THE PER CAPITA APPROACH TO THE PRINCIPLE OF CBDR-RC IN CLIMATE CHANGE REGIME

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Abstract

The principle of Common and Differentiated Responsibilities and respective Capabilities is enshrined in the United Nation Framework Convention (1992) as a guiding principle to ensure equity in climate change regime. India has been vocal speaker of the equity issue in the regime. The CBDR-RC is significantly highlighted in subsequent negotiations in pursuant of a global treaty to reduce GHG emission to avert climate change. However, it has been a contentious issue between developing and developed countries since the beginning of the climate change regime. Despite the common consensus over the principle, the difference of approach to the principle is a root cause of the disagreement. In the present paper, the principle of CBDR-RC has been attempted to explore in light of 'aggregate' and 'per capita' notion.

Key Words: *CBDR-RC, UNFCCC, Climate Change, Per capita.*

Introduction

Anthropogenic GHG emission is an immense threat to the existence of the life on the earth. It has been well established fact now that the earth's average temperature is increasing due to the accumulation of Green House gases in the atmosphere. The Intergovernmental panel on Climate Change (IPCC) has published its various scientific reports to assess the severity of the issue. In its 4th report (IPR4), it has been clearly indicated that to keep the earth safe from the adverse impacts of the climate change, the average rise of global temperature should be under 2^{0}C or in best case scenario it should be less than 1.5^{0}C.

The issue of climate change was first came in political arena in 1972 at Stockholm conference as an Environmental issue. The Stockholm conference was determined to raise consciousness about the potential of humans to cause environmental damage. The tone of conference was divisive as developing countries under the leadership of Indian Prime Minister Mrs. Indira Gandhi accused developed nations for environmental degradation and preferred development over the environment. She said that "poverty is a greatest polluter" and developing countries should focus on the eradication of poverty through the development. Most of the world population lives in developing countries under deprived condition from the basic needs like safe drinking water, electricity, Health, Food, Sanitary and so on. Amid of the pressure from developed nation for global efforts to safeguard the environment, developing countries perceived that this could be a new form of colonialism to hinder the growth prospects of developing countries.

Prior to historical 'Earth Summit', India had been struggling to find the concrete concise and compact principle to validate its position in the regime. Ultimately, India, China and other developing countries promoted the Principle of CBDR as an equity principle to ensure climate justice. But differences were emerged due to the different approach of developing and developed countries in defining the CBDR-RC. The Developing were approaching the equity with 'per capita' norm while developed countries were willing to prefer 'aggregate' norm.

The CSE is the most vocal proponent of 'Per Capita' norm to differentiate mitigation obligations between developed and developing countries. India's official position on equity and right for development is based on the 'Per Capita' norm which was suggested by the CSE. It is pertinent to mention that in 1991, Washington based private research group 'World Resource Institute' (WRI) published a report blaming developing countries for climate change. The CSE published a counter report named 'Global Warming in

Unequal World' and criticized the WRI report for faulty interpretation of data to frame developing countries responsible for climate change. The CSE report mentioned that "the WRI report is based on less on science and more on politically motivated and mathematical jugglery". The conclusions drawn in CSE report was the core argument of India during the 'Earth Summit' held in 1992 (Narian, 1991).

Thus, the CBDR-RC enshrined in the UNFCCC is consistently remains at the centerpiece of negotiation with respect to the mitigation, Adaptation, Finance and technology Transfer under the climate change regime. The CBDR-RC in its operational form attributed to the differentiation between Annex-I parties (developed) and Non-Annex Parties (developing) in the Kyoto Protocol.

Arguments for CBDR in the Climate Change Regime

The justification of CBDR in climate change regime is rely upon two main principles, one the equality and polluter pays principle and second, the economic and capacity principle.

The equity and polluter pays principle: From the beginning of Climate change regime in international political arena, developing countries consistently advocating and advancing the argument that developed countries are primarily responsible for environmental degradation. Hence, in context of their historical emission they have to bear the burden of averting climate change.

Under the climate change regime it is established and well accepted fact that atmosphere is common heritage of humankind. Therefore, every individual has equal right to share the natural resources of the earth. Proponent of this school of thought is mostly from developing world. They are continuously emphasizing the idea of "Per Capita" as this is a direct measure of human welfare, expressed and accepted in international negotiations. From developing countries point of view the Notion of 'Per Capita' is most significant criteria for deciding the equal right to environmental space. (Thadeus, 2010)

Developing countries particularly, China and India were frontiers to raise the per capita norms in climate change regime to combat climate change. They had very clear assumption that progressive convergence towards an equitable distribution of emission rights should be based on per capita norms. In Figure 1 CO_2 emission of developed and developing countries has been shown in different three years.

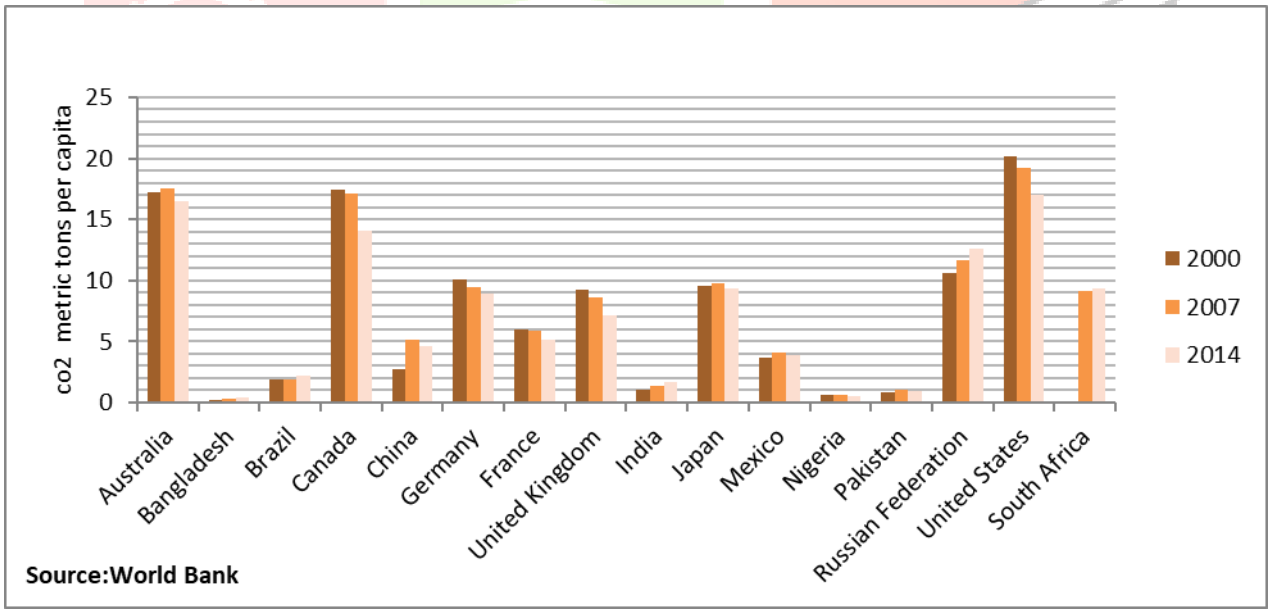

Fig.1 Co2 Emission per Capita

CBDR is mostly framed to compare per capita or national emission levels. These indicators capture the relevant notion of responsibility, however fails to capture other facets. Per capita emission captures the population size but does not cover the causal-contribution aspect concerning responsibilities of sovereign states at the international level. It is clear from the Fig.1 that larger emission blocks belongs to developed countries, assigns greater responsibility to developed countries in combating climate change. If the same

data is compared on the basis of national aggregate emission (which does not capture population size), different picture emerges.

By side to side comparison in Figure 2 and Figure 3, it is clear that China is topping the list of large emitters followed by US, India and Russian federation in aggregate Co2 emission. In fact, China has surpassed US in 2007 and became largest Co2 emitter. But if the aggregate Co2 emission is compared on the per capita basis (Fig.3), developing countries are far behind than those of developed nations.

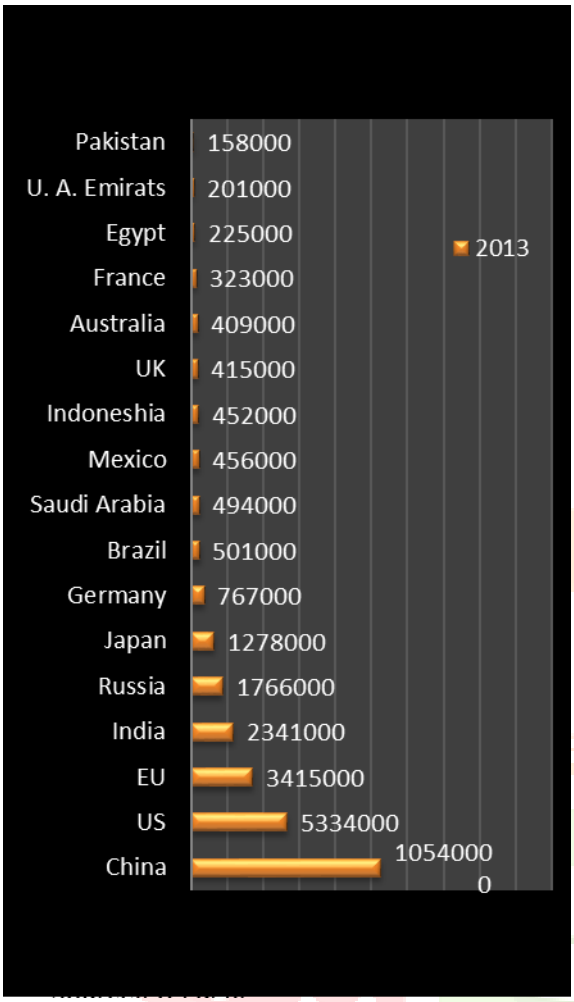

Fig2.CO_2 Emission(Kts)2013

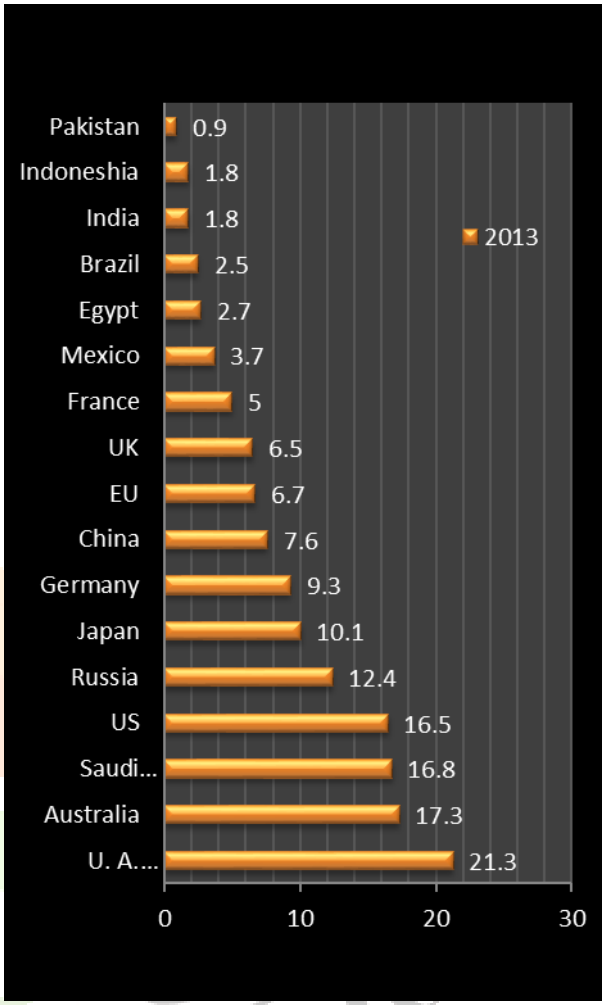

Fig.3 CO_2Emission in Per Capita(tons)2013

Source: EU Edgar

On the basis of data obtained from EU EDGAR (Emission database for Global Atmospheric Research) for the year 2013, it is clearly illustrated that on the basis of aggregate nation wise indicator developing countries have to opt mitigation efforts in combating climate change.US is very keen to include large developing emitter like China and India in any meaningful agreement to mitigate GHG. On the flip side, China and India are consistently advocating the per capita indicator to decide the distribution of mitigation efforts. They have made it clear that per capita is the only basis to ensure equity in any meaningful agreement.

Again, the per capita argument is logically transformed in the notion of 'Carbon Debt'. The notion of 'carbon debt' recognizes historical emission of developed countries. According to the notion of carbon Debt, those using more than their fair share over the global average (on per capita basis) are running of debt to those using less than their fair allocation. (Robbin, n.d.)

The North owes a climate debt to the South and it is rising. The North's high historical emission, coupled with its continuing failure to reduce GHG emissions substantially, have only left a limited, indeed minuscule, carbon budget on which the Southern countries must pursue their development objectives-providing to their poor people a modicum of food and water security, primary health care, literacy, elementary education, access to energy, and employment security. (Bidwai, 2012)

Although it has been always a critical issue to estimate the total carbon space and assign respective emission rights on the basis of such estimate to nations. However, the notion of carbon debt significantly boosted the legitimacy of per capita Argument which eventually transformed into the requirement of special provisions of consideration, technology transfer and importantly financial assistance from developed countries.

The Economic and Capacity Argument

Vulnerability to climate change impacts is divisive, it differ country to country, depending on the economical social and institutional structure of a particular country. Highly concentrated rural population and dependency on agriculture and natural resources, makes developing countries more vulnerable to climate change impacts. According to World Bank data for the year 2014, 70 % of world's poor who live in rural areas, depends on agriculture for their livelihood. Climate change poses a serious threat to these population, which is mostly concentrated in developing and under develop countries. The global average of rural populations is 47%, against this world average, rural population in least developed countries is 69%; in pacific island small states it is 63%; in South Asia it is 67% and in Sub-Saharan Africa it is 63%.While a well below of global average, rural population in OECD members is 20% and in Euro area it is 24%. (World.Bank, 2014)

Table No. 1 Rural population (% of total population)

Country Name	1991	2000	2007	2014
Australia	14.6	12.8	11.7	10.7
Brazil	25.3	18.8	16.6	14.6
Canada	23.4	20.5	19.6	18.4
Bangladesh	**79.7**	**76.4**	**71.8**	**66.5**
China	**72.7**	**64.1**	**54.8**	**45.6**
Germany	26.7	26.9	26.3	24.9
France	25.8	24.1	22.4	20.7
Indonesia	**68.4**	**58.0**	**52.5**	**47.0**
India	**74.2**	**72.3**	**70.1**	**67.6**
Japan	22.5	21.4	12.0	7.0
Mexico	28.2	25.3	23.1	21.0
Nigeria	**69.8**	**65.16**	**59.18**	**53.0**
Pakistan	**69.2**	**66.8**	**64.6**	**61.7**
Russian Federation	26.6	26.7	26.4	26.1
South Africa	47.4	43.1	39.4	35.7
United Kingdom	21.8	21.35	19.52	17.6
United States	24.3	20.9	19.7	18.6
World	56.7	53.5	50.0	46.6

Source: World Bank

It is clear from the table No. 1that highest rural population to the total population mostly living in developing countries (Highlighted) and more prone to impacts of climate change.

Vulnerability to climate change and its impacts is directly proportional to the degree and nature of economic dependency on the natural resources. Climate change is certainly affecting the long term pattern of the weather of a region or country and thus, posing a greater risk to the stability of the economies which are highly depended on agriculture and natural resources. An assessment can be drawn from the data compared in the table No.2

Table No.2 Agriculture Value added to Total GDP in % Term

Developing		Developed		
Country Name	2011	Country Name	2011	
Ethiopia	41.0	Kuwait	0.3	
Mali	38.8	UK	0.7	
Burma	38.2	Canada	0.7	
Afghanistan	34.9	Germany	0.8	
Cambodia	30.0	US	1.2	

Zambia	21.4	Japan	1.2	
Pakistan	20.9	Switzerland	1.3	World Average
Albania	20.7	France	1.8	6.1
Kenya	19.0	EU	1.8	
Bangladesh	18.4	Denmark	1.9	
Nigeria	17.8	Itly	2.0	
India	17.2	Norway	2.6	
Indonesia	14.7	Poland	3.4	
Egypt	14.5	Australia	4.0	
China	10.1	Russia	4.5	
Brazil	5.5	New Zealand	4.8	

Source: IMF

Illustration of Table No. 2 clearly indicates that agriculture sector is a major contributor to the GDP of developing countries and this sector is more vulnerable than to other sectors of GDP. Decrease in crop yield makes the social structure unstable and could lead to social conflicts in developing countries. Again the poor infrastructure, weak governance and poor functioning of institutional structures make the impacts of climate change multifold in developing countries.

Apart from Mitigation, adaptation to the impacts of climate change is also linked with economic capacity of a country. Resilient economies are better positioned to cope with adverse effects of climate change in term of adaptation. Adaptation capacity is rely upon the economic capacity of a particular country. It has been always a critical constrain in global negotiations that how to determine the economic capacity of a particular country to adapt climate change. In terms of absolute GDP (PPP) is taken to determine the economic capacity, it reveals that developing countries are not far behind of developed countries. Figure. No.4 the absolute GDP (PPP) is compared on the basis of data published by World Bank for the year 2014. (Worldbank, 2014)

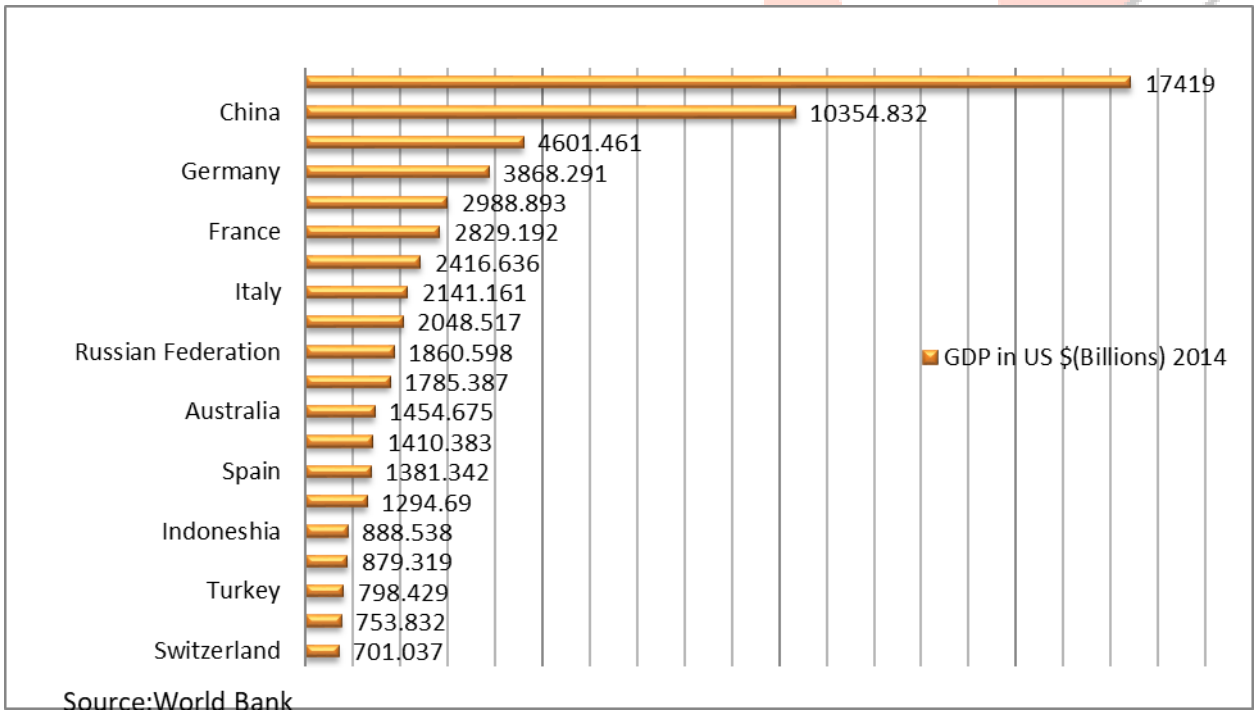

Fig. 4 GDP in US $(Billions) 2014

Figure No.4 Gross Domestic Product(PPP) of top 20 countries has been compared.US is ranked first with the GDP(17419 $ Billions) followed by largest developing country China(10354 $ billions).Besides developed nations, Brazil(7) followed by India(9), Korea Rep(13),Mexico(15) and Indonesia (16).It shows that large developing countries are well economically positioned to cope with climate change and they should accept more responsibility in the endeavor to fight climate change.

Conversely, developing countries have different perspective. They have argued that economic capacity should not be seen in absolute GDP terms, instead, they argued in favor of per capita ratio. In term of GDP per Capita, the above comparison inverts in results. As it reveals from the Figure No. 5 on the basis of GDP per capita indicator large developing economies are far behind of developed nations.

On the per capita basis developing countries are arguing that they should not be compelled to take legally binding emission restriction in account of their requirement for developmental needs to eradicate poverty and meeting the basic needs of their billions of people.

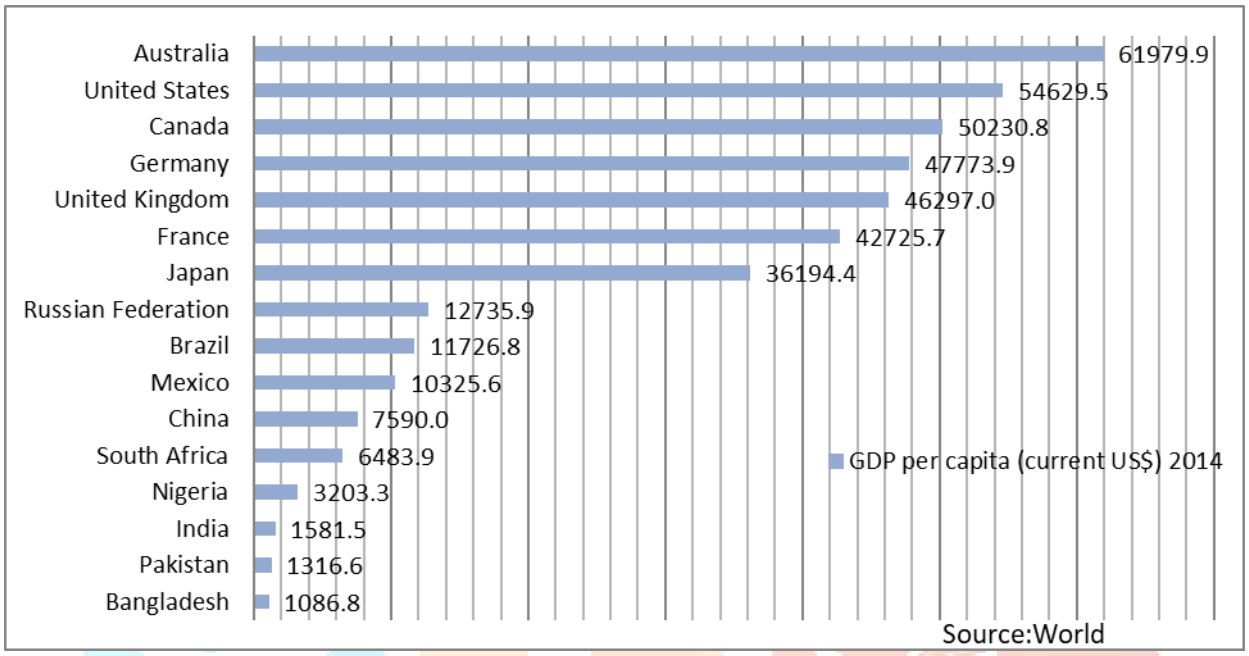

Fig. 5 GDP per capita (current US$) 2014

Illustration of Fig.6 shows that in different four year developed countries are way ahead of developing countries in terms of GDP (PPP) per capita norms. It also reveals from the Fig.6that in some developed countries like France GDP per capita is marginally increased from the year 2007 to year 2014, while it is fallen in UK for the same years. On the other hand it is continuously rising in developing countries year by year. But the aggregate GDP does not capture the true economic vulnerability of the population. In assessment of the economic capacity of a country, the per capita GDP is more relevant than that of aggregate GDP. Despite, the rising GDP of the developing countries, they are far behind of developed states in term of per capita GDP ratio.

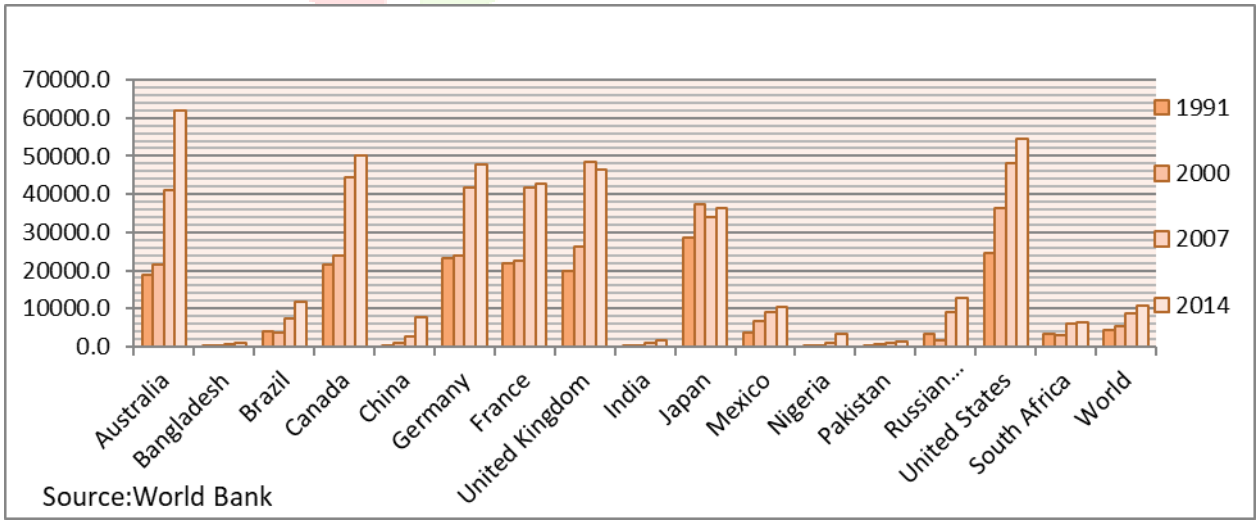

Fig. 6 GDP per capita (current US$)

In climate change regime 'Capacity' is one of the most important criteria for differentiating between countries under the principle of CBDR. Rio Declaration expressly recognized that developed countries responsibility premised on their capability of their superior technologies and financial resources and thus included in UNFCCC

on the basis of their respective capabilities, which is denoted by classification of Annex-I and non Annex countries. (Rajmani, 2012)

The capacity criterion, enshrined in the CBDR, is based on the 'polluter pays principle' which reflects the responsibility of the polluter to bear the cost of averting climate change and adaptation cost of climate change. (Sands, 1995) The capacity criterion is closely linked to the past current, and future contributions criterion.

However the validity of this argument is challenged by the fact that GHG emissions of developing country parties are increasing with a faster pace and are expected to surpass emissions of the US and other developed nations, sooner or later. The combustion of fossil fuel is a main cause of anthropogenic emission of Co2 and world energy use continues to be the contagious issue in global climate change debate. Indeed, developing world emissions began to outpace developed emissions in 2005, and they are projected to continue increasing 7 times faster than in the developed countries. China is now top emitter followed by U.S., and its emissions growth is projected to be 9 times greater than that of the U.S.by 2030. (EIA, 2 November,2009)

International Energy Outlook, 2009 (IEO hereafter) has estimated growth projections for different countries and regions. According to IEO report China and India will grow at faster rate. China is expected to grow with expected rate at 6.4 per year and India is expected to grow at 5.6 annually by 2030.Higher growth requires intensive use of energy and energy portfolios of China, India and other fast developing countries are mainly depended on fossil fuel like coal Natural gas and oil. According to World Bank in year 2011, China's 79% of electricity production is based coal fired power plant and India's 68% electricity was coming from coal based power plants.

On the basis of data obtained from Energy Information Administration, USA, average annual growth in energy related Carbon Dioxide emission in the OECD and non-OECD countries have been charted below for the trajectory of year 2006-2030. From the comparison between OECD and Non-OECD it can be estimated that the collective efforts are needed to address climate change in a comprehensive manner but again, different perspective of developed and developing countries on the equity issue has made it critical to decide the distribution of responsibilities.

On account of robust growth projections in developing countries, their Co2 emission is likely to increase with excess demand for energy at much faster pace as compare to OECD countries. Developed countries, especially US, continuously pressurizing large developing countries to take legally binding emission cuts. On the other hand, developing countries are more concerned of their development requirement and not willing to accept any legally binding emission targets. It is clear from the figure7 and Figure 8 that Co2 emissions related to energy production are projected to grow at the rate of 2.2 % annually in Non-OECD countries from 2006 to 2030 and it is likely to grow in OECD countries at much slower rate 0.3% annually. In non-OECD group Co2 emission (energy related) of Chain, Brazil and India are likely to grow at around 2% annually.
Average Annual Growth in Energy-related CO_2 projection for year 2006 to 2030 is shown below. (EIA, 2009)

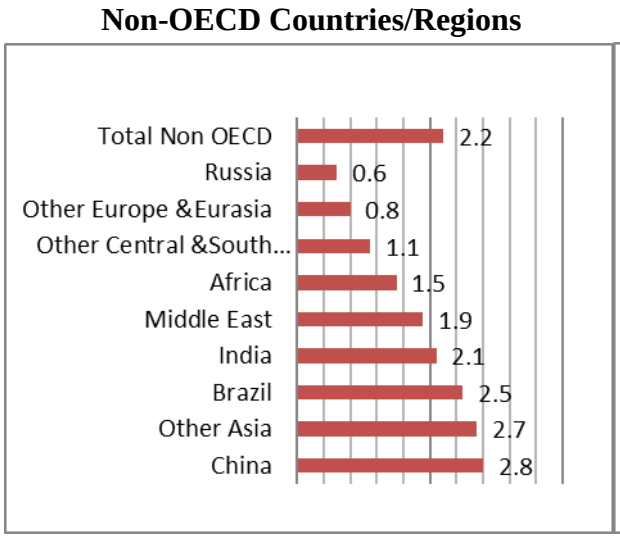

Fig. 7Anuual Growth in %

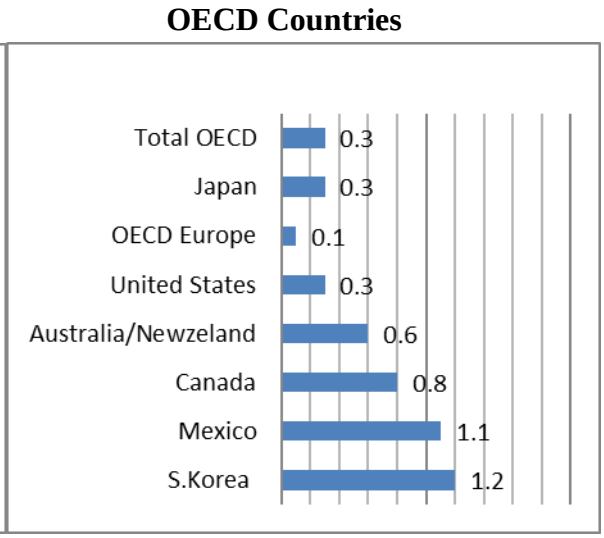

Fig.8 Anuual growth in % Source:IEA

Again when the same projection were done on the basis of per capita indicator Fig. 9 it reveals that despite faster growth in energy related co2 emission in Non-OECD countries, these non-OECD(3.7 metric tons)) countries will not be any close to OECD (11.2 metric tons) countries by 2030.

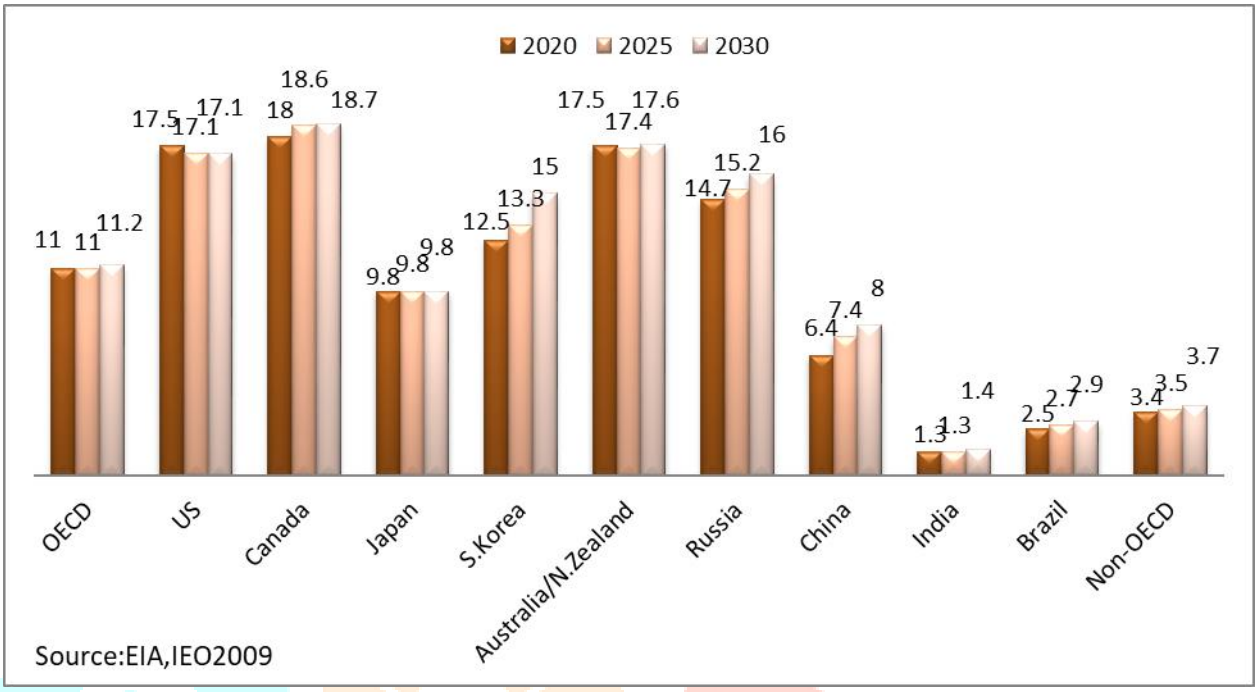

Fig. 9 Projection of Energy related Co2 emission per capita (metric tons)

Conclusion

India is projected to release only 1.4 metric tons per capita Co2 related to energy by 2030 which will be masculine compare to US or Canada.

The principle of 'Common but Differentiated Responsibility and Respective Capabilities"(CBDR-RC) is a fundamental guiding principle of the United Nations Framework Convention(UNFCCC) to lead the negotiations for an agreement for climate change. The CBDR-RC is a centerpiece of various contentious issue emerged during the negotiations. The root cause of disagreement is associated with difference of approach towards defining the principle of CBDR-RC. The Developed states have argument that the GHG mitigation obligations should be distributed on "Differentiated Basis" but according to the "Respective Capabilities". They have clear argument that the 'Major Developing Economies' or 'Advanced Developing Economies' mainly China and India are big GHG emitter and their GHG emission is likely to increase in future, especially India. Therefore, the developed countries compelling India and China to take greater responsibility in averting climate change by reducing their GHG emission.

On the other hand, developing countries have different arguments. They see the global 'common' in term of 'Per Capita'. They argue that every individual have equal right to global atmosphere hence the differentiations should be based on the 'Per Capita' norm. Similarly they have argument that the 'Respective Capabilities' should be measure in term of 'Per Capita'. For developing countries, especially For India and China, the notion of 'Per Capita' is the only equitable basis to define and distribute the mitigation burden.

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