

Genuine Progress Indicator (GPI)- A Real Indicator of Economic Progress

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Abstract

Increase in Gross Domestic Product, Gross National Product etc. which are so highly advertised and publicized by media and other governmental and non-governmental organizations do not necessarily reflect the ground reality and status of well-being and development of the economy of a nation. It is quite conservative in its approach and hence another economic indicator namely Genuine Progress Indicator was proposed by the economic think tank of America to lay down a more scientific and realistic way. In contrast to GDP, the Genuine Progress Indicator (GPI) lays great emphasis on long-term environmental problems and considers it as a cost that is subtracted from GDP to obtain GPI. Despite the warning by environmentalists that if the present state of fossil consumption, conversion of forest areas into habitats, the opening of poisonous chemical industries and establishment of new but very dangerous nuclear power reactors for energy production is continued, it is impossible for mankind or say whole living being to survive in near future. Humanity has already heavily suffered the tragedy of Union Carbide at Bhopal in India, the great Chornobyl tragedy of the USSR, the complete destruction of mankind at Hiroshima and Nagasaki and presently the Tsunami, earthquake, volcanic eruption and atomic reactor leakage, Covid-19 pandemic etc. which are just a few blatant blows to serve as eye openers for economists, technologists and scientists to understand and realize the seriousness and also repeated warnings by nature. Some developed countries have revised their economic analyses system by attaching significant importance to GPI instead of GDP. Environmental and social costs are considered in computation of GPI. Several studies have been done to measure GPI at the national level and sub-national levels. In this paper, attempts have been made to explain various outstanding characteristics of genuine progress indicator (GPI) and their relevance to socio-economic welfare in the present context. It is suggested that moral values, ethics and spirituality should be incorporated as a fourth factor in computation of GPI. This will certainly work as a tool to reduce socio-economic disparities and enhance overall wellbeing of society by adding spirituality and social ethics.

Keywords: Genuine Progress Indicator, Gross Domestic Product, Environment, Spirituality & Ethics

Introduction

At present mainly due to astonishing advances in the field of Science and Technology, various economic growth parameters like GDP etc. have registered tremendous upsurge. As a matter of fact, though economic growth is a necessary condition but by no means a sufficient condition for the development of the socioeconomic scenario of a country, rather ironically enough have been found to be responsible for accentuating socioeconomic disparities, sky-touching differences between rich and poor, developed and developing nation, between have and have not. It has been characterized by conflict and confusion, drug addiction, and social disharmony which have galloped the world completely. This is mainly due to serious neglect of human welfare, environmental

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stability and spirituality which are significantly vital for the very existence of mankind on the earth. Regardless of amazing scientific and industrial development that has brought fortunes to a small number of people, nearly three-fourths of population of the world, mostly in third-world countries, is still struggling with multifaceted socioeconomic problems such as low living standards, low energy consumption per capita, mass illiteracy, inadequate medical facilities, and

rising disparities and social backwardness (Sinha et al., 2016). Many countries including India have registered high growth rates as shown by the increase in gross domestic product and other economic parameters but surprisingly poverty has also increased. Although from the very beginning itself, great economists like Kuznets etc. have agreed that these economic parameters like GNP, GDP etc. are not a very true indicator of the economic status of a country. GDP only measures the market value of goods and services (Bugstad et al., 2014). It appears there is something seriously wrong with the concept of growth economics as it does not ventilate correctly the socioeconomic scenario of a country.

Paradox of GDP as an Economic Indicator

Simon Kuznets advanced the econometrics premise by comparing gross domestic product across successive years to gauge a country's economic progress. While calculating GDP of a country, value in money term of all the goods and services produced in a year is summed up or in other words, the total income of factors of production is measured per year in a country. But Kuznets himself remarked that these parameters do not necessarily reflect the status of human welfare. "The welfare of a nation can scarcely be inferred from a measurement of national income (Kuznets, 1934, p. 7). Commenting on the relationship between GNP and social welfare, Beckerman (1984) also remarks that GDP/GNP has never been regarded as a perfect indicator of economic well-being as a whole due to their conservative outlook, ignoring the various factors that contribute to the welfare concept. Critics of GDP have objected significance of GDP's incapability to measure the parameters of welfare and general happiness (Cobb et al., 1994). Hence the perception that the more is the level of GDP, the more will be development, is far from reality. A very interesting example is that if a tree is planted, there is no increase in GDP but if the tree is cut and sold in the market, GDP goes up.

Should one irrigate the plants to grow and enhance environmental equilibrium for sustainable life on earth or cut it for GDP to go up? The more a country exhausts or vitiates its natural resources, the more goods and services it produces, its GDP rises. GDP never accounts for environmental damage done in the growth process (Anielski, 2007). Today it is customary to acknowledge the phenomenal rise in GDP as a mark of progress and both the governments as well as other organizations sing praises of economic status by mentioning the growth rates in GDP. Even after nearly three decades of economic liberalization and globalization, the prospect of a high growth rate to reduce poverty has not brought encouraging results rather it has further accentuated the socio-economic disparities and level of poverty status especially in rural India, which comprises nearly 70 percent of the Indian population. As a matter of fact, the constant advertisement by media to project GDP as an outstanding parameter of the development of a country is not a wholesome reality rather it is an indication of environmental destruction and social disharmony. Basic livelihood and socio-economic disparities are other menacing problems arising out of unethical growth. A country's welfare cannot be derived at all from a measure of GDP and GNP. During the computation of GDP etc., the significant contribution of unpaid labour to the national economy is completely ignored such as mother's child care, women's household and many other such activities. Another serious defect that is embedded with the growth economic concept is that it does not care to include ecological imbalance and professional ethics which is so significant these days.

How fantastic is the example that the soft drinks that we consume are immensely detrimental to health but the more increase in consumption of soft drinks, the higher the GDP. Since GDP measures every transaction as positive i.e. cost of natural disasters, the oil spill in the sea, crime, divorce etc. are treated positive for the economy as they add money to the

economy by some other means (Willard, 2011). Hence no Government ever cares to stop the sale of alcohol, tobacco etc. and such injurious articles are inducted as it contributes substantially towards the GDP of a country. In an outstanding paper Sharma (2010) critically analysed the shortcomings of GDP computation. Just for example, if the river Yamuna is clean, there is no addition towards the GDP growth parameter. But firstly, there would be an addition to GDP value when it may provide for the establishment of industries by the side of the river, secondly, due to addition of business there is further addition to GDP and the thirdly, most disheartening fact that due to industrial waste, the pollution increases and we spend crores of rupees toward pollution control which also add to GDP. Hence it is amply evident that the repeated proclamation of high growth rates of GDP etc. is irrelevant and redundant as it does not bear much relationship with the general well-being of the masses unless the concept of ecological preservation, ethical consideration and upholding the welfare concept is embedded in the very fabrics of GDP of economy. The pseudo claim of more increase in GDP is virtually meaningless, insignificant and to some extent misleading.

A highly learned economic thinker Schumacher (1973) completely disagrees with the existing concept of economic analysis calling it narrow-angled in which there has been concentration mainly on considering the national income, capital-output ratio etc. with sole objectives to achieve profit maximization as being practiced these days worldwide. The learned Schumacher remarks one must not ignore the worsening socioeconomic scenario depicted by increasing poverty, mental illness, drug addiction, war and hatred. Economic progress without proper emphasis on ethical consideration eventually results in overall deterioration in social conditions. Schumacher completely rejects the present economic analysis system calling it totally worthless and suggests an altogether different approach to economic

consideration where not only the rate of growth and all other existing parameters (GDP, GNP etc.) but he puts forward the concept of welfare-oriented economics where sustainable development, a compatible social environment, stopping the exploitation of poor people, lessening the socioeconomic disparities and bringing about social harmony that would encompass the welfare of all sections of society.

The myth of Gross Domestic Product is that in India where growing GDP is highlighted by papers, media and other government and non-government agencies probably every week, but it stands at 132 places out of 191 countries concerning human development index (HDI rank) and HDI value of 0.633 whereas Switzerland recorded a high of 0.962 HDI value ranking first out of 191 countries as per UNDP report 2021 and a very high Gini-coefficient which means GDP does not reflect the general well-being of the people of the country.

That is why, according to some erudite scholars, another measures of development other than GDP to describe human well beings have been proposed. Some of them are Human Development Index, Gross National Happiness Index, Index of Sustainable Economic Welfare,, and Socio-economic Disparity Index etc. which take into account the literacy, longevity, infant mortality rate, medical facilities available to people and social and political conditions etc. This gives rise to birth of the concept of Gross progress Indicator (GPI) as a more realistic one for measurement of wellbeing of people of a nation. GPI is a wide spectrum indicator as it takes in its purview social and environmental problems also.

According to Kubiszewski et al. (2013), it has been observed that although the global GDP has multiplied nearly three times from mid of the twentieth century, there has been a downward trend in GPI since 1978

Compared to GDP or even green measurements of GDP, we think the GPI captures happiness much more accurately (Clarke & Lawn, 2006). Thus the economic indicator must envisage a wide spectrum outlook to incorporate in its definition i.e. social, environmental and sustainable development parameters. GPI includes all these three indicators. Due to not paying proper attention to environmental equilibrium resulting in climate changes and other calamities, it would be proper to depict the present pitiable condition of the whole world. These days California, Las Vegas, Minnesota, Alabama, Texas, Colorado and the whole world are facing heavy hailstorm, continuous rainfall and dreadful Tornado all due to climate change.

Objectives Behind Adoption of GPI in Place of GDP

“Beyond GDP” concept was conceived due to shortcoming to measure welfare especially when the report of commission on measurement of economic performance and social progress was published and put forwarded by (Stiglitz et al., 2009). “Beyond GDP” acknowledged poverty, inequality, and other welfare indicators which are necessary to evaluate correctly the influence on economic policy (Jorgenson, 2018). To evaluate welfare concepts, four different approaches have been devised so far. First being monetary approach, second approach is composite index, third being the subjective estimation and fourth is Dashboard measure concept (Fleurbay and Blanchet, 2013; Brown, 2017). As a matter of fact, the first effort with respect to measurement of economic welfare was conceived by Nordhaus and Tobin (1975).

Index of Sustainable Economic Welfare (ISEW) (Dally and Cobb, 1989) was later on termed as GPI (Cobb et al.1995; Aleneski and Rowe 1999). It actually represented three pillars of sustainability i.e. economic, social and environmental. Some European states have computed a variant of GPI

and also some of states of USA like Hawaii, Maryland etc.

Equivalent Income approach was put forwarded by Fleurbaye and Gaulier (2009) as an advancement of MEW. Jones and Klenow (2016) computed a consumption-equivalent approach of welfare. In this concept Klenow estimated utility as a determinant of household service, consumption, leisure, and inequality of consumption.

In an another variant of monetary approach, the adjusted GDP is calculated after estimating the monetary value of some services like childcare, consumer durable and unpaid household work (Kanal and Krnegay,2019).

Second approach deals with constructing a new approach namely composite approach which considers both subjective and objective elements which may be called hybrid index. Human Development Index (HDI) is the best example of measuring human welfare as proposed by United Nation Development Programme (UNDP). HDI concept grew assuming that capabilities of people is import criteria for wellbeing. Many indices like life expectancy index, educational index, and GNI index are included in computation of HDI. Nearly 190 countries computes HDI to measures development in reality.

The happy Planet Index is also an important index comprising of non-income component of well-being. The third approach is based on subjective evaluation. As per Layard (2005), it attempts directly to measure individual welfare and the way people appraise their own lives. In this case during the survey using Cantril ladder score, the individual are asked to respond about themselves. The zero score on ladder stands for worst life and score 10 for best possible life. In 2019, the survey for HPI was conducted in nearly 152 countries and surprisingly eight out of top ten countries were located in central and South America where poverty is at very high

level.

Fourth approach toward non- monetary indicators was the use of Dashboard which comprises of set of indicators endorsed by prominent economist like Stiglitz, Sen and Fitoussi, and Durand (2018) to be the most suitable for measuring wellbeing. Organisation for Economic Cooperation and Development (OECD) for better life initiative (Durand 2015; OECD, 2017) has included eleven dimensions of well-being: three components comprising of income and wealth, job and earning, and housing and eight components related to “quality of life” in which health status, work life balance, education and skill, social condition, civic engagement, governance and Cantril ladder score, environmental quality, personal security and subjective wellbeing etc.

As a matter of fact, after evaluation, it is found that all the four approach discussed have theoretical and practical shortcoming (Fleurbacy and Blanchard 2013, Brown 2017). In case of both the composite and monetary indices the question of giving weightage remains quite uncertain and arbitrary.

In this case, money indicators mostly dependent upon imputed prices for measuring value of non-market components. It is quite cumbersome to compute and also it neglects account for various non-market services. The second approach discussed earlier tries to measure the wellbeing using both objective and subjective parameters. The subjective approach has also been found not quite suitable on mostly on the basis of conceptual and methodological ground ((Stewart, 2014). In fact, mostly people adapt to their living condition irrespective of how poor or rich they have been. Even in case of the very poor country, it may indicate high value on Cantril Ladder. They attach a great contribution to their culture. Hence it may be thought as a not a significant indicator of the wellbeing of the people and needs modification to more accurately to tell about the welfare and

development parameters. In case of the fourth approach i.e. Dashboard approach tends to enumerate various indicators that are non-monetary also. But this approach is criticised on the basis it suffered from too much information syndrome. If instead of using single value indicator, one switch over to large collection of indicators it will be very difficult to assess changes in overall wellbeing with respect to time. The dashboard approach has been found to be quite unsuitable for making policy decision for trade off.

By the above discussion, it is clear that in search of the indicators of wellbeing beyond GDP alternatives, this paper presents GPI as a significant indicator as much as it responds to the shortcoming of GDP quite well. GPI incorporate non market contributors, unpaid labour, and environmental sustainability. Although still these days GDP growth is guiding and governing justification of policy by the government but on the other hand GPI provides alternative indicators that clearly explain how efficiently the economy is performing towards offering wellbeing to nation. Berick (2020) remarks “Neither the dashboard approach nor a composite non-monetary index is useful for policy evaluation”. The studies carried out by Kubuzeski for 17 countries between 1950 to 2005 reveals that initially GDP and GPI per capita are positively correlated up to 7000\$ per capita but after this critical value, they diverge from each other which may be contributed to running cost incurred due mainly to the second world war. In this period GPI was dragged down. While GPI is not perfect economic welfare indicator it is far better approximation than GDP. GPI researcher criticized policy makers not to contribute consideration only on GDP growth but also pay proper regard to the contribution of social and environmental elements as well.

The GPI emerged in a paper by Cobb et al (1995) and it was mainly proposed with the aim of overcoming the shortcoming of GDP. GDP totally

ignores welfare and sustainability concept and does not reflect social and environmental factors (Pais et al., 2019). As such, GPI incorporate social and environment factors which was ignored by GDP. Fox and Erickson (2018) took up a consistent methodology to compute GPI for all 50 US states. Researcher have shown increasing interest toward calculating GPI for some of countries which can be witnessed by studies of US states (Bagstad, Berik and Gaddis,2014; Brown and Lazarus,2018), study made for Spain by (O'Mahony, Escardo-Serra and Dufour,2018), for Australia(Kenny et al.,2019), for Turkey (Menegaki,2018), for California US (Brown and Lazarus,2018), for Germany (Held et al.,2018), for China (Long and Ji,2019), and for Iceland (Cook et al.,2022)

All these studies indicate further methodological innovation for better justification in GPI computation. This is why methodological innovation has encouraged the consensus that there is need of a GPI 2.0 OR something like that. Although in recent time many GDP beyond indicators are coming up, only GPI response nicely as welfare indicator and is uniquely suited to evaluate welfare impact of policy proposal. In the opinion of author, GPI is ideal suited to government department in as much as they are in a position to make regular update and also assess the impact of proposal on policy.

GPI- A Better Indicator of the Economy

Hence in order to formulate a more realistic and reasonable indicator with wider socio-economic perception, genuine progress index has been proposed by Cobb et al. (1995) to bring together economic and welfare concepts in its domain. Instead of relying on the only revenue flow factor to determine the economic status of a country or state, GPI attaches significant importance to many other factors such as the impact on environmental sustainability and overall social harmony. Thus GPI has a vast spectrum of factors for consideration

of the development of a country. GPI is a holistic and multifaceted economic growth measurement much more realistic than GDP.

The GPI is calculated by deducting the environment cost such as ecological instability, pollution, depletion of resource, loss of biodiversity, the loss of farmland and wetlands, in addition to ozone layer depletion from GDP. It also includes costs on society, such as an increase in crime and family dissolution including drug-addiction, tension and violence, social disharmony characterized by war and hatred, and mental breakdown (Glazebook, 2010). One example will make it quite clear as to what extent erroneous and unsounded the inference of the well-being of the masses and economic development of a country is indicated by GDP. In the coastal mangrove region of our country, a tropical evergreen trees or shrub of the Rhizophora family works as carbon storage powerhouses sticking massive amounts of organic matter. Here shrimp farming is much more profitable and also opens up the door for export causing GDP to rise. But during shrimp farming, the use of chemicals and fertilizer affects several microorganisms. One of the main causes of the depletion of mangrove forests is due mainly to the expansion of shrimp aquaculture. In fact, mangrove forests is natural infrastructure which protect the nearby inhabited area by decreasing erosion gripping storms, and serving impact during extreme calamities like hurricanes. They are also important for the ecosystem as their dense root help bind and build soil protection. Due to shrimp farming GDP rises but mangrove forest suffers a lot because it leads to ecological imbalance and deterioration in water quality. The cost of biodiversity loss and destabilization of the ecosystem work as subtracting factor and must be deducted from the GDP to obtain GPI and thus we get reduced GPI as compared to GDP.

The prospect of nuclear power generation is being proclaimed as a future alternative to effectively deal with the energy crisis simply because the cost of

production per unit of power is quite small ignoring the fact that the process of nuclear energy is not eco-friendly at all and the danger of ionizing radiation cannot and therefore must not be overlooked if the welfare and existence of mankind is intended. But due to its low cost of production finally yielding to the concept of profit maximization, many countries are planning for more and more share of nuclear power but unlike France, the Scandinavians after recognizing the effect of radioactive radiation are contemplating completely shutting down these reactors from environmental protection point of view. Even the dumping of radioactive waste from these power stations creates a very serious environmental problem as the half-life of various radioactive substance which serves as raw material for nuclear power production is very high (the half-life of carbon-14 is nearly 6000 years). The disposal of these radioactive wastes is another great problem and wherever there is life the poison of radioactivity is absorbed into the biological cycle and thus spreads boundlessly affecting ultimately the health of human beings and even causing cancer. Hence the tranquillity and harmony of nature will be dangerously affected if the natural phenomena are too much interfered with the only aim of achieving economic growth which would ultimately result in a provoked reaction by nature. This can be witnessed by the enormous increase in the frequency of drought, floods, earthquake, Tsunamis, Covid and other natural calamities which creates havoc on the vast population damaging lives and property worth thousands of

crores. However, these days, emphasis is being given to the development of renewable energy sources like geothermal energy, tidal energy, solar energy, hydal energy and wind energy, etc. Since several ecosystems are interrelated, disturbing even smaller ecosystems may produce disastrous consequences and the very existence of man on Earth will be severely endangered. What is the advantage of achieving such acrimonious and disgruntled growth, and astonishing scientific and industrial development when the very survival is under threat? Hence GPI being a more realistic growth measurement to determine the development status of a country takes into its purview the status of capital resources and biodiversity and attaches much emphasis on the stability of the ecosystem in as much as these factors are so essential for the well-being of future generation and sustainable development. At present the corporate sector is creating pseudo-GDP by acting solely in its interest, as its main aim is profit maximization instead of welfare maximization. According to a great economic thinker Schumacher (1973), our aim should be welfare maximization instead of profit maximization. Here the GPI lays down a broad basis for analysis of economic assessment. If we cite the example of the most developed country America, is it not a shocking disclosure to the ardent supporters of GDP as the sole indicator of economic progress that since 1950, GDP showed an increasing trend but the computation of GPI showed negative trend since 1970. So, highly acclaimed GDP does not represent the real economic progress of a country.

Table 1: Genuine Progress Indicators

Genuine Progress Indicator(GPI)	Social Indicators	Volunteer Labour	+
		Household Labour	+
		Family Breakdown	-
		Crime	-
		Underemployment	-
		Lost Leisure Time	-
		Commuting	-
		Vehicle Crashes	-
	Economic Indicators	Personal Consumption	+
		Income Inequality	-
		Net Value Of Current Durable	+/-
		Public Infrastructure	+
		Net Capital Investment	+
	Environmental Indicators	Pollution Abatement	-
		Air Pollution	-
		Water Pollution	-
		Air Pollution	-
		Noise Pollution	-
		Wet Land & Eco system services	+
		Forest Ecosystem services	+
		Desert & Grassland ecosystem Services	+
		Farm land Ecosystem services	+
		Climate Change	-
		Ozone Depletion	-
	Non Renewable Resources use	-	

Source: Berik and Gaddis, 2011

Special Characteristics of GPI

GPI takes many special characteristic factors into its consideration as explained below:

Socio-economic disparity and distribution of income

It may be, however, noticed that the marginal income group people derived more benefit from the increase in income than the rich people. Hence if the marginal sector enjoys a large percentage of national income, GPI registers a rise and if the poor's share of national income decreases, GPI falls. Hence GPI is informative of equality status. GPI is a better balance sheet of the costs and

benefits of growth than the GDP (D'Souza, 2004).

Environmental degradation

The GDP, in its conservative analysis, does not include the environmental damage and other negative elements that has assumed alarming magnitude, nowadays indicated by ozone layer depletion and most agonizing radioactive nuclear waste disposal. These all require long-term heavy costs to be borne by the nation to interact and assure the existence of human beings.

As regards pollution, GDP counts it on two accounts as double gain, first, when pollution is created and next, costs to clean it up, thus this is

double addition. But on the other hand, in the case of GPI, the cost of the pollution clearance program is subtracted from the National Income/GDP. How funny and fantastic is the methodology of GDP calculation which most acclaimed learned people and media loudly and relentlessly go on singing high of the praise; that if you consume a lot of alcohol/Pan masala/cigarette etc. the GDP rises because revenue has been generated and further if you fall ill and go to the doctor to spend on medical treatment the GDP rises even further. How sarcastic and illusory conception it is? Similarly, other expenditures related to medical treatment expenditure, legal expenses etc. all these expenses add to GDP while in the case of GPI taking a holistic view; these expenses are subtracted from the GDP/GNP.

Natural Resource Depletion

Presently we are consuming fossil fuels and other natural resources gifted by nature luxuriously to celebrate scientific and industrial development at an alarming rate ignoring the future generation's requirements. GPI counts forest, cropland, and fossil fuel depletion as a current cost and deducts it from GDP.

Unorganized Sector

Child care by the mother, the household works by women and volunteer work are some very essential duties in the society and basic foundation for life. These are completely ignored in GDP computation whereas these work figures at the approximate cost of hiring in GPI. The unorganized sector has also been provided due significance.

Medical and repair fees from car accidents, as well as household expenditures such as water filters, etc., to reduce pollution, are considered as subtracting expenditures in the case of GPI, but for GDP it is an additive factor for development.

About upholding ethical values

Just like the non-consideration of the preservation of the ecosystem, there is no regard for upholding ethical values in the GDP computation. An enterprise is acceptable if it is capable to make a sufficient monetary profit value irrespective of its adverse impact on the environment and living creatures. The glaring example of ignoring ethical human values is that we have already suffered the great tragedy created by Union Carbide Company (Bhopal, India) which was manufacturing Methylisocyanide a great health hazard. It finally left behind the tragic destruction of thousands of disabled persons languishing for generations to come, but in place of discouraging such dangerous industries even nowadays a lot of chemical industries are allowed to grow which give off poisonous gases that pollute the whole environment-air, water and land making earth unsafe place to live. In the computation of GPI human welfare and environmental protection are attached prime importance.

Rising corruption

The unethical earning gives rise to rampant corruption, probably one of the greatest of all evils that have gradually eaten away the fundamental fabric of social development and today despite the claim of high GDP growth India stands at eighty-fifth position (Corruption Perception Index, 2022) among most corrupt countries of the world. How shameful it is to learn every day about various scams worth thousands and lakhs of crores. On the unethical development of the economy, social scientists warn that mankind would be transformed into robots which do not have human's emotions.

It should not be misunderstood that the general growth in GDP is essentially much associated with environmental problems and adverse effects on human life hence GPI will decrease. It does not mean that we must stop all industries and such

enterprises which are quite essential for livelihood and development also and take care of GPI only. Should we stop all industrial activities to take care of Genuine Progress Indicator? No, not at all. Only we have to apply some precautionary measures. In fact, such industries which produce minimum health hazards and environmental degradation and are eco-friendly be encouraged and that is our cottage industries which have been neglected due to the impact of globalization, liberalization and capitalism and have now been carried into new micro and small industries like weaving, paper bag industries etc. We need to handle the situation with utter carefulness.

Even if we critically analyze the case of thermal power station producing electricity, it is essentially needed that proper care must be taken to make plant environmentally pollution free by providing suitable electrostatic precipitators so that the damage done to human being and agricultural land are fully taken care of. Moreover, the coarse fly ash should be utilized as raw material in cottage industries for fly-ash brick manufacture and the remaining coarse fly ash for filling the water-logged area. The fly-ash brick-making by hand-operated machines has been designed by Sinha (M.I.T. Muzaffarpur, India) which consumes no electrical power and provide employment to thousand around the thermal power station. Here with GDP increases and so also GPI will register growth indicating a bright future and sustainable development of our economy. This is one example and several such instances could be explored in which both GDP and GPI will increase. An economy without proper regard for ecology and ethics will eventually be disastrous as evidenced by many and many natural calamities which warn us from time to time for future safety. So we need to handle the situation with utter care.

GPI Calculation for Sub-national and Islands

Genuine Progress Indicator (GPI) which is one of

the important alternatives of GDP, has been calculated at the national and subnational level. GPI has been calculated with multiple dimensions for state, nation and global levels (Hamilton, 1999). In order to evaluate GPI, here, examples of a state of Australia (Victoria) and also Alberta which is a province of Canada have been cited. In addition to that, studies on GPI of three islands namely Singapore, Hawaii and Iceland have been depicted in following paragraphs.

Victoria (Australia)

Several researchers have attempted to estimate GPI for various periods. For Victoria two famous researchers Clark and Lawn (2006) took up the GPI studies for the period between 1986 and 2003. These researchers tried to differentiate between the GPI of Victoria with its Gross Domestic Product of state. GPI rose by less than 1.5% every year, or by less than 22% during the course of the study. This improvement in sustainable well-being (GPI) should be viewed as moderate, especially when compared to the increase in Victoria's per capita GSP - a 45% increase over the entire period.

Initially they concluded that the per capita gross state product (GSP) has increased rapidly over the last decade. They finally concluded that GPI is a better measure of the wellness of the economic status of a country.

Alberta (Canada)

Anielski attempted to estimate GPI for the period of forty years for Alberta. During the study period (1961-1999) GPI of Alberta showed three different values. For the first ten years of study sharp fall in the value of GPI was registered. However, then for the next period, GPI showed an inverted U curve. Finally, it remains approximately constant from 1985 to 1999 despite constant economic growth.

Hawaii Island

Hawaii Island is located in the Pacific Ocean and it is one of the states of the United States of America. A comprehensive Study for GPI computation was initiated in Hawaii in 2013. They (Ostergaard-Klem & Oleson, 2014) started their studies with economic indicators of PCE and subsequently discussed other factors which are relevant to Hawaii especially expensive transportation of goods and services, medical care, and housing cost. The housing cost of Hawaii is too high to afford and the wage rate is below the national average. The lack of affordable housing is another striking problem. The Gini coefficient is an integral component of GPI which indicates income inequality. It is an established fact if the population is very small, the Gini coefficient cannot capture the true income inequality. The economy of Hawaii depends mainly on a few sectors. The main source of income is expenditure by visitors, transportation, retail industry and defence industries. Due to dependence on limited sectors of the economy and isolation, Hawaii is vulnerable to external shock.

Urban dwellings and resorts for tourists are replacing agricultural land, coastal land and forest. Land-based Pollution and sewage disposal threaten environments pertaining to coastal areas (Jokiel et al., 2004). They suggested new indicators should be added like aesthetics, tourism etc. The cost of air and water pollution should be included.

Singapore

Singapore's GPI was measured by C. O. Delang in a paper namely 'Development beyond growth: Singapore's Genuine Progress' (2016). Delang started this paper with the introduction of the GPI to estimate standards of living of the people of Singapore. Henceforth he described the different factors used to calculate the GPI of Singapore. During Investigating period of 47 years, he found

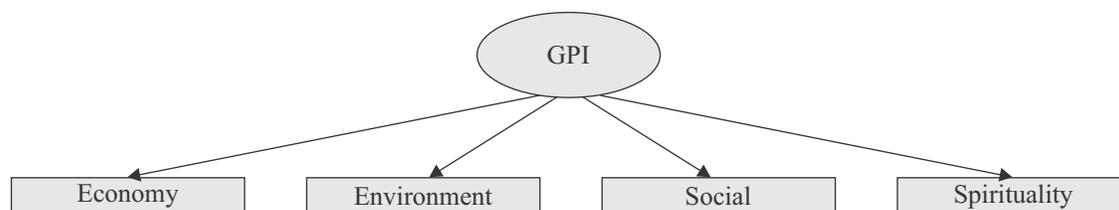
that the association amid GPI and GDP weakened as economic growth did not grow faster than social and environmental costs. From 2005, Singapore's GPI began to fall while the GDP continued to rise. Delang concluded that economic growth did not result in a better standard of life from 1999 to 2014 as GPI declined during this period. He suggested that the people of Singapore might have fared better if its government supported measures that directly enhanced people's lives rather than economic growth.

Iceland

GPI for Iceland was measured by Cook & Davíðsdóttir (2021) for the period 2000 to 2019. They calculated GPI based on three components. The first component was utility from the consumption of goods and services, the Second was utility obtained from essential capital and the third was disutility linked to undesirable social and environmental conditions. Simultaneously several sub-indicators were included which were associated with the main indicators, According to this study. GDP increased by 2.1% (mean annual expansion) from 2000 to 2019 but GPI increased by only 0.6 % (mean annual expansion) during this period. Although GDP was always lower than GPI during the study period. This study was unique in a way that GPI was higher than GDP. The estimated values of the annual flow of ecosystem services, non-market benefit etc. were the main causes of higher GPI.

GPI and Spirituality

In the considered opinion of the author, a unique factor of spirituality should be incorporated among the established factors that determined the GPI of a country as it has a multidimensional impact on the environment, social and economic factors. We all know the invaluable and everlasting impact of spirituality on almost all humans, environments, social and economic factors.



Spirituality advocates a balance between material and non-material aspects of the environment, society and economy for holistic sustainable development. It is important to notice the difference between spirituality and religion. Religion concentrate it attention on path based on faith on the other hand Spirituality concentrates on self-awakening (Narayanswamy,2021) The combination of four purusharthas (artha, kama, dharma and moksha) should essentially be incorporated in GPI estimates. According to Swami Niranjana Saraswati (1995), spirituality essentially shows the path to human beings towards understanding the fundamental relationship between man and environment, man and societies, man and nation and finally man and universe. In this way all the other indicators of GPI i.e. economic, social and environmental may be incorporated and intersected with spirituality. Meditational approach,(an important component of yoga accepted internationally) are known to awaken significant improvement in physical and mental health and wellbeing in general. It eventually tends to reduce anxiety and depression syndrome and calm us, give peace and direct us to path of morality and dignity (Patel,2023)

Similarly, Ethics deals with the right and wrong behaviour of people. Countries that abide by spirituality and ethics will show high GPI. As the author suggests, spirituality and integration of principles of ethics in the general life of the people which will finally reflect in the matrix of the genuine progress indicator in a more realistic way. Spirituality has an enormous and cascading impact on the social and environmental issues of nations. Drug addiction, mental unrest, pollution, ozone layer depletion, cost of family tension etc. may be

reduced if society is following a spiritual path and principles and codes of ethics. Hence spirituality may be considered the fourth dimension of the GPI.

8. Concluding Remarks

From the discussions held in the preceding paragraphs, it is evident that GDP is essentially a conservative indicator of the economy because it is concerned only with the monetary value of total goods and services produced in a year without any consideration of ecology and ethics. On the advancement of economic growth without proper regard to ecology and ethics Kenneth Boulding remarks economic growth based on material computation cannot continue indefinitely without taking its spiritual value. Thus, redefining progress, the concept of GPI has been advocated as it has quite a wider perspective and holistic approach to signify the realistic condition of the economy by incorporating many other parameters like pollution, crime, long-term environmental damage, Ozone layer depletion, greenhouse effect, income distribution, agriculture land degradation and defensive expenditure etc. It has been found that appreciating the holistic approach and merit of GPI many countries are considering to make emphasis on GPI computation in place of GDP (Kubiszewski et al. 2015). These are the reasons why at least several developed countries have revised their economic analysis where they have included the methodology of GPI computation. GPI would be able to inform many other parameters in support of social justice, sustainable development and tranquillity of the world and present a more realistic picture of development ultimately leading to world peace and social harmony.

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