Public Policy Initiative and Shifting Paradigm of Governance in the Context of Climatic Change: Experience from Karnataka State, India

MUZAFFAR H. ASSADI

Abstract: *Climate change has become a major concern of large number of countries including different regions for the past couple of years with the shifting paradigm of development, and commodification of nature. West tries to blame the developing world, the south is equally blaming the west. The concern has grown out of the fear that climate change would affect community life, social structure and agrarian economy including identities of large number of communities. Many of the countries have not prepared themselves for climate change. However exception is Karnataka, a region in India which has prepared with documenting the possible effects of climate change on different regions. In fact climate change requires new form of governance - governance which is receptive, responsive and adaptive.*

Key Words: *Governance, Climate change, Energy, Sustainable Development, Public Policy, Commodification.*

Author: Prof.Muzaffar Assadi, Professor, Dept. of Studies in Political Science, University of Mysore, Manasagangothri, Mysore 570006. Email: muzaffar.assadi@gmail.com, muzaffarassadi@hotmail.com

INTRODUCTION

Climatic change has become a buzz word in recent past both for academics as well as for public policy makers. It is now known as planetary crisis, crisis of the globe etc. At the same time it is no more seen as a concern of environment alone rather a "biggest developmental challenge or concern[1]". The different debates in the context of climate change such as the one on the need for reworking the issues of governance, issues of development, issues of sustainability etc (Devid Held et al 2011. Thomas George et.al, 2011. Albrecht Ansohn, Boris Pleskovic-2010) have percolated down to the domain of policy making too. This is because of the inherent problem in addressing the climate change issue from the perspective of governance. Further it is also due to the belief that climatic change is the result of increasing commercialization of nature both by the individual as well as corporate sector. Incidentally UNESCO argues that "humans are altering the climate"[2], thereby bringing back the human beings as the centrality of and for crisis. At the same time it is argued that climate change ultimately affect the poor more than anybody and thereby any policy making should take into cognizance of its large socio-economic consequence than just

revolving around environmental one. It is here the issues of governance become all the more important. It is in this context it is argued that governance should take into cognizance four important questions: one, how to combat the climatic change through the mediation of different public policy two, will the paradigm shift in the governance help in mitigating climatic change? Three, what would be the socio-economic cost of climatic change? And finally, what would be the nature of governance emerging in the context of climatic change? It is in this background different governments both at the regional as well as national level have taken up the issues much more seriously in recent past.

In fact climate change governance poses different challenges for the contemporary political systems[3]. This is because of the fact

1 UNDP, Ckunate change, Perspectives from Indiam 2009, http://www.undp.org.in/content/pub/ClimateChange/UNDP_Climate_Change.pdf
2 Catherine P. McMullen, Clinate Chanage,Science Compendium 2009, UNESCO., http://www.unep.org/pdf/ccScienceCompendium2009/cc_ScienceCompendium 2009_full_en.pdf
3 James Meadcroft,Climate Change Governacne, The World Bank, 2010,

that climate change effects not only everyday life practices but also the fact that it has larger political consequences too: series of dislocation of population, rehabilitation of displaced population, increasing cost of mitigating the climate change, recurring drought in due course, etc would eventually affect political system to tackle the issues judiciously. This is the reason why the political system ultimately has to take cognizance of the problems afflicting the system. This calls for the paradigm shift in the public policy vis-a-vis the governance. Nonetheless, the governance faces four important problems vis-a-vis the climate change in years to come: They are a) Problem of Societal Reach b) Problem of Equity and Distribution c) Problem of addressing the issues judiciously and d) Problem of adaptability. Nonetheless climate change governance has three requirements (James Meadcroft: 2010): Adaptation Mitigation, paradigm shift in public policy: governance in this context believes in introducing such policies which will take care of the effect of climate change on human activity and politics.

MYTHS AND CLIMATE CHANGE

It is in this context one can understand the kind of myths that have been perpetuated in recent past. One of the myths is that the democratic countries are not adequately prepared to mitigate the climate change due to the political intricacies as well political maneuvering. This particular argument does not hold good to countries like India, including its states like Karnataka. There is sufficient proof to say that democratic country is adequately prepared to face the climate change. This is apparent in the way the pattern of governance shifted from immediate needs to mitigate the problems of future.

Second myth is that developing countries lack holistic picture vis-à-vis the climate change. In fact the developing co untries like India looks at the issues both from larger political perspective but also from socio-economic perspective. In India such issues as poverty, loss of energy, degradation of land, social lifestyle, recurring drought and employment opportunities etc are taken along with climate change.

Third important myth is that developing countries are not sufficiently debating the issues. It is true that in countries like India climate change has become a major concern, even more than the western world. This does not mean that the debate is uniformly spread across the country. In some states there are concerns however issues have been addressed without much debate.

DEBATES AND PERSPECTIVES

There are different perspectives vis-à-vis the climati c change. One perspective tries to look at the issues by linking it to the larger issues of economic growth and prosperity. Sunita Narain for example argues that, "the more prosperous country's economy is higher is its fossil fuel consumption, resulting in higher Greenhouse gas emission"[4].

Adding to this the second argument tries to locate the reason for changing climate change in the over consumption of rich countries than by the poor countries. It is argued that "the unsustainable consumption pattern of rich industrialized nations are responsible for the threat of climate change, argues Kirtit h Parikh (Kirit Parikh:2002)"[5]. It is further argued that "only 25% of the global population lives in these countries, but they emit more than 70% of the total global CO emissions and consume 75-80% of many of the other resources of the world.

Thirdly it is also seen as changing the patterns of consumption and distribution also. This calls for a paradigm shift from the key industry to low carbon emission economy. In other words climate change is seen as part of changing political economy of development. It requires what is called development of new technologies and doing away with the traditional one.

All these have made to find out whether issues of climate change is a political one? Given the controversy in recent past centering around the issues of cap on carbon omission, historical role played by the industrialized countries in sharpening Greenhouse, role of developing

4 Sunita Narain, A Just climatie Change agreement: Thr Framework for an effective global deal" in Catherine P. McMullen, Clinate Chanage, Science Compendium 2009, p 10. See. UNESCO., http://www.unep.org/pdf/ccScienceCompendium2009 cc_ScienceCompendium2009_full_en.pdf

5 Jyothi K Parikh and Kirit Parikh, Climate Change:India's Perceptions,Positions, Policies and Possibilitiess,IGIDR< Mumbai. 2002. p2

countries in addressing the larger issues of survival etc., have contributed to the fact that climate change has become highly contested political issue.

EFFECTS OF CLIMATE CHANGE

Over the past couple of years effects of climatic change is witnessed in different parts of the world including India. These are discernible in the following:

* In 2007 Alaska witnessed highest snow fall in 30 years
* In 2008 Central Canada witnessed subzero temperature
* In 2009 South Carolina witnessed worst wild fire
* In 2009 Mexico witnessed worst draught in 70 years
* In 2008 Hurricane Bertha Atlantic Tropical Storm
* In 2009 China witnessed worst drought in 50 years
* 2008 Florida witnessed Tropical Storm Fray

Debate and Public Policy Governance on Climate Change in India

In India the main concern centered on the issues of reduction in the productivity of agriculture, increase in drought and flood frequency, increase in sea level water and frequency of extreme events. That does not mean that there wasn't other concerns too. In fact in India the concern also expressed on the social categories who contributed towards climate change. It was found that in India the large amount of climate change came from urbanite, rich including the fact that it is centred around some sectors such as power energy 48% of emissions, followed by road transport (10%), iron and steel (10%). The class / sectarian nature of the climate change is apparent in the following:

Per Capita Annual Energy Use (Direct and Indirect) 1989-90*

Income Group	Coal (kg)	Oil (kg)	Elec (Kwh)	Carbon (t)
Rural				
Bottom(50%)	74	22.5	95	054
Middle (40%	127	39.7	152	093
Top (10%)	262	89.8	284	204
Urban				
Bottom (50%)	130	45.6	164	101
Middle (40%	302	118.6	366	246
Top (10%)	765	332.3	858	656

In India other concern is that it would adversely affect the sustainable development. In fact in India the climate change is not viewed in isolation but rather linked to the larger issues of science and technology, economy and trade, diplomacy and politics.

It is in this context Central Government has come out with a National Action Plan for Climate Change. This action plan combined the issues of sustainable development with climate change. It has had couple guiding principles: Protection of poor and vulnerable groups through what is called "inclusive and climate change sensitive development", secondly, achieving growth through sustainable development", thirdly "integration of demand side of management for the purpose of saving resources", and fourthly, adaptation of appropriate technologies, engineering of new technologies, sustainable development ." Its mission centred around seven important issues. They include energy security with emphasis on solar energy and its decentralization, two, energy efficiency which include green projects, captive generation, three sustainable Habitat which include development of energy efficient building, and waste management, fourthly water management - this include establishment of water database for the purpose of its utilization in the public domain, promotion of judicious management of water. In fact most important is the Green

India Project. This project include Enhancing Carbon Sink potentials to bring down Greenhouse gases, enhancing resilience of species and eco-systems to reduce vulnerability," "enabling adaptation of forest dependent local people in the context of climatic vulnerability". Other two issues are Sustainable Agriculture and Strategic Knowledge. In the former case, the stress is on increasing the share of dry and rain fed agriculture, enhancement of farm productivity and risk management and in the latter case, establishment of Central Knowledge System and increasing the capacity building of people and institutions.

DEBATE IN KARNATAKA

Unlike all India level, debate in Karnataka is a much muted affair. There was hardly any attempt to see the issues as political one; even there is no attempt to see the politics of industrial countries who were trying to dominate the issues of climate change. Most of the time the issues of climate change is viewed as problem of science, and urbanization and industrialization rather than the issues of increased consumption in the western world.

Projections and Concerns of Climate Change in Karnataka

Karnataka is one of the first states in India to initiate steps on climatic change. This is because of the fact that after Rajasthan, Karnataka is said to be the second most vulnerable state in India for climatic change in the years to come[6]. Incidentally, recent study conducted by Indian Institute of Science stated that not all the districts in Karnataka will be uniformly affected by climate change rather five districts of North Karnataka would be badly affected by it by 2030. These five districts include Bidar, Gulbarga, Raichur, Bellary and Bijapur districts. These districts will witness an increase of 2 to 3 degrees Celsius in temperature, and at the same time they witness reduction of 5 to 10 per cent in rainfall. They would witness extremity in weather condition. It is said that northern districts will witness an increase of 2 degree Celsius by the year of 2030. It is further argued that by 2030 state would be witnessing a warming of 1.8 to 2.2 0C

6 Deccan Herald, Change to avoid climate change, December 23, 2010.

Many studies (CSST:2010, ISEC:2010, EMPRI:2010) have predicted that Karnataka will emerge as one of the driest places and it will witness depletion of rain fall in the years to come. It is believed that it will increase the drought by 30 percent. Further it is argued that climate change would affect the green cover in the Karnataka, particularly the Western Ghat regions. It is predicted that by 2035 Karnataka will lose more than 4/2 million square km of forest area which is approximately 38 per cent of the current forest areas. This has led to the growth of areas of concerns. There are other concerns too. One of the major concerns is in the area of land - the increasing use of fertilizer, pesticide and also the degradation of land has led to the thinking of preserving the land. The most important concern is apparent in the sphere of agriculture, poverty and economic status. It is argued that the climate change will deplete agricultural production particularly maize and pulses[7] and thereby increases the vulnerability of peasants or farmers to the vagaries of larger market.

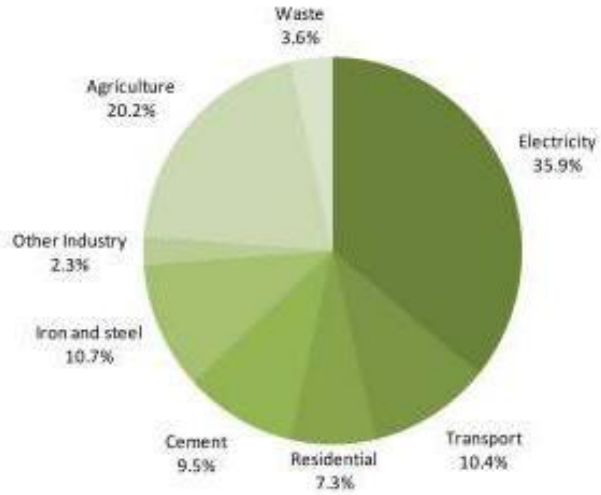
Greenhouse Inventory[8] of Karnataka: Who contributes to Climate Change in Karnataka?

There has been a raging controversy with regard to the Greenhouse inventory. Who literally contributes for the Greenhouse effect in Karnataka is one major question quite often asked. Karnataka is one of the fast developing states in India, and therefore it is easy to link the issues of climate change and the development. In fact Karnataka is now witnessing two paths of

development: Aggressive Path of Capitalist Path and Non-aggressive Path of development. However not all the sectors are contributing the Greenhouse effect. It is found that the contribution of power is highest amounting to 35.90 per cent followed by agriculture 20.2 per cent. Iron and steel is the third sector which affects the climate change in Karnataka, (10.73 per cent) followed by transport 10.48 per cent, and cement (9.58 per cent). This is obvious in the following chart;

7 The Hindu, "climate change to hit north Karantaka hard, March 28 2011,
8 http://www.cstep.in/node/260

FIGURE 1.1 / KARNATAKA: GHG EMISSIONS BY SECTOR



*See notes for Table 1.4 / Karnataka: Summary of GHG Inventory

Interestingly the electricity generation constitute the main culprit of Greenhouse effect in Karnataka. During 2008-09 they contributed nearly 28 per cent towards carbon emission in Karnataka.

TABLE1.1
KARNATAKA : INDUSTRIAL EMISSIONS 2008-2009

INDUSTRY		PRODUCTION (MILLION TONS)	CO2 EMISSIONS (TONS/TONS)	TOTAL CO2 MISSIONS (MILLION TONS)
ALUMINIUM		0.11	1.65	0.180
	Pig Iron	0.23	1.46	0.330
IRON &STEEL	Saleable Steel	0.14	0.70	0.098
	Steel ingots	0.15	0.08	0.012
PAPER		0.37	1.05	0.384

SUGAR	3.40	0.241	0.819
AMMONIA	0.24	0.82	0.197
CEMENT	12.10	0.63	7.642
IRON ORE*	36.39	0.008	0.291
TOTAL			9.954

TABLE1.4

KARNATAKA : SUMMER OF GREENHOUSE GAS (GHG) INVENTORY

	Particulars	Quantity / Production / Area	Production (Units)	CO_2 Emissions (in million tons)	CH_4 Emissions (in million tons)	N_2O Emissions (tons/ tons	CO_2 Equivalence (in Million Tons)
ENERGY	Electricity generation(2009-2010)	11,495	MW	28.76	-	-	28.76
	Transport (2007-08)	-	-	8.35	-	-	8.35
	Residential	-	-	3.57	0.0900	0.002	5.84
INDUSTRY (2008-2009)	Cement production	120.97	Lakh tones	7.64	-	-	7.64
	Iron &steel production	115.4	Lakh tones	8.59	-	-	8.59
	Ammonium production	2.36	Lakh tones	0.19	-	-	0.19
	Aluminum production	1.09	Lakh tones	0.180	-	-	0.18
	Iron ore	423.14	Lakh tones	0.291	-	-	0.29
	Pulp and paper	3.65	Lakh tones	0.38	-	-	0.38
	sugar	33.97	Lakh tones	0.82	-	-	0.82
AGRICULTURE	Enteric formation (2003)	2,56,17,000	Animals	-	0.50	-	10.54
	Livestock manure management(2003)	2,56,17,000	Animals	-	0.04	0.00654	2.93
	Rice cultivation (2007)	1.40	Million hectare	-	0.13	-	2.75
WASTE		-	-	-	0.126	0.00079	2.89
TOTAL							80.6

It as to be pointed out again that the data for the same period was unavailable for all sectors all attempts were made to get the most recent data for each the sector. Hence it is likely that the total emissions will be higher than the 80 million tons given above. one could have fixed a particular yea and projected the emission of sectors where data was unavailable . However, this would introduce more errors as several assumptions had to be made in the projection. Going forward the government should take concerted efforts to collect annual data.

The Greenhouse Effect or Climate Change has effected different sectors as well as categories. The state of envrionment report of 2003 for example has identified, that, vehicular pollution effects public health much more. The Degradation of forest due to the constrution of thermal plants has affected the bio diversity , "vulnerable groups", and critical eco system. It also caused productivity loss too.

Problem	Public health	Loss of biodiversity	Impact of vulnerable groups	Productivity loss	Critical ecosystem	Irrevers-ibility	Urgency	Total
Degradation of forests due to firewood extraction	3	5	5	5	3	5	5	13
Loss of forest areas due to power plants	1	5	3	3	5	5	1	23
Air pollution due to thermal planets	3	1	3	1	1	3	3	15
Ari pollution due to vehicles	5	1	5	3	1	5	3	23
Are pollution due to captive power plants	3	1	5	1	1	5	3	19
Soil pollution due to thermal plants	3	1	3	1	1	3	3	15
Unequal distribution of energy	1	1	5	5	1	1	5	19
Energy shortage	3	1	5	5	1	1	5	21
Low energy efficiencies	5	5	5	5	1	5	5	31

PARADIGM SHIFT

The shift in the governance is apparent when state government came out with different policy measures including establishing Climate Hub in Institute of Social and Economic Change. It is also planning to have a task force to deal with the issues of climate change. More than that it has come out with a draft policy on climatic change. In the former case mode of the governance has shifted over the past one decade towards insisting on rain water harvesting, water conservation, community based tank management, priority to organic farming, use of solar energy, aforestation programmes etc.

In fact paradigm shift is apparent in the following major concerns:

a) Concern about environment

Karnataka is one of the first states to come out with "State Environmental Report". Along with a draft bill on climate change state government has come out with a action plan, covering such issues as Greenhouse Gas inventory, Climate variability and climate change projections ,Impact on Forests ,Agricultural Sector ,Water Resources, Socio-economic Vulnerability and Adaptive Capacity Assessment and Mitigation options in energy sector.

b) Energy

Karnat aka government has come o ut with Karnataka Renewable Energy Policy of 2009-14 which aims at massively increasing the renewable energy. it has come out with Eco friendly resorts and it has made mandatory use of certain energy saving appliance for certain uses and energy efficient motor pump sets, power. Further, it has gone in for regeneration of degraded forest and protection of old trees through the participation of local population. It has undertaken massive greenery programme in the cities and also it has identified what is called "lung spaces in the urban areas". It has come out with what is called BhooChetana programme meant for promoting dry land farming, It aims at increasing the yield at 44 per cent and covering 12.5 lakh hectares in 15 districts. Energy policy envisages the establishment of series of mini hydel projects in the Western Ghats under private public partnership or Build Operate Own Transfer or BOOT scheme. To mitigate the air pollution, the government has established Task Force appointed a steering committee on Development of Bio-Fuel.

c) Land

Third important concern as well as paradigm shift is obvious in the case of land. The degradation of land including the agricultural as well as forest land has been the other major concerns of the Karnataka government. One thing is clear that the increasing use of chemical fertilizers and pesticides have affected the environment. The increasing use of chemical fertilizers has contaminated the water and soil. This is obvious with the fact that the use of chemical fertilizer has increased from 1.11 million tons in 1996-97 to 1.29 million tones 2001. In this context couple of districts has been identified as the hotspot of excessive use of chemical fertilizers (Shimoga, Mandya, Bellary and Raichur). Excessive pesticide use (Gulbarga, Raichur and Bijapur), hotspot of soil erosion (all northern plain districts) and hotspot of water erosion (coastal and Western Ghat region). Under the National Watershed Development Programme it has initiated to reclaim the alkaine lands and resorted to massive reforestation,

Paradigm shift and Initiatives of the Government

Other than the above, the Karnataka government has come out with series of programmes to combat climate change. This is obvious in the following:

- Fiscal incentives for voluntary reduction of emission
- Kannada Ganga: A new scheme to supply safe drinking water
- Rejuvenation of 36,000 tanks in different parts of Karnataka
- Establishment of Bio Fuel Board
- Capacity building of local and urban bodies
- Establishment of Waste Energy Project in Karnataka
- I-Ground water harvesting
- Starting Jalasiri Programme to establish two lakh check-dams to increase the underground water level
- Development of Lakes in Metropolitan areas such as in Bangalore (25 lakes have been rejuvenated till date)
- Establishment of Western Ghat Task Force as the latter is said to be hot spot of 4500 varieties of species
- Establishment of Village Forest Committees to protect the forest cover (Till date 50,000 such committees have been established in different villages)
- Planting trees in more than 80,000 hectares per annum
- Establishment of 3377 Bio-diversity Management Committees
- Supporting organic farming (Till date 52,300 farmers covering 70,000 hectares of land have adopted organic farming)

CONCLUSIONS

The multiple public policies show the increasing concern of the government. At the same time it also denotes the paradigm shift in the governance sphere. This does not mean that the climate change has not come under any criticism. One of the criticisms leveled against the public policy on climate change is that it is basically in the form of mitigating the problem than making a comprehensive analysis of the issue. Secondly, most of the public policy has come out as a reaction to the developmental issue rather than as a reaction to peoples' demand. Thirdly they do not reflect the fair understanding of the impact of climate change on the overall social categories. Fourthly advocates of climate change do not have specific time frame to mitigate the issues. Whatever it may be it is true that Karnataka has prepared itself to face the climate change in a judicious manner.

Climate Change Projections in Karnataka

Sl. No.	District	Increase projected in T_{avg} (in ^{0}C)	Increase projected in T_{min} (in ^{0}C)	Increase projected in T_{max} (in ^{0}C)
1	Yadgir	2.21	2.34	2.10
2	Bijapur	2.20	2.32	2.11
3	Raichur	2.20	2.31	2.12
4	Gulbarga	2.19	2.33	2.04
5	Bagalkote	2.15	2.25	2.10
6	Koppal	2.14	2.21	2.09
7	Bidar	2.12	2.30	1.93
8	Bellary	2.08	2.16	2.03
9	Gadag	2.08	2.15	2.05
10	Belgaum	2.01	2.11	1.98
11	Chitradurga	2.00	2.07	1.97
12	Dharwar	2.00	2.08	1.97
13	Mandya	1.99	2.03	2.00
14	Tumkur	1.99	2.06	1.96
15	Chikballapur	1.98	2.06	1.91
16	Davangere	1.98	2.05	1.98
17	Bangalore rural	1.97	2.06	1.91
18	Haveri	1.97	2.04	1.97
19	Ramanagar	1.97	2.05	1.92
20	Bangalore urban	1.96	2.06	1.88
21	Chamaraja nagar	1.96	2.03	1.94
22	Kolar	1.96	2.06	1.87
23	Mysore	1.95	1.99	1.98
24	Hassan	1.92	1.96	1.95
25	Shimoga	1.88	1.95	1.91
26	Uttarakannada	1.87	1.96	1.86
27	Chikmagalur	1.86	1.93	1.89
28	Kodagu	1.79	1.86	1.81
29	Dakshinakannada	1.72	1.81	1.71
30	Udupi	1.71	1.78	1.72