this applies to Canada as well) political interference from lobby groups undermines the development and adoption of new metrics. Many industries feel threatened that changing the emphasis of what we measure will lead to public sentiment and policies that ultimately affect how they operate [70]. Whether it is political interference, society's general malaise for change, or the difficulty in designing new metrics and models, meaningful progress towards suitable alternatives has been disturbingly slow. Critics have been questioning the merits of economic growth for over half a century.

7. Conclusion: Moving Beyond GDP

GPI type measures have been produced for over 20 years with limited uptake in mainstream policy arenas. Most calculations have been one-off or short-duration exercises largely led by the academic community and non-governmental organizations. With the exception of the State of Maryland, no jurisdiction currently calculates a GPI in lieu of GDP or alongside GDP as part of regular statistical reporting. In 2009, The State of Maryland calculated their GPI and developed a GPI forecasting tool to support policy and planning decisions. Under current leadership, the State appears committed to updating GPI estimates on a regular basis, although they have not yet done so or outlined a plan forward [71]. The State Governor has been an important political champion of the GPI. This is perhaps the critical story; adoption of GPI metrics require strong political champions combined with the capacity to undertake these complicated calculations in a robust fashion.

Several countries in Europe are considering adopting a "Green GDP" or measure of wellbeing. In 2009, the European Parliamentary Commission issued a roadmap outlining a five-year process for moving beyond GDP [72]. Nicholas Sarkozy, former President of the French Republic, established The Commission on the Measurement of Economic Performance and Social Progress led by Joseph Stiglitz, Amartya Sen and Paul Fitoussi to identify limits of GDP and consider additional information required for the production of more relevant indicators [17]. The United Kingdom Office of National Statistics released the country's first set of wellbeing indicators in November, 2012 as part of their Measuring National Wellbeing (MNW) programme. The programme, which began with a six month national debate about 'what matters' aims to report annually a trusted set of national statistics to help citizens understand and monitor wellbeing [73].

The traction in Europe to go beyond the GDP is positive. From a Canadian viewpoint, the wider debate and discussions seem to reiterate 20 years of effort. In terms of progress, are governments really moving forward? In Canada, much of the early momentum has stalled. Even in Europe, the language supporting new metrics is clearly as an addition to existing economic growth metrics. No evidence suggests that these are replacement measures or signal a new economic direction. GPI metrics broaden what we measure to include the contribution of social and environmental factors toward human welfare. The current emphasis has not been on redefining a new economic worldview reflective of sustainability principles but on tweaking what we measure to correct for perceived flaws in the GDP as a surrogate of wellbeing. Adopting a GPI does not necessarily change the underlying structure of the

economy and its imperatives. GPI can, however, be used to argue for that. Increasingly, however, GPI and related metrics are advanced within an economic growth framework. In an era of sustainability urgency, GPI metrics are insufficient on their own to change dramatically the underlying framework of economic decision-making. Biophysical metrics based on physical flows, for example, are necessary to capture the throughput impacts, which drive economic activity. Changing resource use, consumption patterns and development pathways requires a suite of robust tools that challenge the economic growth agenda.

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Conflict of Interest

The authors declare no conflict of interest.

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