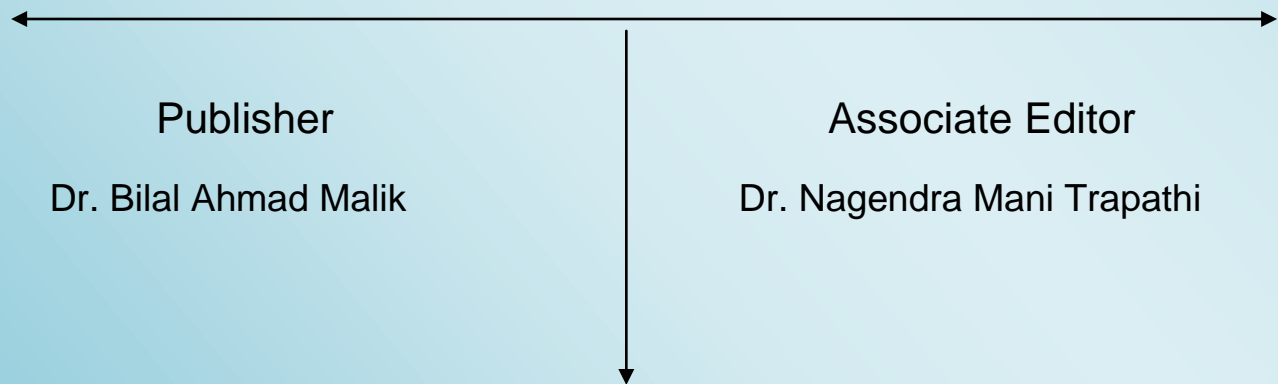


# North Asian International Research Journal Consortium

*North Asian International Research Journal of  
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## ANALYSIS OF GREEN ECONOMY OF INDIA

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### **ABSTRACT**

*India is a Republic Country of South Asia; it is the seventh largest country by area, the second most populous country with over 1.2 billion people and the most populous democracy in the world. Since 1991 India accepted the LPG policy and became one of the fastest growing major economies. But today, there are many environmental problems and issues in India. Therefore, there is the need for using alternative model of development known as green economy. The concept of green economy is being discussed in recent decade for achieving sustainability in inclusive growth and development of respective area of countries of the World. In the recent years, discussion around sustainability has become a key element of the global agenda and plan. This is because the newest and current scientific studies with our direct experiences of environmental damage and climate change are making it clear the present economic development model needs to change. Therefore, UN General Assembly decided to hold a summit in Rio de Janeiro in 2012 to celebrate the 20th anniversary of the first Rio Earth Summit in 1992. Main theme of this conference was "Green economy in the context of Sustainable Development and Poverty Eradication" This paper concluded that except one indicator of governmental expenditure on health, all remaining indicators of green economy indicate India has been contributing honest attempts for a green economy.*

**Key Words:** Green Economy, Rio Earth Summit, Renewable Energy, Life Expectancy, Health Expenditure.

### **1. INTRODUCTION:**

The Industrial Revolution started from approximately 1770 through 1850 which was characterized by a change in the manufacturing process through the use of machinery, chemical, education, skilled labour, new ideas, and other innovations. This time period was about a distinct working class which worked in the factories

and industries of the richer class of society, industrial owner often producing goods for relatively low pay in less than suitable conditions. The middle hub of the Industrial Revolution was Great Britain. However, the Industrial Revolution had an essential effect on many other countries around the world. During this industrial revolution period British enter in India, they started commercial occupation for earning the wealth for self development; slowly they became a leader of big India. They established East India Company in 31 Dec, 1600 for purpose of collection of revenue and raw material for industrial production and collected all materials and money they were sending to Britain. In addition, after goods were manufactured in Britain, these goods were brought from India to be sold. Thus, India served to develop the Britain's market for the sale of Britain's manufactured and processed goods. However India did not derive large benefit from the Industrial Revolution in the way that Great Britain did. In reality, Indian economy was devastating by the Industrial Revolution. Besides, India's colonial masters forced laws that determine to the farmers which crops exactly to cultivate and how much crops to cultivate. This led to a situation where no food crops were cultivated due to all the land was devoted to only for production of raw materials used for the industries purpose. The end result was famine and poverty rise. Hence, industrial revolution turned India into a source of rare raw materials for British industries as well as a market for their finished products. British only concentrate on use of production factors and mass production for earning profit and collecting wealth for selfish development and it has led to a depletion of certain natural resources, leaving the environment permanently damaged and injured. One of the examples is deforestation, which is the clearing of forest trees for use in artificial commodity production. When the trees are finished, the wildlife in the forest also becomes threatened. The absence of trees or forest is only compounded by the problem of carbon emissions and bad weather or climate. Whereas forests would help emit the obligatory oxygen and refresh the levels of healthy gases in the atmosphere, factories and industries are emitting poisonous emissions and eliminate the source of oxygen. Pollution that has resulted from factories and industries involves not only airborne emissions but land and water pollution also. The primary problem of global warming arises resulting from various pollutions and carbon emissions. As the temperature rises, the glaciers and snow are melting and oceans are rising. More animal species are becoming endangered or destroyed as a result of global warming. A good thing of the Industrial Revolution has certainly been the mass production of food for the globe population. The population has grown by algebraically due to the availability of food, at the same time the mass production of man-made and chemically altered food has also contributed to worldwide obesity and physical health problems. Beside, while the Industrial Revolution was the cause of positive transform for the industrial world, there is no question but other hand it has wreaked havoc on the environmental biodiversity and ecosystem services. The depletion of natural resources,

carbon emissions, pollution of air, water and land with human health problems that have resulted directly from the Industrial Revolution's accomplishments have only been disastrous for the earth environment.

## 2. OBJECTIVES OF THE RESEARCH STUDY

The major objectives of the present research study are as follows.

1. To study the theoretical issues relating to the concept of a green economy;
2. To examine the nature and extent of a green economy achieved by the India;
3. To suggest the appropriate suggestions for attaining green economy in respect to India

## 3. HYPOTHESIS OF THE RESEARCH STUDY

The hypothesis of the present research study is as follows:

1. India is not rigorous and honest in achieving a green economy. ( $H_0$ )

## 4. CONCEPT OF GREEN ECONOMY AND RESEARCH PROBLEM

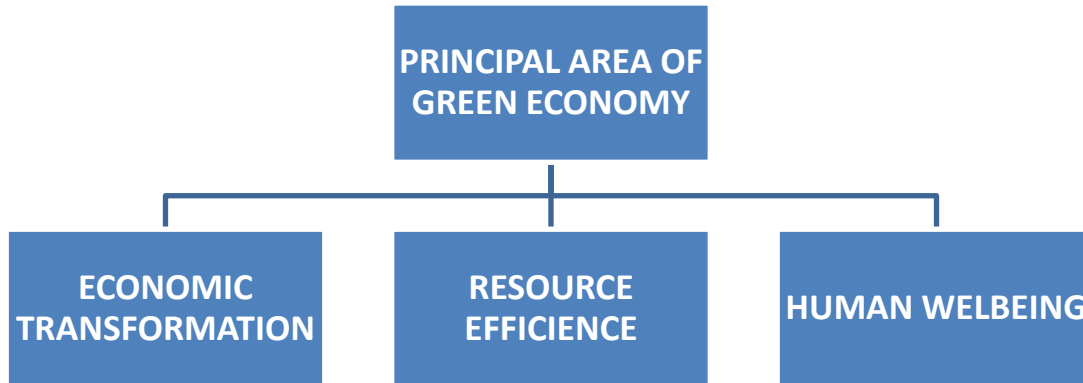
Today we use the conventional macro economics indicators of GDP to understanding overall economic position of a country, but GDP does not properly account for social and environmental cost and benefit. It is also difficult to achieve sustainable decision-making. Therefore, the Green Economy is a new approach arose from summit of Rio de Janeiro, 2012 (Rio+20) to celebrate the 20<sup>th</sup> anniversary of the first Rio Earth Summit in 1992. The UNEP defines a green economy as one that results in "improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities" (UNEP, 2011, P-16). In its simplest expression, a green economy is low carbon, resource efficient and socially inclusive economy. In a green economy, growth in income and employment should be driven by public and private investments, that reduce carbon emissions and pollution, enhance energy and resource efficiency and prevent the loss of biodiversity and ecosystem services. The green economy approach is an effort to focus sustainable development and poverty reduction effort on transforming economic activities and economies.

India can make green growth a reality by putting in place strategies to reduce environmental degradation at the minimal cost of 0.02% to 0.04% of average annual GDP growth rate. According to a New World Bank Report, 2013, this will allow India to maintain a high pace of economic growth without jeopardizing future environmental sustainability. The annual cost of environmental degradation in India, amounts to about Rs. 3.75

trillion (\$ 80 billion) equivalent to 5.7% of GDP. It focuses on particle pollution from the burning of fossil fuels, which has serious health consequences amounting to up to 3% of India's GDP along with losses due to lack of access to clean water supply, sanitation and hygiene and natural resource depletion. Of this, the impacts of outdoor air pollution account for the highest share at 1.7% followed by cost of indoor air pollution at 1.3%. The higher costs for outdoor/indoor air pollution are primarily driven by an elevated exposure of the young and productive urban population to particulate matter pollution, that results in a substantial cardio pulmonary and chronic obstructive pulmonary disease mortality load among adults. Further a significant portion of diseases caused by poor water supply, sanitation and hygiene is borne by children under 5. Above 23% of child mortality in the country could be attributed to environmental degradation. Also according to World Bank Report, 2013 "Diagnostic Assessment of select Environmental Challenges in India" is green growth affordable to India, 10 % particulate emission reduction by 2030 will lower GDP modestly, representing a loss of merely 0.3% to the GDP compared to business as usual, on the other hand, a 30% particulate emission reduction lowers GDP about \$ 97 billion, or 0.7% with very little impact on the growth rate. There are significant health benefits, the savings from reduced health damage range from \$ 105 billion in the 30% case to \$ 24 billion with a 10% reduction. This, to a large extent, compensates for the projected GDP loss. The report also emphasized that green growth is measurable and important as India is a hotspot of unique biodiversity and ecosystems. The study undertook a first ever comprehensive assessment of value of ecosystem services from various biomes across India. Based on conservative estimates, it amounts to about 3.0% to 5.0% of GDP. Conventional measures of growth do not adequately capture the environmental cost, which have been found to be particularly severe at the current rapid growth rate (World Bank, 2013, p.24). In this backdrop, it is essential to evaluate the state of the green economy of India. Therefore, the present study tries to examine the state consisting of nature and extent of the green economy with reference to India through empirical analysis by using appropriate indicators of green economy for the latest study period.

## 5. RESEARCH METHODOLOGY

The present analytical research work depends on the time series secondary data provided by World Bank (National Development Indicators) during the period 2000 to 2015. This study considers the appropriate indicators of environment, human well-being and social equity relating to a green economy of India.



This research study highlights three principal areas of a green economy and their indicators and the key challenges to developing a framework for metrics for a green economy. Metrics framework of a green economy given by the UNEP with identified three principal areas and the number of indicators of a green economy, within these areas are given below.

### **5.1.Indicators of Economic Transformation**

A green economy is first and foremost about transforming the way economies grow currently. Growth is typically generated from investments in high emission, heavily polluting, waste generating, resource intensive and ecosystem damaging activities. A green economy requires investment to shift towards low carbon, clean energy, waste minimizing, resource efficient and ecosystem enhancing activities. The key indicators of economic transformation, therefore, include the shift in investment over time, the consequent growth of environment friendly or environmentally enhancing goods and services and related jobs.

### **5.2.Indicators of Resource Efficiency**

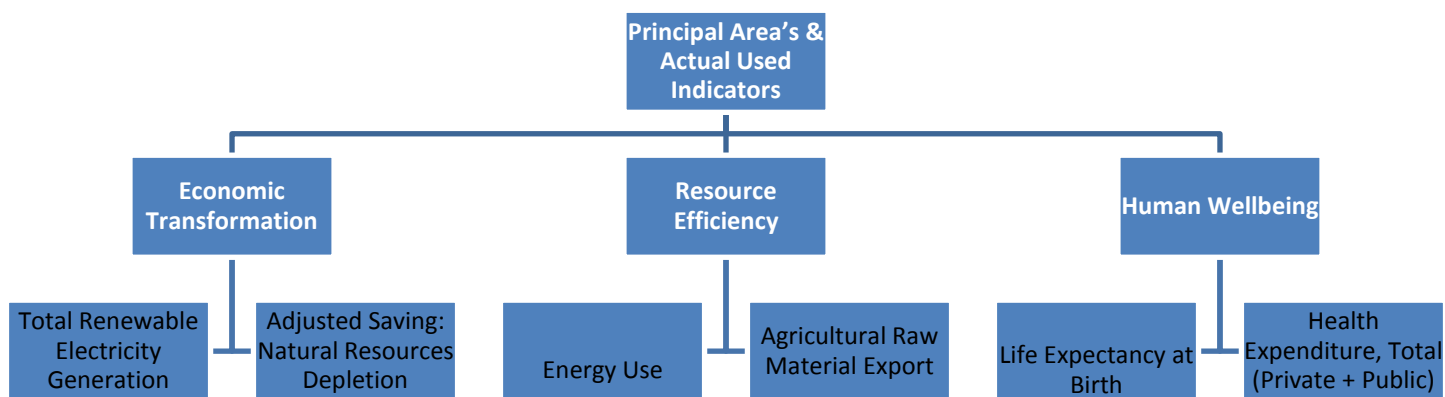
Principal indicators of this area include those on the use of materials, energy, water, land, changes to ecosystems, generation of waste and emissions of hazardous substances related to economic activities.

### **5.3.Indicators of Progress and Well-being**

A green economy can contribute to societal progress and human well-being in two ways is, Firstly, by redirecting investments towards green goods and services and secondly by redirecting investments towards the strengthening of human and social capital. Some of the indicators of progress and well-being area include the

extent to which basic human needs are fulfilled, the level of education achieved, health status of the population and the availability of, and access by the poor to social safety nets, conventional indicators of GDP, also covers calories per capita, population below poverty (USD day), Human Development Index (HDI) and employment generation from each sector.

Researchers have used the following actual and appropriate indicators of a green economy from its areas, which are nearer to the original indicators.



## 6. ENVIRONMENTAL ISSUES IN INDIA:

The environmental issues in India become more serious every day like that lack of environmental education, falling fertility of agricultural land, declining water level in earth, mass deforestation, land degradation, excess use of fertilizers and chemical in food production and river contamination and pollution. a true about India, ours whopping 65 percent of the land is degraded in some way like nature or size and the infinite government policies do little to curb the damage. In reality, there is no shortage at all of government legislation protecting the environment and other resources but sorry to say that it is never enforced due to flagrant abuse of power, corruption, lack of resources, lengthy process of policy preparation and its implementation. We discussed here, some essential burning issues exist in Indian economy and whether or environment.

First, Drought is very dangerous calamity stood in front of India because most of area covered by natural calamity of drought due to inadequate or lack of access to vital fresh water resources to common people of



country. Furthermore Indian economy in large scale depends on agriculture and allied sector. Therefore, economy is directly influenced by impact of drought. Similarly, our 67 per cent agriculture land directly depends on rainfall or monsoon. Consequently, one of the most important proverbs has applied to Indian agriculture, “Indian Agriculture is gamble on monsoon”.

Second, Deforestation is one of the important issue exist in India in the form of over-grazing, indiscriminate falling of forest tree and over exploitation of land resources. The devastating effects of deforestation in India take account of soil, water and wind erosions, estimated to cost over 16,400 crores every year. Deforestation and over-grazing have been causing tremendous land erosion and landslides. On an average India is losing about 6,000 million ton of top soil annually due to water erosion in the absence of trees. The loss worked out from the top soil erosion in 1973 was Rs. 700 crore, in 1976, 1977 and in 1978 was Rs. 889 crore, Rs. 1,200 crore and Rs. 1,091 crore respectively. At Present in India, the available of per capita forest land in India is 0.064 hectare compared to the world average of 1 hectare, Canada 14.2 hectare, Australia 7.6 ha and USA 7.30 ha. Indian forests comprise only 0.50 per cent of the world forest area. India is losing about 1.5 million hectares of forest cover each year. If this trend continues we may in the next 20 years or so reach to zero forest value in our country. (FAO, 2009, P.15).

Third point concern to air quality, due to the bad air quality most of the Indian Children suffering from asthma in big cities, now at 50% and rising fast. Air pollution is the fifth leading cause of death in India after high blood pressure, indoor air pollution, tobacco smoking and poor nutrition, with about 620,000 premature deaths occurring from air pollution-related diseases. Like China, India faces an unprecedented public health crisis due to air pollution.

Being a member of the G-20, India decided to promote the concept of a green economy is linked to its overall aim to foster prosperity and sustainability in development as elaborated in the country’s Eleventh Five-Year Plan on 2007 to 2012. In embracing green growth, India envisages poverty alleviation and the lowering of economic inequalities as a key benefit that could be derived from implementing the green economy concept (Government of India, Planning Commission, 11th Five Year Plan (2007–12): Inclusive Growth. New Delhi: Oxford University Press, 2008, [http://planningcommission.nic.in/plans/planrel/fiveyr/11th/11\\_v1/11th\\_vol1.pdf](http://planningcommission.nic.in/plans/planrel/fiveyr/11th/11_v1/11th_vol1.pdf), accessed 22 September, 2013). Before implementation of green growth, India need its quest to reduce poverty and spur economic activity, regarded the controls on carbon emissions from fossil fuel-generated energy as unfair. (Bowen A & S Fankhauser, ‘The green growth narrative: Paradigm shift or just spin’, Global Environmental

Change, 21, 4, 2011, pp. 1157–59) In recent times, India's objectives of economic development show a different point of view in which opportunities for growth could be realized from developing a green economy.

## 7. INDIA & BRCS ON ROAD MAP TO TURN INTO GREEN ECONOMY

7<sup>th</sup> BRICS conference was held in Russian city of Ufa in Bashkortostan on 8 & 9 July, 2015. In this conference various Ministers from Brazil, Russia, India, China and South Africa, along with the executive director of the United Nations Environment Programme, met to discuss on how to prepare ideal road map for transitioning to green economies to ensure sustainable development without compromising on their competitiveness. Also they discuss green economy development and cooperation in tackling climate change. In BRICS, India highlighted that sustainable development should address in particular like poverty eradication, changing unsustainable and promoting sustainable patterns of production and consumption, protecting and managing the natural resource base of economic, cultural and social development; and talk about climate change and global warming. The BRICS Environment Ministers decided to establish a Working Group on environment to identify and discuss priority areas of cooperation to explore the potential of the BRICS New Development Bank for funding environmental projects, explore the possibility of establishing a collaborative platform of the BRICS countries, intended to share best environmental practices and facilitate the exchange of environmentally sound technologies and know-how with participation of public and private stakeholders; and hold regular meetings of Environment Ministers of BRICS. (Climate Change Policy and Practice 22 April, 2015. Accessed March 26, 2016; available from <http://climate-1.iisd.org/news/brics-environment-ministers-discuss-green-economy-climate-change/>)

The BRICS nations hold a unique position as leading emerging economies and political powers at the regional and international level. When mature economies across the globe grapple with high budget deficits, poor growth rate and increasing unemployment, the BRICS are expanding rapidly for helping their members to lift people or nation out of poverty and driving the global economy," today Achim Steiner is Executive Director of UN Environmental Programme (UNEP). He told that the BRICS' efforts towards establishing an environmental public-private partnership (PPP) mechanism to facilitate investment in green technologies and related environmental projects in member country. Also BRICS countries try to provide an opportunity to expedite and strengthen the global transition to a green economy. Under the Innovative financial mechanisms of BRICS, for instance- The New Development Bank and the Contingent Reserve Arrangement have the potential to construct a sustainable green infrastructure, longer-term competitiveness for the BRICS economies and strengthen South-

South cooperation. (United Nations Environmental Programme, MOSCOW, 22 April, 2015. Accessed March 26, 2016; available from <http://www.unep.org/newscentre/Default.aspx?DocumentID=26811&ArticleID=34980&l=en>)

## 8. DATA RESULTS AND ANALYSIS

Researcher has selected six dummy or alternative but appropriate indicators for accounting of green performance of India. For each area two indicators are chosen.

**Table No. 8.1. Indicators of Resource Efficiency**

Total Renewable Electricity Generation						
Sr. No	Year	In Billion Kilowatt Hours (000,000,000)	Annual % Change	Indian Population In Crore (00,00,000)	Annual % Change	Per Capita Renewable Electr. Generation (Khr.)
1	2000-01	77	0.00	101.4	0.00	76
2	2001-02	77	0.00	102.9	2.00	75
3	2002-03	68	-12	104.6	2.00	65
4	2003-04	80	18	105.1	0.37	76
5	2004-05	90	13	106.6	1.00	85
6	2005-06	109	21	108.1	1.00	101
7	2006-07	123	13	109.6	1.00	112
8	2007-08	133	8.00	113.1	3.00	118
9	2008-09	125	-6.00	114.8	2.00	109
10	2009-10	123	-2.00	116.7	2.00	105

11	2010-11	135	10	117.3	1.00	115
12	2011-12	160	19	119.1	1.00	135
13	2012-13	160	0.00	121.1	1.00	133
14	2013-14	166	4.00	122.1	1.00	136
15	2014-15	174	5.00	123.7	1.00	141
16	2015-16	182	5.00	130.1	5.00	140
<b>C.G.R</b>		<b>7.00%</b>		<b>2.00%</b>		<b>5.00%</b>
<b>MEAN</b>		<b>124</b>		<b>113.5</b>		<b>108</b>
<b>C.V</b>		<b>30%</b>		<b>7.00%</b>		<b>24%</b>

(Source: 1-U.S Energy information administration -<http://www.eia.gov> or World development Indicators-last updated: 28/07/2015. 2-Population Statistics Source: Central Intelligence Agency, Washington, D.C)

World Walk and run through energy, therefore all countries has been engaging in energy and electricity generation help of natural resources like coal, oil, gas, timber etc,. But this conventional energy is harmful to environment and ecosystem services of respective country. Hence, today there is need to be generated the clean or healthy energy for sustainable development of the World. Above table revealed the data about total renewable electricity generation in India. It shows that until 2002 and excepting 2008, 09 & 2012; renewable electricity generation status has been good, even their compound growth rate was at positive 7 per cent and averagely generated 124 Billion Kilowatt Hours. But coefficient of variation indicates renewable electricity generating process is inconsistent therefore C.V is at 30 per cent. Besides, if we compare the renewable electricity generation with growing population then we come over the growth of renewable electricity is higher than growth of Indian Population therefore; per capita electricity has been showing a continuous increase. It increased from 77 Khr in 2000 to 140 Khr in 2015 due to technological and industrial development in India. Averagely, 108 Khr per capita renewable energy has increased. But only at 5 per cent compound growth rate is found in respect to per capita renewable electricity generation in India.

In conclusion, performance of renewable electricity generation of India has been improving year by year. For that, we should hard work for increasing share of renewable energy in total electricity generation in India.

**Table No.8.2: Adjusted Saving: Natural Resources Depletion**

<b>Adjusted Saving: Natural Resources Depletion</b>			
<b>Sr. No.</b>	<b>Year</b>	<b>% of GNI</b>	<b>Net Annual Percentage Change (%)</b>
<b>1</b>	<b>2000-01</b>	2.83	0.00
<b>2</b>	<b>2001-02</b>	2.72	-0.11
<b>3</b>	<b>2002-03</b>	2.69	-0.03
<b>4</b>	<b>2003-04</b>	2.73	0.04
<b>5</b>	<b>2004-05</b>	2.86	0.13
<b>6</b>	<b>2005-06</b>	3.02	0.16
<b>7</b>	<b>2006-07</b>	3.62	0.6
<b>8</b>	<b>2007-08</b>	4.04	0.42
<b>9</b>	<b>2008-09</b>	5.55	1.51
<b>10</b>	<b>2009-10</b>	3.01	-2.54
<b>11</b>	<b>2010-11</b>	4.19	1.18
<b>12</b>	<b>2011-12</b>	4.26	0.07
<b>13</b>	<b>2012-13</b>	3.23	-1.03
<b>14</b>	<b>2013-14</b>	3.14	-0.09
<b>15</b>	<b>2014-15</b>	4.12	0.98
<b>16</b>	<b>2015-16</b>	4.22	0.10
<b>C.G.R</b>		<b>3.00%</b>	
<b>MEAN</b>		<b>3.51</b>	
<b>C.V</b>		<b>23%</b>	

(Source:World Bank staff estimates based on sources and methods in World Bank's "The Changing Wealth of Nations: Measuring Sustainable Development in the New Millennium"-2011 or World development Indicators-last updated: 28/07/2015)

Resource depletion means the consumption of a resource faster than it can be replenished. Natural resources are commonly divided between renewable resources and non-renewable resources. Here, we want the meaning of Natural resource depletion is the sum of net forest depletion, energy depletion, and mineral depletion. Net forest depletion is unit resource rents times the excess of round wood harvest over natural growth. Energy depletion is the ratio of the value of the stock of energy resources to the remaining reserve lifetime (capped at 25 years). It covers coal, crude oil, and natural gas. Mineral depletion is the ratio of the value of the stock of mineral resources to the remaining reserve lifetime (capped at 25 years). It covers tin, gold, lead, zinc, iron, copper, nickel, silver, bauxite, and phosphate.

Above table no.8.2 shows that percentage of natural resource depletion in India. In 2000, natural resources deplete at 2.83 percent of GNI and then this depletion rate has been gradually increasing until 2008 then it goes done in the year of 2009, 2012 and 2013. Excepting these years, slowly depletion rate has increasing still now. Right column of table shows that annual percentage change of resources depletion in India. We may see that most of positive percentage changes found in years 2008 & 2010 and negative percentage changes found in 2001, 2002, 2009, 2012 & 2013. But we should keep in mind, positive percentage changes shows that more resources exploitation by citizen vice versa negative percentage changes showing that improved the condition of natural resource, means lower deplete of natural resource in respective years. Overall picture of Natural resources repletion is showing that compound growth rate of 3 per cent. Similarly, natural resource depletion has been 3.51 average percentage of GNI. This means 23 percent of coefficient of variation is found in given period of study.

**Table No.8.3.Indicators of Resource Efficiency**

Following two indicators has taken from principal area of resource efficiency for accounting of green performance.

<b>Energy Use</b>			
<b>Sr. No.</b>	<b>Year</b>	<b>kg of Oil Equivalent Per Capita</b>	<b>Annual Percentage Change (%)</b>
<b>1</b>	<b>2000-01</b>	438	0.00
<b>2</b>	<b>2001-02</b>	438	0.00

3	2002-03	444	1.00
4	2003-04	448	1.00
5	2004-05	466	4.00
6	2005-06	479	3.00
7	2006-07	498	4.00
8	2007-08	521	5.00
9	2008-09	538	3.00
10	2009-10	585	9.00
11	2010-11	599	2.00
12	2011-12	616	3.00
13	2012-13	637	3.00
14	2013-14	643	1.00
15	2014-15	661	3.00
16	2015-16	679	3.00
<b>C.G.R</b>		<b>3.00%</b>	
<b>MEAN</b>		<b>543</b>	
<b>C.V</b>		<b>16%</b>	

(Source: International Energy Agency (IEA Statistics) & OECD/IEA, <http://www.iea.org/stats/index.asp> or World development Indicators-last updated: 28/07/2015)

In the Modernization, energy plays most important role in inclusive and sustainable development of around the world of humans. In the above table, Energy concept prepared or framed from various sources of primary energy like Coal, petroleum, and natural gas are fossil fuels, and also non-renewable resources. Under the principal area of resource efficiency; these primary natural resources should be used perfectly or fully without waste of any part of respective source of energy. Today these energy resources have been depleting fast to meet

the requirements of industry and transportation. That means, we may come over the conclusion of those countries has been using higher natural resources of energy, those gone on top of economic, social and cultural development. Vice-versa those countries has used less energy compared to developed countries like USA, Australia, Norway etc. realized less development and achieved low growth. Therefore, conventional sources of energy cannot be neglected, it is imperative to develop programmes in the area of renewable sources, as they not only help conserve scarce conventional sources of energy but contribute immensely to a forestation, improvement of the environment, employment generation, upgradation of health and hygiene, social and women's welfare, provision of water for agriculture and drinking, and bio-fertilizer production.

Above table shows the data about per capita energy use (kg of Oil Equivalent) in India. In 2000, annual per capita energy use was 438kg, then after the 2001 gradually rate of per capita energy use has been growing up to present year 2016. In the present, availability of energy is 679Kg per capita. Conclusion of this description is that compound growth of annual availability of energy in India during the study period is at positive 3 per cent and average availability of energy in India is 543 Kg per capita. Variation is also normally seen at 16 per cent (C.V) during study period. Ultimately, per capita energy has been steadily rising at 3% CGR. This is very positive thing for developing India to acquire sustainability in economic development and growth.

**Table No.8.4: Agricultural Raw Material Export**

<b>Agricultural Raw Material Export</b>			
<b>Sr. No.</b>	<b>Year</b>	<b>% of Merchandise Exports</b>	<b>Net Annual Percentage Change (%)</b>
<b>1</b>	<b>2000-01</b>	1.26	0.00
<b>2</b>	<b>2001-02</b>	1.14	-0.12
<b>3</b>	<b>2002-03</b>	1.06	-0.08
<b>4</b>	<b>2003-04</b>	1.08	0.02
<b>5</b>	<b>2004-05</b>	1.20	0.12
<b>6</b>	<b>2005-06</b>	1.27	0.07



7	2006-07	1.72	0.45
8	2007-08	1.98	0.26
9	2008-09	1.74	-0.24
10	2009-10	1.16	-0.58
11	2010-11	2.01	0.85
12	2011-12	1.83	-0.18
13	2012-13	1.95	0.12
14	2013-14	2.06	0.11
15	2014-15	1.57	-0.49
16	2015-16	2.03	0.46
<b>C.G.R</b>		<b>4.00%</b>	
<b>MEAN</b>		<b>1.57</b>	
<b>C.V</b>		<b>25%</b>	

(Source: World Bank staff estimates from the Comtrade database maintained by the United Nations Statistics Division or World development Indicators-last updated: 28/07/2015)

Agriculture has been backbone of Indian Economy because before the independence period and after the two decades of independence, share of agriculture sector in total GDP was above 60 percent. Similarly, share of agriculture in total merchandise exports also essential for improving the balance of trade. Therefore, this study is important for critical analysis of role agriculture in not only merchandise exports but also economic and social development. Beside, agriculture is purely pollution free and hazardless occupation. Resulting, it has been giving important contribution in attaining green growth and green economy objectives. In respect to India, since long period; India has been exporting agricultural raw material to European countries.

Here, we analyze the performance of agriculture sector with the help of table no.8.4. It releases data about Agricultural Raw Material Export by India. In 2000, out of total 1.26 percent share was in total merchandise export. During the study period of research, its percentage share has been increasing averagely at 1.57. But

excepting some years, in 2010-11, 2013-14 & 2015-16 share of agriculture raw material export in total export has rise. During the study period, coefficient of variation seen normally at 25% then its share has been increasing at 4.00 percent (C.G.R). Conclusion, share of agricultural raw material export has been steadily growing. In consideration of it will have helped to attain the objective of green economy.

**Table No.8.5 Indicators of Progress and Well-being**

There were some indicators included in principal area of Progress and well-being for accounting of physical growth of respective country but, here only two indicative and representative indicators has taken for analysis of whether the performance is green in India.

<b>Life Expectancy at Birth</b>			
<b>Sr. No.</b>	<b>Year</b>	<b>Total Age (Years)</b>	<b>Annual Percentage Change (%)</b>
<b>1</b>	<b>2000-01</b>	62	0.00
<b>2</b>	<b>2001-02</b>	63	1.61
<b>3</b>	<b>2002-03</b>	63	0.00
<b>4</b>	<b>2003-04</b>	63	0.00
<b>5</b>	<b>2004-05</b>	64	1.58
<b>6</b>	<b>2005-06</b>	64	0.00
<b>7</b>	<b>2006-07</b>	64	0.00
<b>8</b>	<b>2007-08</b>	65	1.56
<b>9</b>	<b>2008-09</b>	65	0.00
<b>10</b>	<b>2009-10</b>	65	0.00
<b>11</b>	<b>2010-11</b>	66	1.53
<b>12</b>	<b>2011-12</b>	66	0.00

13	2012-13	66	0.00
14	2013-14	66	0.00
15	2014-15	67	1.51
16	2015-16	67	0.00
<b>C.G.R</b>		<b>0.49%</b>	
<b>MEAN</b>		<b>65</b>	
<b>C.V</b>		<b>2.00%</b>	

(Source: Derived from male and female life expectancy at birth from sources such as: (1) United Nations Population Division. World Population Prospects, (2) United Nations Statistical Division. Population and Vital Statistics Report (various years), (3) Census reports and other statistical publications from national statistical offices, (4) Eurostat: Demographic Statistics, (5) Secretariat of the Pacific Community: Statistics and Demography Programme, and (6) U.S. Census Bureau: International Database or World development Indicators-last updated: 28/07/2015)

Above indicators of life expectancy at birth is essential for accounting the real influences of development on human life standard in respective countries. Healthy and Long life can be obtained through green and sustainable development of around the respective area of human society. For example, people of Norway, Australia and Netherland have long life comparative to India. Therefore, we may come over to conclusion of getting the long life to citizen of respective country is best indicator of physical development of green economy.

Above table no.8.5 shows that expected total life of Indian people in response to implementation of green development model for inclusive and sustainable development of Indian economy. In 2000, life was 62 years of Indian people then it has been gradually increasing up to 67 in 2015-16. During this study period compound growth rate of life expectancy is very meager at 0.49 per cent but positive. Moreover, coefficient of variation also found very normal at 2 percent. Ultimately, we can tell about average life of Indian is 65 year during the selected study period.

Table No.8.6: Total Health Expenditure (Private + Public)

<b>Total Health Expenditure (Private + Public)</b>			
<b>Sr. No.</b>	<b>Year</b>	<b>% of GDP</b>	<b>Net Annual Percentage Change (%)</b>
1	2000-01	4.31	0.00
2	2001-02	4.55	0.24
3	2002-03	4.45	-0.10
4	2003-04	4.35	-0.10
5	2004-05	4.56	0.21
6	2005-06	4.31	-0.25
7	2006-07	4.09	-0.22
8	2007-08	3.94	-0.15
9	2008-09	3.99	0.05
10	2009-10	4.05	0.06
11	2010-11	3.82	-0.23
12	2011-12	3.83	0.01
13	2012-13	3.81	-0.02
14	2013-14	3.97	0.16
15	2014-15	3.72	-0.25
16	2015-16	3.67	-0.05
<b>C.G.R</b>		<b>-1.00%</b>	
<b>MEAN</b>		<b>4.09</b>	
<b>C.V</b>		<b>7.00%</b>	

(Source: World Health Organization National Health Account database-

<http://apps.who.int/nha/database/DataExplorerRegime.aspx> or World development Indicators-last updated: 28/07/2015)

Physical and Mental oriented Labour's work efficiency ultimately depend on their body fitness and good health because if, labours neither physically fit nor healthy for work, result will show that not only micro level but also macro level production would decline. Moreover, many researches has demonstrated that more significant relationship between labour health and industrial production level, income level, standard of living of labour of respective firm and concluding, overall growth has been depending on health condition of respective firm, industry, or country. Therefore, study of health or expenditure on them; should be important for accounting the green performance of respective area.

Above table no.8.6 shows the chronological total health expenditure (Public + Private) on Indian citizen. Table figures showing in percentage to total expenditure of India. According to pure scientist and social scientist, above percentage of expenditure on health is not significant comparative to present population status and their growth. Howbeit, study about government expenditure on their citizen should be important for evaluate the present schemes of social welfare. Hence, above table helps to understanding the trend of government expenditure on Health. In 2000, government had expended at 4.31 percent share of total expenditure. But this percentage share slowly declined up to 2006 and speedily declination of expenditure on health, in 2015-16, government spent only 3.67 percentage share on Indian health service out of total expenditure.

Conclusion, during the present research study period, India has been spending average 4.09 percent budget on health infrastructure in developing India. This is not sufficient budget provision for subcontinent India. Moreover, one additional demerit of government health expenditure is that compound growth rate shows at minus 1 percent. Besides, coefficient of variation seen at only 7 percent, but this fluctuation is not matter for improving health condition in subcontinent India.

## 9. HYPOTHESIS TESTING

The researcher has used the one sample (Two tailed) t-test for hypothesis testing. This test has applied to each indicator of different principal area of green economy for evaluating the role of a particular parameter in attaining the green economy in India.

One sample t-test (Two tailed test) at 0.05 Percent Significance Level							
Sr. No	Hypothesis-H <sub>0</sub>	Degree of Freedom	T- Calculated Value	T-Table Value	Mean Difference	P- Value	Decision (Accept or Reject)
<b>Economic Transformation</b>							
1	<b>H<sub>0</sub></b> -There is no significant contribution by renewable energy to green economy in India.	15	4.976	2.731	46.875	.000 (P<0.05)	H <sub>0</sub> -Reject
	<b>H<sub>a</sub></b> -Renewable energy has significantly contributed to green economy in India.						H <sub>a</sub> -Accept
2	<b>H<sub>0</sub></b> -No significant depletion in natural resources has taken place in India.	15	3.378	2.731	0.68437	.004 (P<0.05)	H <sub>0</sub> -Reject
	<b>H<sub>a</sub></b> -A significant depletion in natural resources has taken place in India.						H <sub>a</sub> -Accept
<b>Resource Efficiency</b>							
3	<b>H<sub>0</sub></b> -Energy use in India is not efficient	15	4.804	2.731	105.125	.000 (P<0.05)	H <sub>0</sub> -Reject
	<b>H<sub>a</sub></b> -Energy use is efficient in India						H <sub>a</sub> -Accept
4	<b>H<sub>0</sub></b> -There is no significant export of agricultural raw materials by India.	15	3.161	2.731	0.30625	.006 (P<0.05)	H <sub>0</sub> -Reject

	<b>H<sub>a</sub></b> -There is significant export of agricultural raw materials by India						<b>H<sub>a</sub>-Accept</b>
<b>Human Wellbeing</b>							
5	<b>H<sub>0</sub></b> -There is no significant improvement in life expectancy at birth in India.	15	7.201	2.731	2.750	.000 (P<0.05)	H <sub>0</sub> -Reject
	<b>H<sub>a</sub></b> -There is significant improvement in life expectancy at birth in India.						<b>H<sub>a</sub>-Accept</b>
6	<b>H<sub>0</sub></b> -There is no significant expenditure on health by government in India	15	-2.998	2.731	-22125	.009 (P<0.05)	<b>H<sub>0</sub>-Accept</b>
	<b>H<sub>a</sub></b> -There is significant expenditure on health by government in India						H <sub>a</sub> -Reject
<b>All results are significant at .05 percent significant level for 15 degree of freedom</b>							

Above Table revealed very essential statistical data about the formulated Null hypothesis either to accept or reject. We have used one sample t-test to all indicators of three principal areas of green economy, at 0.05 percent significance level for 15 degree of freedom (d.f). Above results show that except the p-values of sixth indicator of health, remained indicators p-values are less than 0.05. (P<0.05); along with came out the result about t-value. Calculated value of ‘t’ are more than the table values in respected of all indicators of green economy except the sixth indicator of health. This means that, formulated first five null hypotheses are rejected and alternatives would be accept. Because of “If the calculated value of ‘t’ exceeds  $t_{0.05}$ . We say that the difference between  $\bar{x}$  (Sample Mean) and  $\mu$  (Population Mean) is significant at 5% level. Vice-versa if  $t' \leq t_{0.05}$ , We conclude that the difference between  $\bar{x}$  and  $\mu$  is not significant and hence the sample might have been drawn from a population with mean =  $\mu$ .

In conclusion, except the last indicator of total health expenditure, remaining indicators has been significant contributing in attaining the green economy for India. But, why last indicator did not significantly contributed in attaining green economy. Because of Indian government has been less expending on health facility or infrastructure, therefore, its mean difference has been minus 22125. Ultimately, researcher has come over out of six green economy indicators; five has been significantly contributed in green growth and green economy.

## 10. CONCLUSIONS

The thorough discussion of some indicators from their principal area of green economy with reference to India reveals that some indicators show positive trend useful for green economy except the indicator health. This adequately proves that India had adopted the strategy of green economy; hence it is endeavoring in that direction. But there is urgent need to improve the health sector and its positive results. The necessary provision for health in government budget with honesty and rigorous in spending and implementation will help us a lot.

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