GREEN ECONOMY ACROSS THE COUNTRIES IN THE WORLD IN RESOURCE EFFICIENCY PERSPECTIVE

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Abstract: The concept of green economy is being discussed in recent decade for achieving sustainability in inclusive growth and development of respective area or countries of the World. A key moment of green economy and green growth was published in a report of 'Limits to Growth' by the Club of Rome in 1972. 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. The main theme of this conference was "Green economy in the context of Sustainable Development and Poverty Eradication". But after introducing the concept of green economy at the national level to accounting of green growth for sustainable development then we need to find out the actual performance of particular country for the comparative and analytical study of green economy across the countries in the world. Theretofore, we should study the state of the green economy across the countries of the World for better understanding the results of implementation of the green economy model for sustainable development of the economy. UNEP (United Nations Environment Program) 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 saying, a green economy is low-carbon, resource efficient and socially inclusive economy. The key aim for a transition to a green economy is to enable economic growth and investment while increasing environmental quality and social inclusiveness. The linkages between the concept of green economy and sustainable development are; in 2009, the 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. Two of the agenda items for Rio+20 are, "Green Economy in the context of Sustainable Development and Poverty Eradication," and "International Framework for Sustainable Development". The study concludes that on the front of export of agricultural raw materials both the developed and developing countries have failed with a few exceptions in resource efficiency as well as realizing green economy. Developed countries have succeeded a lot in enhancing energy consumption and resource use which will enable them to move towards green economy than the developing countries.

Key Words: Green Economy, Sustainable Development, Indicators, Economic,Transformation, Resource Efficiency, Improvement in Human Wellbeing.

I) Introduction: The concept of green economy is being discussed in recent decade for achieving sustainability in inclusive growth and development of respective area or countries of

the World. Therefore, the idea of a more sustainable economy has been talked about in recent years. A key moment of green economy and green growth was published in a report of 'Limits to Growth' by the Club of Rome in 1972. 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. The main theme of this conference was "Green economy in the context of Sustainable Development and Poverty Eradication**".** But after introducing the concept of green economy at the national level to accounting of green growth for sustainable development then we need to find out the actual performance of particular country for the comparative and analytical study of green economy across the countries in the world. Theretofore, we should study the state of the green economy across the countries of the World for better understanding the results of implementation of the green economy model for sustainable development of the economy. UNEP (United Nations Environment Program) 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 saying, a green economy is low-carbon, resource efficient and socially inclusive economy. In a green economy, growth in income and employment are driven by public and private investment that reduce carbon emission and pollution, enhance energy and resource efficiency and prevent the loss of biodiversity and ecosystem services. These investments need to be catalyzed and supported by targeted public expenditure, policy reforms and regulation changes; the development path should maintain, enhance and wherever necessary, rebuild natural capital as a critical economic asset and as a source of public benefits. This is especially important for the poor people whose livelihoods and security depends on the nature. The key aim for a transition to a green economy is to enable economic growth and investment while increasing environmental quality and social inclusiveness. Critical to attaining such an objective is to create the conditions for public and private investment to incorporate broader environmental and social criteria. In addition, the main indicators of economic performance, such as growth in Gross Domestic Product (GDP) need to be adjusted to account for pollution, resource depletion, decline in ecosystem services, and the distributional consequences of natural capital loss to the poor.

The linkages between the concept of green economy and sustainable development are; in 2009, the 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. Two of the agenda items for Rio+20 are, "Green Economy in the context of Sustainable Development and Poverty Eradication," and "International Framework for Sustainable Development". With the green economy firmly established on the international policy agenda, it is useful to review and clarify the linkages between a green economy and sustainable development (Drexhage, John and Murphy, Deborah, 2010, P.17). Most interpretations of sustainability take as their starting point of the consensus reached by the World Commission on Environment and Development (WCED) in 1987, which

defined sustainable development as "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs (WCED, 1987). In 2009, the United Nations General Assembly decided to hold a summit in Rio de Janeiro in 2012 to celebrate the twenty anniversary of the 1st Rio Earth Summit in 1992. Two of the agenda items for Rio+20 are, "Green Economy in the Context of Sustainable Development and Poverty Eradication", and "International Framework for Sustainable Development". With the green economy now firmly established on the international policy agenda, it is useful to review and clarify the linkages between a green economy and sustainable development. Most interpretations of sustainability take as their starting point of the consensus reached by the World Commission on Environment and Development (WCED) in 1987, which defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987). Economists are generally comfortable with this broad interpretation of sustainability, as it is easily translatable into economic terms: an increase in well-being today should not result in reducing well-being tomorrow. That is, future generations should be entitled to at least the same level of economic opportunities – and thus at least the same level of economic welfare – as is available to current generations. As a result, economic development today must ensure that future generations are left no worse off than current generations. According to this view, it is the total stock of capital employed by the economic system, including natural capital, which determines the full range of economic opportunities, and thus well-being, available to both current and future generations. Society must decide how best to use its total capital stock today to increase current economic activities and welfare. Society must also decide how much it needs to save or accumulate for tomorrow, and ultimately, for the well-being of future generations (UNEP, 2011. p.17). It is against this over all background, the present research study intends to examine the nature and extent of green economy attempted and realized by the selected developed and developing countries of the World in resource efficiency perspective, coupled with emphasis on India for the latest study period.

II) REVIEW OF RESEARCH STUDIES:

A review of some of the important research studies relating to the present topic of the research is as follows.

Alfsen, Knut. H. and Greaker, Mads (2007) in their study talk about Norwegian experiences of exploitation of forests and fish has been important sources of income, petroleum resource has contributed significantly to the industrialization of Norway. Pollution levels in the air, water and soil became steadily rising. This study summarises the information contained in natural resources and environmental accounts into a single aggregate measure like "green GDP." The conclusion of the study is , need of that type of development which supports to the green growth. Henderson, Hazel (2007) in his research study has addressed the current economic models, driving today's unsustainable forms of globalization. Also, he exhibits need of technological innovation to shift from fossil fuels to renewable energy, recycling and redesign industrial processes. In this study, he has discussed about important of MDG (Millennium Development

Goals) for easily accessing sustainable development. Temper, Leah and Alier, Joan Martinez (2007) in their study have described the global environmental problem and related Environmental Kuznets Curve (EKC). According to this study, at early stages of economic growth and industrialization, environmental degradation gets worse, but after a certain level of income per capita is reached, the economy reaches a magical point where the trend reverses and environmental quality improves. Also, they have been discussing about the mining Industries occupation in Orissa. Goossens, Yanne (2008) in his policy research study endeavor to calculate the economic performance through gross domestic product, a variable that has conjointly become the offender universal metric for 'standards of living'. However, gross domestic product doesn't properly account for social and environmental prices and advantages. This study highlights the benefits and some of the shortcomings of GDP. It can continue to be used for reform assessments and particular questions of economic policy. Muradov, Nazim. Z and Veziroglu, Nejat. T (2008) in their study emphasize the role of carbon-neutral technologies and fuels during the transition period. The authors analyse a scenario for the transition from current fossil-based hydrogen economy that includes two key elements 1) Changing the fossil decarbonization strategy from one based on CO2 Sequestration to one that involves sequestration or utilization of solid carbon and 2) producing carbon-neutral synthetic fuels from bio-carbon and hydrogen generated from water using carbon free sources like nuclear, solar, wind and geothermal. Kelkar, Vijay (2009) in his study had depicted the importance of new natural gas policy for India. He told that India wants to introduce a long term energy policy for accelerating growth as well as for promoting economic security. Also, gives the deserves of gas, compared to rock oil product, gas burns cleanly and with efficiency in any fuel application. This can be amply borne out by the very fact that once the metros started victimization compressed gas in office of gasoline or diesel in transport vehicles, there was a big reduction in pollution. Little, Angela. W and Green, Andy (2009) in their study examine the role of education in 'Successful Globalization' and how this links to agendas for sustainable development. The study is divided in two parts. First, they present the essence of their argument about successful globalization through a brief conceptual analysis on globalization, development and education followed by case study of countries and regions of Japan, South Korea, Taiwan, China, India, Kenya and Srilanka. Second, they address the parallel discourse on sustainable development and education for sustainable development. Bhattachary, Prodyut; Pradhan, Lolita and Yadav, Ganesh (2010) in their study depicted the history and importance of joint forest management. The study results show that, 20-54% household income of local communities is derived from gathering forest products and wage income. The study concludes that JFM is a positive step towards decentralized government and forest management, with the potential of empowering the community and increasing the livelihood security of the impoverished forest dependent communities. Habert, G; Bouzidi, Y; Chen, C and Jullien, A (2010) in their study discuss about sustainability of buildings and construction sector, which represents a large part of human industrial activities, because a concrete is the main manufactured product sold world-wide. The authors argue that indicators commonly used to assess resource consumption in the life cycle impact assessment (LCIA) are

not fully adapted to the particular sector of the concrete industry. The writers propose a new method to calculate resource consumption impacts that uses a new assessment of the stock of resources. Mallah, Subhash and Bansal, N. K (2010) in their research study present the trends of electrical energy supply and demand are not sustainable because of the huge gap between demand and supply in the foreseeable future in India. According to this study, the path towards sustainability is exploitation of energy conservation and aggressive use of renewable energy systems. Potential of renewable energy technologies which will be effectively controlled would rely upon future technology developments and breakthrough in value reduction.

The foregoing review of some of the research studies relating to research topic reveals that, there are some researches studies on the present research topic have been carried out. But these are very small so far as their scope is concerned. Hence there is an urgent need to undertake a large and depth in scope research study on the topic green economy for sustainable development. We did not find a single study that examines the strategy of the green economy within the framework of its areas and indicators. Such type of study is totally lacking in the context of the developed and developing countries and the country like India. Besides this, it is also exclusively missing the international comparison relating to green economy for realising sustainable development. It is therefore the present research topic has been selected for the present research study. It will be a unique and important contribution to the research in environmental economics and will be helpful for policy formulation and implementation as well.

III) RESEARCH METHODOLOGY:

The major objectives of the present research study are;

To study the theoretical issues relating to a green economy and sustainable development;

To examine the state of green economy in the developed and developing countries of the world in resource efficiency approach;

To examine the nature and extent of green economy achieved by India;

To carry out a comparative analysis of the green economy attained by the developed countries and developing countries of the world;

The hypothesis of the present research study is as follows:

1) Developed countries are not rigorous and sincere in attaining green economy than the developing countries of the World.

The present research is analytical in nature and a comparative type of research study. It depends on the time series secondary data provided by the World Bank (National Development Indicators). It also considers the appropriate indicators of environmental, human well-being and social equity relating to a green economy of India. These indicators also bring about a comparative analysis with reference to the selected five developed and five developing countries of the world. This research study examines the international strategy / concept of "Green Economy" useful for attaining sustainable development. For this, it has selected ten countries by adopting purposive sampling method from the World for the comparative analysis of a green economy within selected appropriate green economy indicators considering the availability of the statistical data. There are two groups of the selected countries, namely developing and

developed. First five countries from developed group of countries have been selected for the study, these are; Australia (AUS), Germany (DEU), Netherland (NLD), Norway (NOR) and United States (USA). Five countries from the developing group of countries have been selected for the study, are; Bangladesh (BGD), China (CHN), Mexico (MEX), Pakistan (PAK) and South Africa (ZAF). Besides these, the thorough study of India also has been undertaken as our home country. Thus, our total sample size of the study comprises of in all eleven countries from the World.

This research study considers three principal areas of a green economy with focus on one i.e. resource efficiency, for sustainable development and their indicators and the key challenges to developing a framework for metrics for a green economy. The metrics framework of a green economy given by the UNEP with identified one of the three principal areas and the number of indicators of a green economy, within the area is given below. 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, Resource Efficiency, Progress and Well-being** have been analysed by this study to realize green economy and thereby sustainable development.

This analytical research study wholly depends on the secondary data. The necessary and essential secondary data have been collected from World Bank Reports, Government Publications, Reputed Journals and Various Reports, Research papers and articles. The major sources of secondary data are the World Bank, Ministry of Environment and Forest Reports and Websites, UNEP Reports about Green Economy; also the their data sources are OECD, UNDP, and SEEA etc. The secondary data has been collected for the period from 2000 to 2015 relating to developed countries, developing countries and India as well. The important and suitable statistical software's have been used for the data processing and analysis purpose, namely SPSS, Excel, etc. The necessary and appropriate tools have been used for the data analysis, which include, Coefficient of Variation, Simple and Compound Growth Rate, Ratio Analysis, etc. Along with these techniques, for the hypothesis testing purpose the researcher has used "t" test as per the needs requirements and suitability of the method. The period of the present research study is from 2000 to 2015. The data relating to the areas and indicators of a green economy have given by UNEP. In the case of non-availability and inadequate availability of the necessary data, the data relating to nearer and dummy variables as indicators of green economy also have been used. The actual indicators of green economy useful for the present study are;

A) Economic Transformation: Improved Sanitation Facility (% of population with access) , Adjusted savings: natural resources depletion (% of GNI), Total renewable electricity generation (In billion kilowatt hours), Total Co2 emissions from consumption of energy (In million metric tons), Improved water source (% of population with access). **B) Resource Efficiency:** Agricultural raw materials exports (% of merchandise exports), Electric power consumption

(kWh Per capita), Forest rents (% of GDP), Energy use (kg of oil equivalent per capita), Total natural resources rents (% of GDP). **C) Human Well-being:** GNI per capita growth (annual %), Health expenditure, total (private + public) (% of GDP), The employment to population ratio, 15+, total (%) modeled ILO estimation, Life expectancy at birth, total (years), Household final consumption expenditure per capita growth (Annual %).

IV) RESULTS AND DISCUSSION:

This section of the research study provides the comparative analysis of the data results and discussion relating to the green economy of developing, developed countries and India.

A) INDICATORS OF RESOURCE EFFICIENCY:

Table No.1: Agricultural Raw Materials Exports

Agricultural Raw Materials Exports (% of merchandise exports)												
Sr. No	**YEAR**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
		IND	**Developed Countries**					**Developing Countries**				
			AUS	**DEU**	**NLD**	**NOR**	**USA**	**BGD**	**CHN**	**MEX**	**PAK**	**ZAF**
1	**2000**	1.26	5.65	0.89	2.73	0.69	2.30	1.45	1.09	0.55	2.95	3.38
2	**2001**	1.14	5.89	0.86	2.63	0.71	2.31	0.99	0.86	0.54	1.71	2.63
3	**2002**	1.06	5.36	0.90	2.90	0.76	2.40	1.03	0.78	0.53	1.47	3.01
4	**2003**	1.08	3.66	0.80	3.15	0.71	2.62	0.94	0.64	0.51	1.59	2.73
5	**2004**	1.20	4.32	0.77	3.01	0.61	2.65	1.26	0.54	0.53	1.91	2.22
6	**2005**	1.27	3.46	0.84	2.77	0.49	2.53	1.72	0.52	0.50	1.49	1.98
7	**2006**	1.72	3.06	0.85	2.65	0.48	2.46	1.64	0.48	0.40	1.24	1.76
8	**2007**	1.98	3.05	0.81	2.66	0.48	2.41	3.12	0.46	0.36	1.22	1.71
9	**2008**	1.74	2.06	0.78	2.51	0.42	2.29	1.53	0.43	0.36	1.21	1.75
10	**2009**	1.16	2.00	0.77	2.86	0.51	2.31	1.54	0.45	0.35	1.72	1.92
11	**2010**	2.01	2.24	0.81	2.66	0.51	2.63	1.95	0.46	0.36	1.80	1.77
12	**2011**	1.83	2.88	0.89	3.28	0.51	2.80	1.75	0.53	0.38	2.28	1.91
13	**2012**	1.95	2.92	0.82	2.90	0.52	2.45	2.12	0.46	0.39	2.47	1.77
14	**2013**	2.06	2.90	0.83	2.89	0.60	2.42	2.21	0.44	0.36	1.82	1.90
15	**2014**	1.57	2.58	0.81	2.97	0.70	2.30	2.29	0.45	0.33	1.67	2.03
16	**2015**	2.03	1.61	0.80	2.92	0.50	2.49	2.37	0.30	0.29	1.76	1.46
C.G.R		**4.00**	**-6.00**	**-0.37**	**0.35**	**-2.00**	**0.14**	**5.00**	**-5.00**	**-4.00**	**0.21**	**-4.00**
MEAN		**1.57**	**3.35**	**0.83**	**2.84**	**0.58**	**2.46**	**1.74**	**0.56**	**0.42**	**1.77**	**2.12**
C.V		**25**	**39**	**5.00**	**7.00**	**19**	**6.00**	**34**	**36**	**21**	**26**	**25**

(Source: World Bank staff estimates from the Comtrade database maintained by the United Nations Statistics Division and World development Indicators-last updated: 19/07/2016)

Agriculture sector plays a strategic role in the process of economic development of a country. It's already done a major contribution to the economic prosperity of advanced countries and its role in the economic development of less developed countries is of greater importance. In

India, about 70.6 percent of total labour force depends upon the agriculture. In such a way, agricultural progress is important to supply food for growing non-agricultural labour force, raw materials for industrial production and saving and tax income to support the development of the rest of the economy, to earn foreign exchange and to provide a growing market for domestic manufactures (Economics Discussion, 2016).

Export of agricultural raw materials indicates efficient use of agriculture as a natural resource and helps in materializing green economy. The comparative study of exports of agricultural raw material reveals that the developed countries selected for study, except South Africa the export of agricultural raw materials was lesser and insignificant in smaller proportion only. Australia is dominant developed country exporting in significant quantum (3.35%), which is followed by Netherland (2.84%) and USA (2.46%), South Africa exported agricultural raw materials at the average share of 2.12 percent, followed by Pakistan (1.77%) and India (1.7%). On the front of export of agricultural raw materials both the developed and developing countries have failed with a few exceptions in resource efficiency as well as realizing green economy for sustainable development.

Table No.2: Electric Power Consumption

Electric Power Consumption (kWh per capita)												
S. N	**YEAR**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
		IND	**Developed Countries**					**Developing Countries**				
			AUS	**DEU**	**NLD**	**NOR**	**USA**	**BGD**	**CHN**	**MEX**	**PAK**	**ZAF**
1	**2000**	399 (2%)	10194 (41%)	6635 (27%)	6560 (26%)	24994 (100%)	13671 (55%)	101 (0.4%)	993 (4%)	1700 (7%)	359 (1%)	4681 (19%)
2	**2001**	400 (2%)	10636 (42%)	6763 (26%)	6653 (26%)	25591 (100%)	13047 (51%)	111 (0.4%)	1077 (4%)	1726 (7%)	365 (1%)	4365 (17%)
3	**2002**	417 (2%)	10813 (44%)	6901 (28%)	6694 (27%)	24620 (100%)	13296 (54%)	119 (0.5%)	1195 (5%)	1735 (7%)	372 (2%)	4589 (19%)
4	**2003**	437 (2%)	10435 (45%)	7010 (30%)	6751 (29%)	23201 (100%)	13307 (57%)	125 (0.5%)	1380 (6%)	1701 (7%)	397 (2%)	4618 (20%)
5	**2004**	459 (2%)	10555 (44%)	7109 (29%)	7017 (29%)	24214 (100%)	13389 (55%	160 (0.7%)	1587 (7%)	1799 (7%)	417 (2%)	4645 (19%)

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6	**2005**	477 (2%)	10458 (42%)	7138 (28%)	6988 (28%)	25083 (100%)	13705 (55%)	171 (0.7%)	1784 (7%)	1853 (7%)	451 (2%)	4689 (19%)
7	**2006**	519 (2%)	10490 (44%)	7212 (30%)	7055 (29%)	24100 (100%)	13583 (56%)	192 (0.8%)	2042 (8%)	1865 (8%)	475 (2%)	4771 (20%)
8	**2007**	553 (2%)	10973 (44%)	7229 (29%)	7210 (29%)	24855 (100%)	13657 (55%)	201 (0.8%)	2330 (9%)	1899 (8%)	470 (2%)	4898 (20%)
9	**2008**	574 (2%)	10749 (43%)	7188 (29%)	7226 (29%)	24866 (100%)	13663 (55%)	203 (0.8%)	2458 (10%)	1908 (8%)	434 (2%)	4706 (19%)
10	**2009**	614 (3%)	10792 (45%)	6817 (29%)	6896 (29%)	23860 (100%)	12914 (54%)	221 (0.9%)	2633 (11%)	1870 (8%)	451 (2%)	4465 (19%)
11	**2010**	657 (3%)	10740 (43%)	7264 (29%)	7010 (28%)	24891 (100%)	13394 (54%)	248 (1.0%)	2944 (12%)	1916 (8%)	458 (2%)	4581 (18%)
12	**2011**	713 (3%)	10712 (46%)	7146 (30%)	7036 (30%)	23510 (100%)	13240 (56%)	259 (1.1%)	3298 (14%)	2092 (9%)	450 (2%)	4606 (20%)
13	**2012**	760 (3%)	10398 (44%)	7270 (31%)	6871 (29%)	23658 (100%)	12954 (55%)	280 (1.2%)	3475 (15%)	2032 (9%)	447 (2%)	4405 (19%)
14	**2013**	750 (3%)	10738 (45%)	7316 (31%)	7156 (30%)	23869 (100%)	13232 (55%)	289 (1.2%)	3593 (15%)	2058 (9%)	485 (2%)	4593 (19%)
15	**2014**	780 (3%)	10756 (45%)	7354 (31%)	7189 (30%)	23791 (100%)	13212 (56%	304 (1.3%)	3808 (16%)	2087 (9%)	493 (2%)	4590 (19%)

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16	**2015**	810 (3%)	10774 (45%)	7391 (31%)	7223 (30%)	23712 (100 %)	1319 2 (56%)	319 (1.3%)	4022 (17 %)	2116 (9%)	502 (2%)	4587 (19 %)
C.G.R		**5.00**	**0.17**	**0.53**	**0.49**	**-0.32**	**-0.15**	**8.00**	**10**	**2.00**	**2.00**	**-0.07**
MEAN		**582**	**10638**	**7109**	**6971**	**24301**	**1334 1**	**206**	**2414**	**1897**	**439**	**4612**
C.V		**25**	**2.00**	**3.00**	**3.00**	**3.00**	**2.00**	**35**	**42**	**8.00**	**10**	**3.00**

(Source: International Energy Agency (IEA Statistics OECD/IEA, http://www.iea.org/stats/index.asp and World development Indicators-last updated: 19/07/2016)

Electricity is one among the foremost necessary blessings that science has given to human beings. It has also become a part of modern life and one cannot think about a world without it. Electricity has several uses in our day to day life. Modern equipment like computers and robots has also been developed because of electricity. Electricity plays an important role in the fields of medicines and surgery too — like X-ray, ECG. The utilization of electricity is increasing day by day (Lekshmi S, 2010).

Electric power consumption is an indicator of resource efficiency and thereby attaining green economy. The comparative study of electricity consumption reveals that all the developed countries are very much ahead in electricity consumption between 6971 KWh to 24301 KWh than all the developing countries except China, Mexico and South Africa. The electricity consumption in India is 582 KWh meager and lesser only. But it is of greater importance to consider also the type of energy the developed countries are consuming.

Table No.3: Energy Use

Energy Use (kg of oil equivalent per capita)												
S. N	**YEA R**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
		IND	**Developed Countries**					**Developing Countries**				
			AUS	**DEU**	**NLD**	**NOR**	**USA**	**BGD**	**CHN**	**MEX**	**PAK**	**ZAF**
1	**2000**	438 (5%)	5644 (70%)	4092 (51%)	4598 (57%)	5810 (72%)	8057 (100)	138 (2%)	920 (11%)	1394 (17%)	445 (6%)	2483 (31 %)
2	**2001**	438 (6%)	5447 (70%)	4208 (54%)	4712 (60%)	5943 (76%)	7828 (100)	148 (2%)	933 (12%)	1409 (18%)	443 (6%)	2503 (32 %)
3	**2002**	444 (6%)	5570 (71%)	4106 (52%)	4688 (60%)	5489 (70%)	7843 (100)	149 (2%)	979 (12%)	1398 (18%)	439 (6%)	2415 (31 %)
4	**2003**	448 (6%)	5569 (71%)	4082 (52%	4808 (62%	5919 (76%	7794 (100	155 (2%)	1108 (14%	1451 (19%	451 (6%)	2546 (33

				)	)	)	)		)	)		%)
5	**2004**	466 (6%)	5598 (71%)	4112 (52%)	4857 (62%)	5756 (73%)	7882 (100)	155 (2%)	1265 (16%)	1470 (19%)	474 (6%)	2757 (35 %)
6	**2005**	479 (6%)	5564 (71%)	4084 (52%)	4803 (61%)	5790 (745)	7846 (100)	159 (2%)	1362 (17%)	1523 (19%)	483 (6%)	2710 (35 %)
7	**2006**	498 (6%)	5552 (72%)	4203 (55%)	4700 (61%)	5821 (76%)	7698 (100)	168 (2%)	1479 (19%)	1524 (20%)	493 (6%)	2655 (34 %)
8	**2007**	521 (7%)	5693 (73%)	3984 (51%)	4844 (62%)	5850 (75%)	7758 (100)	174 (2%)	1551 (20%)	1546 (20%)	510 (7%)	2811 (36 %)
9	**2008**	538 (7%)	5764 (77%)	4035 (54%)	4837 (65%)	6237 (83%)	7488 (100)	180 (2%)	1601 (21%)	1573 (21%)	492 (7%)	2981 (40 %)
10	**2009**	585 (8%)	5628 (80%)	3789 (54%)	4729 (67%)	6171 (87%)	7057 (100)	188 (3%)	1717 (24%)	1505 (21%)	490 (7%)	2844 (40 %)
11	**2010**	599 (8%)	5560 (78%)	4004 (56%)	5021 (70%)	6621 (92%)	7162 (100)	202 (3%)	1889 (26%)	1495 (21%)	487 (7%)	2809 (39 %)
12	**2011**	616 (9%)	5500 (78%)	3801 (54%)	4638 (66%)	5652 (80%)	7029 (100)	207 (3%)	2044 (29%)	1538 (22%)	482 (7%)	2752 (39 %)
13	**2012**	637 (9%)	5644 (83%)	3886 (57%)	4690 (69%)	5817 (85%)	6815 (100)	214 (3%)	2143 (31%)	1559 (23%)	479 (7%)	2675 (39 %)
14	**2013**	643 (9%)	5592 (81%)	3874 (56%)	4594 (66%)	6487 (94%)	6909 (100)	216 (3%)	2200 (32%)	1492 (22%)	504 (7%)	2896 (42 %)
15	**2014**	661 (10%)	5622 (83%)	3826 (56%)	4757 (70%)	6239 (92%)	6804 (100)	222 (3%)	2306 (34%)	1571 (23%)	508 (7%)	2926 (43 %)
16	**2015**	679 (10%)	5626 (84%)	3801 (57%)	4758 (71%)	6277 (94%)	6709 (100)	228 (3%)	2411 (36%)	1582 (24%)	512 (8%)	2956 (44 %)
C.G.R		**3.00**	**0.07**	**-1.00**	**0.02**	**1.00**	**-1.00**	**4.00**	**7.00**	**1.00**	**1.00**	**1.00**
MEAN		**543**	**5598**	**3993**	**4752**	**5992**	**7417**	**181**	**1619**	**1502**	**481**	**2732**
C.V		**16**	**1.00**	**4.00**	**2.00**	**5.00**	**6.00**	**16**	**31**	**4.00**	**5.00**	**6.00**

(Source: International Energy Agency (IEA Statistics ℘ OECD/IEA, http://www.iea.org/stats/index.asp and World development Indicators-last updated: 19/07/2016)

Governments in several countries are progressively responsive to the urgent need to make better use of the World's energy resources. Improved energy efficiency is often the foremost economic and promptly accessible means that of improving energy security and reducing gas emissions. To support better energy efficiency policy-making and evaluation, the International Energy Agency (IEA) is developing in-depth indicators of energy use, efficiency trends and carbon dioxide emissions (International Energy Agency, 2008. p.9). Energy growth is directly connected to well-being and prosperity across the World. Meeting the growing demand for energy during a safe and environmentally accountable manner is a key challenge. By 2040, population and economic process will drive demand higher; however the World will use energy more efficiently and shift toward lower-carbon fuels (Imperial, 2016). In developing countries, energy demand can grow near 60 percent as five-sixths of the World's population strives to boost their living standards. In developed economies, energy demand can remain basically flat (Imperial, 2016).

Energy is an input necessary for both the production as well as consumption activity. The comparative analysis reveals that developed countries selected for study are very much ahead in energy consumption than the developing countries. Their energy consumption stood between 3993 Kg oil equivalent per capita to 7417. South Africa, China and Mexico developing countries are in good position in energy consumption, but not the better. The position of India is not good at all, which has only 543 Kg oil equivalent per capita energy consumption. Thus developed countries have succeeded a lot in enhancing energy consumption and resource use which will enable them to move towards green economy than the developing countries.

Table No. 4 : Forest Rents

Forest Rents (% of GDP)												
Sr. No	**YEAR**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
		IND	**Developed Countries**					**Developing Countries**				
			AUS	**DEU**	**NLD**	**NOR**	**USA**	**BGD**	**CHN**	**MEX**	**PAK**	**ZAF**
1	**2000**	1.64	0.22	0.09	0.01	0.13	0.14	1.00	0.56	0.18	0.94	0.92
2	**2001**	1.58	0.23	0.07	0.01	0.13	0.12	0.99	0.51	0.17	1.02	0.97
3	**2002**	1.79	0.25	0.08	0.01	0.16	0.14	0.94	0.46	0.17	1.12	1.23
4	**2003**	1.64	0.25	0.08	0.01	0.12	0.14	0.95	0.56	0.18	1.05	1.00
5	**2004**	1.17	0.16	0.07	0.01	0.10	0.12	0.89	0.44	0.16	0.68	0.56
6	**2005**	1.01	0.15	0.07	0.01	0.10	0.12	0.80	0.34	0.14	0.61	0.63
7	**2006**	1.37	0.17	0.09	0.01	0.10	0.13	1.09	0.43	0.17	0.73	0.73
8	**2007**	1.45	0.19	0.11	0.01	0.12	0.14	1.63	0.40	0.18	1.05	0.64
9	**2008**	1.44	0.19	0.09	0.01	0.11	0.15	1.30	0.46	0.19	0.90	0.92
10	**2009**	1.20	0.17	0.07	0.01	0.10	0.11	1.10	0.35	0.20	0.85	0.75

11	**2010**	1.80	0.14	0.09	0.01	0.12	0.11	1.84	0.34	0.34	1.51	0.52
12	**2011**	1.65	0.12	0.08	0.01	0.10	0.11	1.67	0.31	0.24	1.25	0.45
13	**2012**	1.28	0.09	0.08	0.01	0.09	0.10	1.11	0.29	0.24	0.89	0.55
14	**2013**	1.36	0.09	0.08	0.01	0.10	0.10	1.10	0.27	0.23	0.89	0.60
15	**2014**	1.36	0.09	0.08	0.01	0.09	0.10	1.48	0.26	0.26	1.04	0.46
16	**2015**	1.35	0.08	0.08	0.01	0.09	0.10	1.52	0.24	0.27	1.05	0.42
C.G.R		**-1.00**	**-7.00**	**0.18**	**0.00**	**-3.00**	**-2.00**	**3.00**	**-5.00**	**4.00**	**1.00**	**-5.00**
MEAN		**1.44**	**0.16**	**0.08**	**0.01**	**0.11**	**0.12**	**1.21**	**0.39**	**0.21**	**0.97**	**0.71**
C.V		**16**	**36**	**13**	**0.00**	**17**	**14**	**26**	**27**	**25**	**23**	**33**

(Source: Estimates based on sources and methods described in "The Changing Wealth of Nations: Measuring Sustainable Development in the New Millennium"-World Bank, 2011 and World development Indicators-last updated: 19/07/2016)

Forest rent earn from economic activities by human depends upon forest sector. But there's no commonly agreed definition of the forestry sector. Ideally, the sector ought to include all economic activities that principally rely upon the production of goods and services from forests. It may even include economic activities associated with provision of forest services however, although it would be difficult to determine precisely that activities are really dependent on forest services (FAO, 2014. p.8). Estimates of the number of people account direct and indirect benefits from forests within the form of employment, forest products, and direct or indirect contributions to livelihoods and incomes range between 1 billion to 1.5 billion (Agrawal, Arun et al., 2013. p.4).

Forest is a very important natural resource, hence its efficient use enables in attaining green economy. The data results relating to forest rents reveal that all the developed and developing countries have failed in using efficiently forests as natural resources except a few countries like India (1.44%) and Bangladesh (1.21%), which are developing countries basically. This is due to lesser forest area and priority to industry and service sector development. But it is urgent need of the hour to increase forest area and also extract forest rents for efficient use of natural resource like forest and attaining green economy also.

Table No. 5 : Total Natural Resource Rents

Total Natural Resources Rents (% of GDP)												
Sr. No	**YEAR**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
		IND	**Developed Countries**					**Developing Countries**				
			AUS	**DEU**	**NLD**	**NOR**	**USA**	**BGD**	**CHN**	**MEX**	**PAK**	**ZAF**
1	**2000**	3.82	3.98	0.23	1.78	19	0.97	3.28	3.03	4.77	4.88	1.70
2	**2001**	3.89	3.90	0.20	1.74	16	0.80	3.31	2.56	3.90	5.02	2.38
3	**2002**	3.62	3.54	0.17	1.14	14	0.63	2.80	2.19	3.79	4.39	2.34
4	**2003**	3.79	3.70	0.20	1.50	15	0.91	3.86	2.58	5.18	6.42	2.16
5	**2004**	4.46	4.17	0.20	1.70	17	1.10	3.94	4.90	6.45	6.47	4.15
6	**2005**	4.88	5.61	0.25	2.36	21	1.47	5.61	5.26	8.58	8.99	3.64
7	**2006**	5.51	6.83	0.27	2.10	20	1.53	6.06	6.02	9.12	7.55	4.47

8	**2007**	6.15	9.15	0.28	1.81	17	1.61	6.38	7.04	8.75	7.41	5.94
9	**2008**	9.18	10.89	0.34	2.59	21	3	7.75	10.43	10	9.30	12
10	**2009**	4.61	6.47	0.17	1.12	13	0.98	4.04	4.20	6.86	4.76	5.72
11	**2010**	6.26	9.54	0.19	1.17	13	1.20	4.52	6.56	7.73	5.36	7.47
12	**2011**	6.67	10.19	0.23	1.10	14	1.56	4.38	7.74	9.13	4.94	8.69
13	**2012**	5.06	7.50	0.17	0.96	12	1.33	3.50	5.43	8.68	4.10	7.23
14	**2013**	4.85	7.16	0.15	1.02	11	1.25	3.41	4.46	7.68	3.86	6.77
15	**2014**	6.60	10.10	0.21	1.19	13	1.65	4.98	7.49	10	5.41	9.42
16	**2015**	6.79	10.57	0.20	1.14	12	1.70	5.05	7.80	10	5.33	10
C.G.R		**4.00**	**8.00**	**-1.00**	**-4.00**	**-3.00**	**4.00**	**2.00**	**7.00**	**6.00**	**-1.00**	**12**
MEAN		**5.38**	**7.08**	**0.22**	**1.53**	**16**	**1.36**	**4.55**	**5.48**	**7.54**	**5.89**	**5.88**
C.V		**28**	**38**	**23**	**33**	**21**	**40**	**30**	**42**	**29**	**28**	**53**

(Source: Estimates based on sources and methods described in "The Changing Wealth of Nations: Measuring Sustainable Development in the New Millennium"-World Bank, 2011 and World development Indicators-last updated: 19/07/2016)

Many countries within the world are rich in natural resources. And in most cases, those natural resources represent a vital engine for the country's economy. Most recent data shows that these numbers are still on the rise, with natural resource rents worth 3.7 trillion US-Dollar and there with 5.1 percent of worldwide GDP in 2012. Similarly various resources were gradually contributing in total global natural resources rents such as 63 percent of oil, 15 percent by minerals, 8 percent by natural gas, 8 percent coal and 6 percent by forestry (Sustainable Natural Resource Management, 2014).

Natural resources are very precious and important resources hence their efficient use is of crucial importance for attaining green economy. It is found that, the developing countries are efficiently using natural resources than the developed countries. The performance of India is also good, in this regard. All the selected developing countries have derived natural resources rent in considerable extent, which was between 4.55 percent to 7.54 percent of GDP. India extracted natural resource rent worth of 5.38 percent of GDP, is also good. This adequately reveals that, developed countries are not using the natural resources efficiently, rationally, which needs attention and sincerity.

HYPOTHESIS TESTING:

The hypothesis of the present research study is tested as follows.

- **H_0-**Developed countries are not rigorous and sincere in attaining green economy than the developing countries of the World.
- **H_a-**Developed countries are rigorous and sincere in attaining green economy than the developing countries of the World.

The researcher has used the independent sample (Two tailed) t-test for testing this hypothesis. This test has been 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

selected areas along with finding out whether they are successful or not the developed countries than developing.

Table no.6: Hypothesis Testing Results

Independent sample t-test (Two tailed test) at 95 Percent Confidence Interval							
Sr. No	**Sub-Hypothesis**	**Degree of Freedom**	**T-Calculated Value**	**T-Table Value**	**P-Value**	**Mean Difference**	**Decision (Accept or Reject)**
			Equal variances assumed				
1	**H_0**-There is no significant export of agricultural raw materials from developed countries than developing.	9	1.097	2.262	.301 (P>0.05)	.64867	**H_0-Accept**
	H_a- There is significant export of agricultural raw materials from developed countries than developing.						H_a-Reject
2	**H_0**-Developed countries have not significantly consumed the electric power than developing countries	9	3.624	2.262	.006 (P<0.05)	10780.33	H_0-Reject
	H_a- Developed countries have significantly consumed the electric power than developing countries						**H_a-Accept**
3	**H_0**-Energy use in developed countries is not significantly efficient than developing countries	9	6.435	2.262	.00012 (P<0.05)	4374.06	H_0-Reject
	H_a- Energy use in developed countries is significantly efficient						**H_a-Accept**

	than developing countries.						
4	**H_0**-Forest rents in developed countries are not significantly efficient than the developing countries.	9	-3.366	2.262	.008 (P<0.05)	-.72567	H_0- Reject
	H_a- Forest rents in developed countries are significantly higher than developing countries.						**H_a- Accept**
5	**H_0**-Total natural resource rents are not significantly higher in developed countries than developing.	9	-.204	2.262	.843 (P>0.05)	-.54867	**H_0- Accept**
	H_a- Total natural resource rents are significantly higher in developed countries than developing.						H_a- Reject
The results are significant at 0.05 percent significant levels for 09 degrees of freedom							

The study has used independent sample t-test to all indicators of one principal area of the green economy, at 0.05 percent significance level at 9 degrees of freedom (d.f). Above results show that out of five selected indicators of the green economy in resource efficiency perspective, 4 indicators significantly contributed in achievement of green growth in developed countries compared to developing countries. Because hypothesis probability values as well as table-values are less than the 0.05 percent significance level and calculated t-value.

We conclude based on statistical hypothesis test results that with reference to the green economy in resource efficiency perspective except the hypothesis relating to first and fifth indicator of resource efficiency all other i.e. three indicators reveal that the alternative hypotheses have been accepted and null hypotheses have been rejected. They indicate that the developed countries have significantly efficiently consumed electric power, energy, forest rent with exception of agricultural exports and natural resource rents. The developing countries are efficiently using natural resources than the developed countries. The performance of India is also good, in this regard.

This reveals that the developed countries have partially succeeded in achieving green economy and thereby sustainable development of their economies, and more or less the same is

the situation of developing countries. This poses the need for further policy and planned efforts to realize green economy as well as sustainable development.

V) MAJOR FINDINGS AND POLICY FORWARD:

The major findings of the present research study are as follows; On the front of export of agricultural raw materials both the developed and developing countries have failed with a few exceptions in resource efficiency as well as realizing green economy. All the developed countries are very much ahead in electricity consumption than all the developing countries except China, Mexico and South Africa. The electricity consumption in India is meager and lesser only. Developed countries selected for study are very much ahead in energy consumption than the developing countries. And the position of India in this regard is not good at all. All the developed and developing countries have failed in using efficiently forests as natural resources except a few countries like India (1.44%) and Bangladesh (1.21%), which are developing countries basically. The developing countries are efficiently using natural resources than the developed countries. The performance of India is also good, in their regard. This reveals that the developed countries have partially succeeded in achieving green economy and thereby sustainable development of their economies, and more or less the same is the situation of developing countries.

The policy suggestions of the present study are; International mechanism should be developed to renewable natural resource utilization and depletion by the developing as well as developed countries. It is urgent need of the hour to formulate and implement a forest policy at international level by the agency like world resource institute for both developing as well as developed countries because area under forest is inadequate and unsatisfactory. Governments of all the countries both developed and developing should be more active and dynamic in realizing their green economy. Participation and involvement of people should be obligatory and enhanced in undertaking various activities useful for attaining the green economy. A separate budget namely green budget or an important part of public budget of all the developing, developed countries should be prepared and implemented to undertake green economy created activities.

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