

PENANG INSTITUTE

# MONOGRAPHS

#23

7 SEPT 2022

## Rethinking GDP: The Need for Better Measures of Progress

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## **EXECUTIVE SUMMARY**

- Although Gross Domestic Product (GDP) provides useful information on the structure and performance of the economy, it measures only monetary transactions related to the production of marketed goods and services and gives therefore an incomplete picture of the social and natural capital systems within which the economy operates.
- GDP should not be viewed as a measure of economic progress, because it can provide misleading indications about how well-off people are and therefore distorts policy decisions.
- The Genuine Progress Indicator (GPI), on the other hand, provides a better approximation of the country's sustainable economic welfare or progress, and draws attention to critical development issues such as the distribution of resources, the costs and benefits of production and consumption, and the value of non-market goods and services.
- It is found that over the past two decades, the gap between Malaysia's economic growth and progress has widened. This gap is mainly a result of the costs of growth, such as natural resource depletion, pulling down GPI values despite the addition of the positive contributions of monetary value of non-market services and household work.
- Data and methodological issues are the major obstacles to developing, implementing, and applying better measures of progress, such as the GPI. A coordinated effort by various stakeholders is needed to achieve consensus around developing and applying indicators that effectively capture the economic state of society.

# 1 Introduction

Gross Domestic Product (GDP) is the most commonly used measure of output and economic activity worldwide. For many policymakers and economists, economic development and improved social wellbeing have conventionally been measured by increases in GDP. However, in light of vast changes in perspective on social wellbeing, environmental concerns, and shifts in the global economy, many now question if GDP is indeed a sufficient measure of economic development and social wellbeing (Costanza, 2014; Dynan & Sheiner, 2018). As a result, it is critical to revisit and redefine what economic development is and what GDP actually measures.

An economy is part of a larger arrangement that includes social and environmental systems as well, and cannot be separated from them. The economy draws benefits from natural (e.g., raw materials), social (e.g., institutions and communities) and human (e.g., skills and knowledge) goods, and the quantity and quality of such capital can be also affected by economic activities (Costanza et al., 2009). This suggests that maintaining or improving the condition of natural assets and people's wellbeing are essential in sustaining economic growth for the longer term. Hence, economic success is about how the economy meets people's needs in a fair, sustainable and resilient manner.

GDP measures the monetary value of final goods and services produced and consumed in the country in a certain period of time. There are three different approaches to measuring GDP, namely through expenditure, production and income. The expenditure approach adds up the market value of all spending on final products by consumers, businesses and government plus exports minus imports. The production approach, on the other hand, estimates the total value of economic output and then deducts the cost of intermediate consumption from it. GDP based on income approach, in turn, is the summation of everything earned by people and firms—mainly wages, profits, rents, and interest income. Thus, GDP in this case, measures the flow of goods and services publicly traded for money. All three approaches should theoretically give the same value for GDP<sup>1</sup>—if production increases, incomes and expenditures should increase by the same amount.

The Department of Statistics Malaysia (DOSM) publishes GDP data derived from all three approaches at the national level, but only uses the production approach at the subnational level. In effect, GDP by production and expenditure approaches are the most commonly used.

Figures for economic growth are presented as the annual percentage increase in both nominal and real GDP. Real GDP is the adjusted nominal GDP that takes inflation into account. Hence, in times of inflation, the real GDP is lower than the nominal GDP. Although the real GDP is a more accurate reflection of output in an economy than the nominal GDP, it still cannot be a sufficient measure of societal progress, as it does not take into account the vast changes in the environment and society.

## 2 Limitations of GDP as a measure of progress

Limitations of GDP as a measure of economic welfare and social well-being has been discussed and debated by economists and academics from various fields (Costanza et al., 2009; Berik, 2018). Since its introduction, economists have emphasised GDP to be a measure of economic activity and not an indicator of general well-being (Stiglitz et al., 2009). In short, many have stated that GDP was never designed to be a measure of progress.

Although GDP provides useful information about an economy's structure, size, and performance, it fails to reflect how most people live or who benefits from economic growth. For instance, important

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<sup>1</sup> In practice, due to the usage of different data sources, the three methods may not give the same value.

societal features such as the quality of social relations, crime and levels of health and education, are not recognised in GDP measures. In addition, information about income distribution, which reveals how the economic growth is distributed amongst people, is not included in GDP. Nor does GDP include consumer welfare derived from market- and non-market-based activities such as services provided by the government and leisure, even though most of these activities increase household consumption.

Some of the important work undertaken in society to facilitate national wellbeing is performed without monetary compensation. These include unpaid household work (e.g., caring for children and elderly, preparation of meals, and physical maintenance of the housing stock) as well as volunteer community work. Despite their crucial contribution to the economy, these services go entirely unmeasured in the GDP.

Moreover, GDP does not capture environmental issues such as pollution, destruction of the environment and natural resource depletion. According to the Changing Wealth of Nations 2021 report from the World Bank, during the past two decades, countries with higher GDP growth have experienced a faster decline in the share of natural capital as well as unsustainable management of some of their natural assets, even as other assets accumulated. For instance, Malaysia's proportion of natural capital declined from one-fourth in 1995 to one-tenth in 2018 of its total wealth, although its economy grew on average by more than 5% each year (World Bank, 2021). This shows a mismatch between growing GDP and natural resource depletion. All the above-mentioned issues intimate that GDP on its own cannot be a reliable indicator of a country's progress. Hence an alternative measure to account for social and environmental changes as a result of economic development is required.

### **3 Alternatives to GDP**

Given the limitations of GDP as a measure of progress, there is a need for improved measures that more completely capture wellbeing and economic progress, and assist in achieving better and more informed government policy decisions. Over the years, various indicators and indexes have emerged to take on that role. These measures can be categorised as follows: 1) Indexes that do not use GDP and mainly measure aspects of well-being directly<sup>2</sup>, such as Ecological Footprint (EF), Subjective Well-being (SW) and Gross National Happiness (GNH); 2) Indexes that use GDP as a foundation and make corrections to existing GDP, such as Green GDP, Genuine Progress Indicator (GPI) and Genuine Savings (GS); and 3) Composite indexes that combine various approaches, such as Human Development Index (HDI), Living Planet Index (LPI), and Happy Planet Index (HPI). While some of these methods can and are being applied for policy decisions, so far, no indicators have been developed to represent all the major dimensions of wellbeing in a single index. Table 1 presents some examples of progress and development indexes that have been measured for Malaysia.

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<sup>2</sup> These do not measure economic activity, and instead measure changes in environmental, social and human capital.

**Table 1: Examples of existing measures of progress and development for Malaysia**

Measure	Factors of consideration	Findings
Human Development Index (HDI)	Life expectancy; educational attainment; and income	Between 1990 and 2019, Malaysia's HDI value increased by 26% from 0.64 to 0.81. In 2019, Malaysia ranked 62 out of 189 countries in UNDP's HDI (UNDP, 2020).
The Happy Planet Index (HPI)	Ecological footprint; wellbeing (quality of life) and life expectancy.	In 2019, Malaysia's HPI (41.7) was ranked at number 95 out of 152 countries, with life expectancy (76.2 years) considered to be at a 'good' level, while the other two indicators, wellbeing (rated 5.43 out of 10) and ecological footprint (4 gha/p), were at 'medium' level and 'poor' level, respectively (Abdallah et al., 2021).
World Happiness Index (WHI)	GDP per capita, social support, healthy life expectancy, freedom, generosity, and corruption.	In the World Happiness Report 2022, of the 146 countries across the globe, Malaysia ranked 70 <sup>th</sup> (averaged over 2019-2021) in terms of overall happiness (Helliwell et al., 2022).

One of the first alternatives to GDP which has been used widely by government and non-governmental organisations worldwide to track progress is the Genuine Progress Indicator (GPI) or the Index of Sustainable Economic Welfare (Talberth et al., 2007). The GPI uses GDP as a foundation, yet, unlike it, the GPI goes beyond measuring economic quantity and incorporates economic quality by including social and environmental costs, income distribution, and other non-marketed economic activities. In other words, it includes components of GDP that contribute to genuine progress. The GPI can therefore give a better guidance than GDP when developing economic welfare is a concern.

## 4 Estimating Malaysia's genuine progress

A GPI to measure Malaysia's genuine progress over the last couple of decades (2000-2020)<sup>3</sup> has been constructed. The variables and methodology used are largely based on that employed by Tran (2011) and Talberth et al. (2007). The GPI is constructed using the following equation:

$$GPI_t = CON_t + WPPSC_t + HL_t - \Delta FD_t - CR_t - NRD_t \quad (1)$$

Where:

$GPI_t$  = Genuine Progress Indicator at time  $t$ ;

$CON_t$  = Weighted adjusted consumption expenditure at time  $t$ ;

<sup>3</sup> The time-period is based on data availability.

$WPPSC_t$  = Welfare from publicly-provided service capital at time t;

$HL_t$  = Value of unpaid household labour at time t;

$\Delta FD_t$  = Change in foreign debt position at time t;

$CR_t$  = Cost of crime at time t; and

$NRD_t$  = Natural resource depletion at time t.

The GPI uses value of consumption expenditure as the base. Consumption expenditure is adjusted by applying the Gini coefficient to include income distribution. Economic theory and research suggest that the poor and middle class benefit more from a given increase in their income than the rich (Tran, 2011). Hence, the GPI increases when a greater percentage of the nation's income goes to the poor, and decreases when their share falls.

The GPI also considers important ‘positive’ variables that are disregarded in the GDP calculations, such as the value of the labour that goes into housework, services from consumer durables, and welfare from publicly-provided service capital (e.g., roads, schools and hospitals). It also factors in “negative” variables such as cost of crime and natural resource depletion, as well as changes in foreign debt position. The sum of “positive” variables is therefore adjusted for “negative” variables that are considered to have an adverse effect on genuine progress.

Components, data sources and calculation methods for the GPI are presented in Table 2. Gaps in the data were imputed using interpolation methods.

**Table 2: GPI components, calculation methodologies, and sources of data**

<b>Components</b>	<b>Contributor or Detractor*</b>	<b>Calculation method</b>	<b>Data sources</b>
Consumption Expenditures (CE)	Positive	Private consumption plus public consumption <sup>4</sup>	DOSM
Income Distribution Index (IDI)	-	Current year Gini coefficient divided by base year Gini coefficient, multiplied by 100.  Base year Gini coefficient is the lowest Gini (year 2016 = 0.399). It is assumed that the lowest level of inequality is the optimal condition from an economic welfare perspective.  Unavailable input followed the preceding year input.	Gini coefficient: DOSM

<sup>4</sup> The calculation of the consumption expenditure in the GPI varies in different studies, where in some studies government expenditure is not included (Hashim et al., 2018 and Posner, 2010).

Expenditure on Consumer Durables (ECD)	Negative	Final Consumption of Household Durable goods	DOSM
Service from Consumer Durables (SCD)	Positive	Inputs are derived from adding previous ten years of consumer durables to arrive at stock of consumer durables, then multiplying by 0.1 (10%).	-
Weighted Adjusted Consumption Expenditure (CON)	Positive	ECD is subtracted from CE and replaced by SCD. This value is then adjusted by the IDI to incorporate the ability of low-income individuals to consume. The result is weighted by multiplying by 100.	-
Minimum Wage	-	Following Hashim et al. (2018), unavailable data are estimated at average ratio of available minimum wage to GDP per capita.	Data from 2013-2020 are obtained from Trading Economics. Available from: <a href="https://tradingeconomics.com/malaysia/minimum-wages">https://tradingeconomics.com/malaysia/minimum-wages</a>
Number of Households	-	Total number of households	Population and Demographic Statistics Division, DOSM
Household Work (HW)	Positive	The minimum wage is used to proxy for the value of unpaid household work. The annual number of hours spent on household work by households is multiplied by the minimum wage rate and the number of households.	The number of hours spent on unpaid household work is based on the time use study by Khazanah Research Institute (2019). The number of hours from 2000 to 2018 is increased by 1% each year and for 2020 is reduced by 1% due to labour-reducing technologies based on assumption by Lawn and Clarke (2006).
Consumption of Fixed Capital (FC)	Positive	Total consumption of fixed capital	World Bank and DOSM
Public to Private Investment (PPI)	Positive	The public sector share in investment consumption divided by the private sector share in investment consumption.	Gross fixed capital formation (public and private), DOSM
Welfare from Publicly-Provided Service Capital (WPPSC)	Positive	PPI multiplied by FC. The result is then multiplied by 0.75, based on the assumption of Lawn and Clarke (2006) that 75% of all government investment spending is on service capital rather than producer goods.	-
Change in Foreign Debt Position ( $\Delta$ FD)	Negative	Difference between external debt of previous year and current year.	External debt, Bank Negara Malaysia (BNM)
Cost of crime (CR)	Negative	Number of recorded offences (violent crime and property crime) times costs of crime.	Data on recorded crimes were available for 2000-2005 (property crime) and 2015-

			2020 (violent crime and property crime) from DOSM. Missing values were calculated by interpolation.  The cost of crime is estimated based on the cost of crime survey by Ishak (2016).
Natural Resource Depletion (NRD)	Negative	Natural resources depletion (% of GNI) times GNI (current prices)  Natural resource depletion is the sum of net forest depletion, energy depletion, and mineral depletion.	World Bank and DOSM
Household Work (HW)	Positive	The minimum wage is used to proxy for the value of unpaid household work. The annual number of hours spent on household work by households is multiplied by the minimum wage rate and the number of households.	The number of hours spent on unpaid household work is based on the time use study by Khazanah Research Institute (2019). The number of hours from 2000 to 2018 is increased by 1% each year and for 2020 is reduced by 1% due to labour-reducing technologies based on assumption by Lawn and Clarke (2006).
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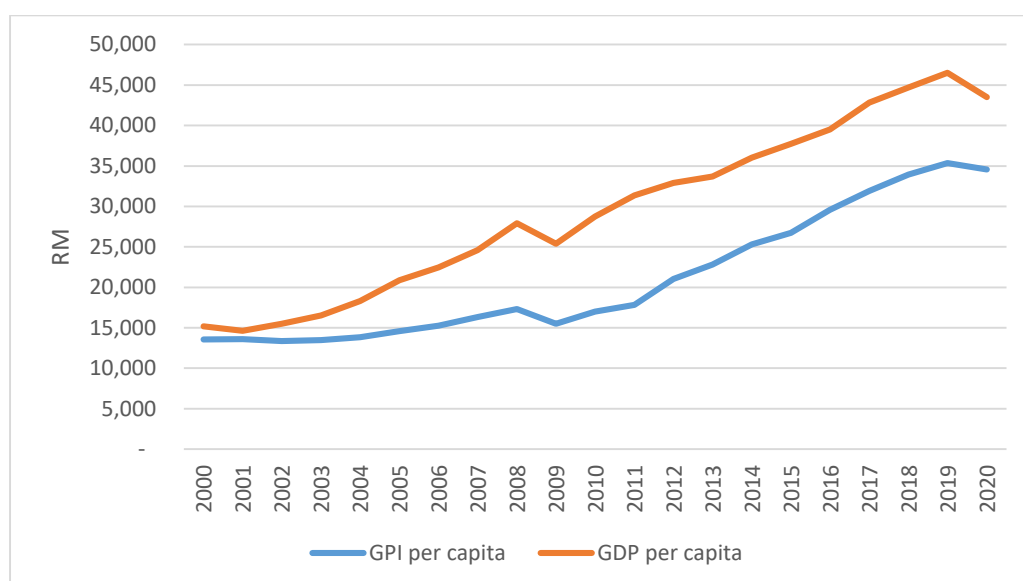
*Note: 1) Selection of components and methods applied are based on data availability. Calculation methods are based on methods used in Tran (2011) and Posner (2010) studies.  
2) \* The sign shows if the component represents an addition (Positive) or subtraction (Negative) in deriving the GPI.*

## 5 Comparison of GPI per capita and GDP per capita

Based on the above methodology, Malaysia's GPI has increased from RM318.7 billion in 2000 to RM1,122.1 billion in 2020. This corresponds to an average annual growth rate of 6.7% for the period. By comparison, GDP grew steadily from RM356.4 billion in 2000 to RM1,416.6 billion in 2020, an average annual growth rate of about 7.3%. As these figures conceal the effects of population growth, it is vital to look at both GPI and GDP figures in per capita terms. Figure 1 compares annual GDP per capita and GPI per capita in Malaysia. It is found that over the past two decades, the value of GPI per capita has been consistently below its corresponding GDP per capita.

Furthermore, the discrepancy between GDP per capita and GPI per capita has significantly grown from a relatively marginal gap of just RM1,329 in 2000 to RM8,859 in 2020. This gap is mainly a result of the costs of growth that pull down GPI values, despite the addition of the positive components. It means that the marginal benefits associated with growth in consumption expenditures, the value of housework, and capital services have been offset by the marginal costs associated with natural resource depletion, net foreign borrowing, consumer durable expenditures and undesirable side effects of growth. This implies the widening gap between growth and progress, and therefore reduced welfare in contrast to economic growth.

**Figure 1: GDP per capita vs. GPI per capita in Malaysia, 2000-2020**



Source: Department of Statistics Malaysia (GDP per capita) and author's calculation (GPI per capita).

In 2000, consumption expenditures accounted for 48.6% of all positive contributions to the GPI. In 2020, that share had risen to approximately 80%, mainly due to a remarkable increase in household final consumption expenditures. As the GDP account usually tells us, higher consumer spending is often a sign of a healthy economy and a wealthy society. The fact that the GDP has risen significantly and per capita personal consumption expenditures have more than quadrupled since 2000, suggests that Malaysia is becoming more prosperous and is improving its living standards. However, the GPI account shows that the increasing relevance of consumption expenditures has been accompanied by a significant decrease in the relevance of welfare from publicly-provided services. This share has fallen from 41.7% in 2000 to 6.5% in 2020, mainly due to a sharp drop in Producer Price Index (PPI).

As for GPI deductions, the cost associated with natural resource depletion and consumer durable expenditures have the largest shares in GPI deductions. One notable trend are the growing costs of natural resource depletion, which include forests, energy, and minerals depletion, from RM19.3 billion in 2000 to RM52.7 billion in 2020. It is worth noting that natural resources, both renewable and non-renewable, are an important part of the wealth of nations. Although the exploitation of natural resources might increase GDP through the income generated by industries involved in activities, it actually depletes the country's assets. Beside contributing towards fiscal revenue and income, natural resources (e.g., forests) are often the basis of livelihoods in poorer communities.

## 6 Challenges to the Measuring of Real Progress

Even though issues with GDP as a measure of progress and welfare have been known since its inception, and several alternative indicators have been proposed, there are still significant challenges to developing, implementing and applying better measures of progress. The following discusses some of these barriers:

### *Availability and frequency of data*

In this study, data barriers are one of the most significant challenges to measuring real progress and economic wellbeing. The choice of indicators and their components highly depends on what is important to the community as well as the availability of data. In order to make sure that an indicator is effective in measuring progress towards desired goals, reliable data at an appropriate scale and scope are required. Additionally, frequency of data is another issue that might hinder adoption of alternative or complementary measures. GDP in Malaysia is currently reported in annual and quarterly basis. However, the infrastructure does not exist yet for collecting and reporting various social and environmental data as frequently as economic data.

### *Lack of a standardised valuation method*

In constructing a progress indicator, it is difficult to find agreement on which component to incorporate, and how to value and measure them, which makes it a challenge to draw meaningful comparisons among countries. For example, there are currently no international standards specifying the method by which a GPI is to be calculated. It means that the types of components included in any particular GPI calculation are mainly left to the decision of the persons undertaking the study. This might therefore be partly responsible for the lack of agreement on a better measure to replace or complement the GDP.

### *Monetary valuation of non-market goods and services*

It is challenging to assign a monetary value to non-economic variables. For instance, the value of environmental services, such as biodiversity, cannot be fully captured in economic markets because of the intangible nature of the services provided. In this case, non-market valuation techniques, such as contingent valuation, choice modelling and travel-cost models, should be applied albeit that these also come with their own limitations (Baker and Ruting, 2014).

Despite the above-mentioned challenges and barriers, a measure like GPI that incorporates economic, social and environmental components in a single framework brings us closer to a more realistic picture of how we are progressing than using GDP as a proxy. Although the GPI has not yet attained cross-country comparability, it can provide a welfare profile of the economy as well as a guide for policy-making toward sustainability. Additionally, GPI can also be used to evaluate the impact of different proposed policies (e.g., increasing the minimum wage or a shift to renewable energy sources).

## **7 Conclusion and Moving Forward**

While measuring production and growth remains crucial especially for the monitoring of economic activities, attention is more and more shifting to people's welfare and wellbeing. The economic system is in fact a tool for improving wellbeing. Wellbeing is multi-dimensional, and has various economic, social and environmental components, yet most of these are missed by GDP measures. Thus, there is a need to develop a statistical system centred on people's well-being and sustainability which complements measures of market activity. Using a complementary indicator such as GPI, which incorporates principles of sustainable development, aids in better understanding of economic progress and encourages long-term planning (i.e., sustainable growth). Additionally, it enables policymakers to measure how well their citizens are doing both economically and socially, and perhaps improve the ways in which policies are made.

Yet, for the alternative or complementary indicator to be accepted on the same level as GDP, a standardised methodology and a proper template are required. Importantly, support from the government and private funds is essential to the building of the infrastructure needed to collect and

report relevant data regularly. It is therefore recommended that a database of information sources about each social and environmental component be created. This database would record regularly not only required data for improving the construction of the GPI or any other alternative indicator, but also information on the causal mechanisms responsible for a change in components.

A coordinated effort by various stakeholders, such as policymakers and scholars, to reach a consensus around developing and using indicators that fully capture the state of society is very much needed.

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