

Introduction

General: Water is a natural renewable resource, fundamental to life, livelihood, food & nutritional security, sustainable development. It is also a scarce resource. Two thirds of the Earth is covered by water, of which 97% of it is saline. That means fresh water covers only around 3%. However, of this 68.7% is in icecaps & glaciers and 30.1% as groundwater, wherein large part of it is not available for use as fresh water. Only small part of groundwater & ice melt is available as fresh water. Around 0.3% is only available as surface water and of which 87% is in lakes, 11% in swamps and 2% in rivers.

India has more than 17.11% of the world's population, but has only 4.6% of world's water resources with 2.3% of world's land area. The natural input to any surface water system is precipitation and snow melt within its watershed. In India, around 78% of average rainfall occurs in June to September, known as Southwest Monsoon. However, at regional level they are highly variable with orographic patterns – Western Ghats, Himalayan ranges, etc, Northeast Monsoon [October to December], Western disturbances in winter, cyclonic activity in pre-and post-monsoon seasons in Arabian Sea and Bay of Bengal. Humans have no control on precipitation & snowfall. They present, thus, high variations with space and time. Also, climate change [Reddy, 2008 & 2010] plays significant role in defining the rainfall and snowfall [Reddy, 1993 & 2002] with the time. All these define water availability in space and time.

Climate Change versus Global warming: UN introduced a new body to look in to this issue, namely IPCC [Inter-governmental Panel on Climate Change] a political body in place of WMO [World

Meteorological Organization] wherein meteorological services of different countries are part and parcel in developing policies relating to weather and climate. IPCC is filled with picked-up people to serve the vested interests. Though they talk of climate change but the studies primarily related to global warming and emissions. Also, global warming was built on false foundations, namely global temperature data series. This data series were built with meager data covering around 20% to 25% of the global area under variable met network distribution and ecological – land use and land cover – changes. This is manipulated time and again to meet their policy. Based on such data IPCC postulated several sensational hypotheses.

Global warming proponents knew the fact that global warming is not a settled science. Because of this global warming proponents instead say “climate change is settled Science”, which is a fact. The main component of climate change is natural variability [WMO, 1966]. Humans have no control over it and thus we need to adapt to them – this I presented for agriculture in 70s & 80s and summarized in Reddy [1993]. They are region specific. Extremes are part of natural variability. This can be seen from the climate normal data of individual countries wherein extremes have not crossed these limits. Also, regional general circulation patterns over different seasons play the important role in year to year variations in extremes under natural variability. For example Western Disturbances in northwestern parts of India will influence heat and cold waves in summer and winter based on the high pressure belt location [Reddy & Rao, 1978]. The second component of climate change is ecological changes – associated with changes in land & water use and land cover changes. They are highly local-region specific. Urban-heat-island effect and rural-cold-island effect comes under this. They will influence the natural variability in that local/region. This plays important role in power consumption and agriculture.

The third is greenhouse effect on temperature. This is a natural change. Global warming is part of it but it is not settled science basically because: in nature the conversion component of natural CO₂ in to temperature has reached a saturation point. Any new addition to CO₂ due to man’s actions, the increase in temperature is insignificant – a plateau like scenario [see Figure 1 in Reddy (1995)]. Because of this, IPCC with 97% scientific support [as they claim], IPCC using trial and error approach to link CO₂ raise to

temperature raise under global warming. As a part of this game, IPCC goes on changing the “sensitivity factor – 1.95 under AR5 was reduced to 1.55 under AR5” that relates CO₂ with temperature. Also, IPCC now states global warming is more than half of the global temperature rise [50.1% is also more than half]. This is a subjective statement. That means that they agreed that the global temperature rise not entirely due to global warming phenomenon. IPCC has no valid data to verify its estimates as the global temperature curve is built on hypothetically derived data series as stated above. When that data series showed a hiatus for the last 19 years, three different theories were put forward – one group manipulates the data to remove hiatus, another group says temperature is hiding in deep-ocean and the third says it is a part of natural variation. But all these never cared to look in to temperature curve built using balloon and satellite data. According to this using IPCC inference, global warming component is just around 0.15 °C, which is insignificant to influence climate or nature. Politicians don’t understand these issues and politicians and scientists look at 100 billion dollars – Paris summit!!! Because of this, all those groups are using the word climate change instead of global warming.

Our leaders say something, talk something and act something else. There is no coherence in their speeches and to real goals on which they talk of. For example they quote sufferings of one ‘X’ and build the story. Finally they are falling in to the trap of global warming and CO₂. How this is going to save that ‘X’ -- hunger-starvation --? In the past activists brought out an album on ‘Save Africa’ collected billions of dollars and really the amount went in to that component is not even 10% and the rest went in to the pockets of the activists.

IT groups wanted to spread its roots in all aspects of life. This is highly power consuming activity. Instead of putting a cap on such activities, power production cannot be reduced and thus CO₂. Indian PM’s visit in September 2015 to Silicon Valley, IT top bosses say that they will dump their IT into rural India, which in turn is going to effecting severely agriculture sector and health of education system. During previous PM time they wanted to spend few thousand crores on providing free cell phones to rural labour. I got it stopped on the same basis. Agriculture is the backbone to mitigate the goals UN announced and that is what US President

saying and Pope Francis saying. The incoherent actions will lead nowhere!!!

We talk of global warming and climate change but we rarely look in to local environmental problems and resolving them appropriately. Take the example of festivals. They turn in to money spinning monsters along with vote bank provider. Governments through them are trying to divert peoples' attention on their failures. The impact of the festivals on environment and human health are enormous. Media talk and talk but indirectly canvassing in favour of those activities. This year's Ganesh Chaturdi in Hyderabad and its surroundings run in to around Rs. 20,000 crores business activities. In this used thousands of tons of plaster of Paris. This not only filling the lakes but also polluting the lakes -- this is indirectly serving the needs of realtors. Some of it removed and dumped in to low lying areas that making the area of no use and reducing infiltration of rain water in to ground, which is increasing year after year.

The chemical colours used in the Ganesha's making are polluting the water bodies and thus groundwater. Every year this is increasing. The festival organizers used to tell that this pollution is negligible when compared to regular pollution of Hussainsagar Lake in the heart of Hyderabad. The observations made by pollution control board, now, indicated nearly double in parameters after the immersion of Vinayaka's in the Lake. This increase is associated with discharging large part of the water in the lake in to Musi River and rainfall contribution was not much. In addition to this, the processions on the last day increased the air and noise pollution that severely affected the health of young kids and old. With all these negative effects, neither the government nor the people are interested to bring down the number of idols and the height of the idols – Khairatabad idol height is 60 feet. Unfortunately, in this case even the courts playing ding-dong role favouring the government. To resolve the issue, government appointed a single retired judge committee in 1985 and it recommended idols height should be below 3 feet [traditional Hindu system they are supposed to be 8" x 4". But, neither the courts nor the government interested to implement this recommendation. Media goes on saying groundwater is polluted and air pollution effecting the people, etc., every other day to get ratings. All this is lip-sympathy. Some Media propaganda says that they can build more than 60 feet idols with clay. This is the

attitude!!! What difference it makes either we use clay or plaster of Paris in building the idols of that tall. Both fill the water bodies and reduce the water holding capacity.

Then next festival comes with crackers. It increases the pollution levels by more than 1000 times and cause health and physical harm but we do little to stop them. While manufacturing and storage accidents several children died and yet neither the government nor the people do their little bit to stop them!!! We are unable to stop them basically because: now a day festivals turned in to lucrative business running in to thousands of crores. Politicians-bureaucrats get their share. In fact the government itself is encouraging the same type in IT. This is in fact running in to lakhs of crores of business and at the same time harming the environment and human health. Large part of the power consumption is used in IT related industry. Finally the casualty is water and human health. Can we do something on this menace to protect ourselves in specific and people in general???

These are practical issues that can be easily stopped but we rarely interested but talk of global warming and emissions.

Water Management: Water management is the activity of planning, developing, distributing and managing the optimum uses of water resources. In an ideal world, water management planning has regarded to all the competing demands for water and seeks to allocate water on an equitable basis to satisfy all uses and demands. This is rarely possible in practice as under corrupt and bad governance the developmental activities rarely reach their goals. The projects run as per the dictates of judiciary, bureaucracy and politicians even if projects are technical in nature. Unfortunately technically qualified people including engineers & scientists rarely question such decisions or discuss in open – worried about their promotions and monetary gains and awards-rewards. Thus, technical issues are put in the hands of non-technicians to serve the political-region interests at the cost of people. In the river water distribution among riparian states, tribunals appointed by Central Government plays vital role. The tribunals are filled with retired judges with unfettered powers even though irrigation projects are technical in nature and less of legal in nature. The integrity of the judges plays an important role to get unbiased recommendations.

Sources of Irrigation: Among the different sources of irrigation except canal irrigation systems, others are localized with little conflicts in sharing of waters in the past; but it is not so any more. Regional political parties created war like conditions under vote bank politics and at the same time for monitory gains. The first Prime Minister of India, Late Pundit Jawaharlal Nehru observed that “dams are the modern temples” and with this spirit encouraged building of dams. This helped India to achieve self-sufficiency in food production. This helped India to reach from begging bowl scenario to exporting scenario. However, even after 68 years of Independence to India, the progress in irrigation projects are moving three steps forward and six steps backward with the changing political priorities of elected ruling parties and inter-state & within the regions in a state politics. The progress in irrigation projects severely hampered, thus, with regional political parties, whose priorities are looting the state under the disguise of populist schemes. Also regional political parties found irrigation is a major hurdle in their vote bank politics and thus still to date more than 60% of the cultivated area in India is at the mercy of “Rain God”. To add to the vows, western funded NGOs became major hurdle in the progress of irrigation projects – particularly dams and inter-linking of rivers.

Agrarian Basis: Civilizations have been dependent on development of irrigated agriculture to provide agrarian basis of a society and to enhance the security of people. Globally irrigated area has been increased from 8 Mha in 1800 to just over 255 Mha in 1995. With the passing of time the % area under different sources of irrigation changed drastically [Reddy, 2014]. The over exploitation of groundwater not only reduced the water quality but also reduced drastically the area cultivated per pump [it reduced from 2.5 ha to 0.5 ha in Andhra Pradesh], and thus resulted increase in power consumption per hectare. Also with the reduction in area under tanks indirectly reduced the capacity of recharging of groundwater.

In October 2015 FAO released a draft on “Sustainable agricultural development for food security and nutrition including the role of livestock”. On this they released my comments on line on 5th October 2015, in which I observed that: I wonder whether the material presented in the document is meant to serve the interests of “IPCC” or to serve the people/nations to develop sustainable agriculture. From this report it is clear that the report is

not really made to serve the people/nations to build sustainable agriculture.

Emissions and global warming has insignificant influence on agriculture. IPCC goes on changing the sensitivity factor that relates anthropogenic greenhouse gases with global warming. Also, now they say in a qualitative manner that it is only more than half of global temperature constitutes global warming. From the balloon and satellite data so far the global warming is only 0.15 °C. This is insignificant to influence agriculture. The seasonal and annual and dry to wet periods temperature variation goes beyond 10 °C that the local crops experiencing for the centuries.

The main component of climate change that has direct impact is natural variability. This I worked for several countries and adapted agriculture to them. Sometimes these are modified by local/regional ecological changes – land use and land cover changes. Based on this concept, forefathers developed agriculture systems that are sustainable under variable rainfall conditions. To improve the economy and nutrient security they adapted animal husbandry in to agriculture. This system was killed by chemical input mono crop agriculture. Here the yields increased with the level of irrigation and fertilizer supply and reached a plateau by 80s. So, the increase in production was due to chemical inputs. But, technology is not the primary cause for increasing the production but the primary component is irrigation. Agriculture under small holdings will be sustainable not with the technology but by providing supplemental water over rainfall.

The chemical input agricultural technology introduced the evil pollution [soil, water, air and food] that is affecting the health of life forms including the humans and crop production as well quality of potable water. To better utilize the scarce natural resources under small farm holdings is cooperative farming under organic inputs. These are the issues that the report should have concentrated rather than emissions and global warming to serve IPCC. I am more of a practical man than theoretical like IPCC which only creates panic and help collect billions of dollars to collect and share. Some of these are exposed very recently.

As part of 67th Independent Day address to the Nation our Respected President of India Shri. Pranab Mukherjee put fine words of “inclusive growth” but what is happening is selective growth. Under globalization scenario 25% of the population of the

world including India consumes 75% of its natural resources annually. Unfortunately, world over sustainable growth or development in itself is not a political agenda but it has been recognized that without political change, sustainable growth or development is not possible. For example the present NDA government mandated projects line Digital India & Swacch Bharat running in to lakhs of crores but mostly benefitting the urban rich.

Production: Competition for land & water increased gradually with the growth in population, urbanization & industrialization. Though food production can meet the food needs of the population of India at present – but this is not meeting farmers' economic & nutrition security under chemical input technology, as it is not equally distributed resulting hunger & starvation. Though farmers developed pollution free innovations with organic inputs have the yield advantage, government is encouraging GMO's with no yield advantage but work under chemical input pollution and irrigation condition only [Reddy, 2011].

I think technology might have originated from man's laziness. He didn't want to use his muscle power like other animals to earn a living. So he used his intelligence to invent enhancements. Eventually he found that the enhancements did not really reduce his work, it only created a new set of problems which increased his workload. So he invented another technology to solve those problems. But again that new technology gave rise to a new set of problems and he invented another technology to solve those. The process is going on and on; we call it progress.

When we want adopt a new technology, we rarely look at its' long term impacts, both positive and negative, of such technologies on nature and thus on environment as it is driven by profit mode. This lacuna is glaringly evident in agriculture. In all these, business interests out play the environmental consequences. Sometimes it may not be possible to recover the destruction caused by the technologies, particularly those that affect biodiversity. Here the public relations groups play the spoil sport that mosque the reality.

Environmental concerns: Sometimes we equate environmental concerns of projects such as mining-industry to irrigation projects. The former is to benefit individual investors and the later to benefit people in general. We talk of cost effectiveness of the later but not the former. However, with the passing of time the fresh water in

lakes and rivers are turning in to cesspools of poison [Figure 1.1]. The potable water availability for drinking is severely affected, though polluted water is still used in agriculture. The classical example is the water from the Musi River in Hyderabad – it is the same all around urban areas in the country. The water is used to cultivate around 2.5 lakh acres. Thus the food produced from such water is highly contaminated and creating numerous health hazards. To provide potable water huge sums are invested to treat the water for drinking. For cleaning Ganga River UPA spent around Rs. 20000 crores and now NDA government wanted to spend Rs. 1,00,000 crores with no end for getting pollution free Ganga water. Here we are not following the “precautionary principle”.



Figure 1.1: River pollution

Pollution: Rachel Carson published “Silent Spring” in 1962. The book documented the detrimental effects on the environment—particularly on birds—of the indiscriminate use of pesticides. Carson accused the chemical industry of spreading disinformation and public officials of accepting industry claims unquestioningly. This has led environmental movement in 70s. However, with powerful lobby this was thwarted and in its place a new concept was brought in. Billions of dollars were spent on this to control research & dissemination of false information. This is termed as global warming.

Pollution can take many forms. The air we breathe, the water we drink, the ground where we grow our food, and even the increasing noise we hear every day—all contribute to health problems and a lower quality of life. Water is the casualty of such pollution in several ways. This reduces the water availability for use under different sectors.

Judiciary: Though the judiciary is one of the four pillars of the Indian Constitution, it has become no different from other three pillars with reference to corruption. The 2014 reports in media high lights how our judiciary is functioning starting with their recruitment. Here the major issue is even after retirement they enjoy power. In fact, I think, this issue started with my letter to the Chief Justice of India with a copy to the Prime Minister of India on 11th February 2013. In this I raised three issues namely “not before me”, “quid pro co” and “recruitment – collegiums system”. Former two are illogical and are used to manipulate justice. In Andhra Pradesh to destroy the political rivals or to protect the criminals/corrupt politicians these two clauses were/are used invariably. The misuses of these two clauses are more hazardous than corruption. Justice is rarely achieved with such a system. Unfortunately in the recruitment of judges there is no independent body like UPSC and thus lacking integrity. Majority of the judges belong to particular industrial/business/political groups as they are behind their appointments/ recruitments. My letter was forwarded [may be] to the law ministry and law ministry organized a meeting with CMs, judges along with PM. CMs favoured UPSC but judges disagreed. However, government brought out National Judicial Appointment Commission [NJAC] Act, 2014 in place of existing collegiums system of recruitment and this was notified on April 15, 2015. Judges are fighting in Supreme Court on this for their power but when I submitted to three successive Chief Justices of the Supreme Court on fraudulent act of tribunal of Krishna Water sharing, they did not even cared to acknowledge it. -- Former Supreme Court judge justice Katju exposed the wrong doings by Chief Justices of India itself. A report says “SC favours I-T probe against former CJI’s kin: Brought benami properties worth Crores” – 15th September 2015. With such a scenario with the judiciary, what will happen if such judges after retirement are appointed as River Water Tribunal members & Chairmen?

The other side of it is political interferences to gain vote bank at the cost of development and achieve easy monitory gains. With

the regional parties, this scenario has aggravated. Completion of irrigation projects are taking decades. With the change of guard at the State and or at the Centre the priorities are changing. This not only is affecting the finances but also the expected development. In India we don't have clear cut mandates in irrigation projects, more particularly on inter-state projects. With this, real estate takes the priority over peoples' interest/needs.

In light of these, in this book, the author looked in to the aspects pertaining to irrigation and irrigation projects in India in general and Andhra Pradesh in specific to get sustainable development.