**IPCC Report-2022**

**Climate change**

**Energy – Water – Food Nexus**

**Challenges Ahead**

**Latest IPCC Report-2022 reveals that India is warming faster than the global average.** Climate change hit the region harder and harder. While resilient action is already underway, the adverse events are multiplying its intensity will continue to increase in the coming decades, starting now. Climate change impacts results into resource exhaustion and growing local and global demands for water, food and energy. Social and political structures gets shaken brittle, and severe droughts or floods and other natural disasters catalysis a variety of crisis – social, economical, political and civil conflicts across the world. Strong economic growth may mitigate some of the risks. Furthermore, growth based on Oil, Gas and Coal is affecting foreign exchange resources and defense preparedness. With viable alternatives and resilient practices it is possible to have rapid socio-economic growth with equity, prosperity of all citizens in “Amritkal’.

Local assessments from time to time are necessary to asses potential security implications. Despite regional variations, several overarching aspects of climate change can be mitigated simultaneously and can be tackled. In fact the country has under gone these severe challenges in early part of independence and even before that – with re-current droughts, famine followed by migration, cattle death, rationing and import of food grains. But it came out successfully. Gujarat had this situation up the year 2000 – but then transformation took place in Gujarat and in other states.

Climate change is transforming basic conditions. Thus, history is becoming reference for the future as the challenges are same and therefore with transformational action, climate change altering the livelihood foundations can be prevented and with consistent efforts and use of technology, livelihood conditions can be improved.

Climate change results direct and indirect security threats. It is a complex interaction of different forces and factors which leads scarcity of supplies of key-source Food, Water and Energy. Global warming affects local level harvests which in turn lead to food insecurity and unemployment. Thus, climate change increases insecurity through a number of interacting impacts.

The current climate change is taking place in times of rapid global change such as high population growth, increasing urbanization, rising energy, water and food demand, and global political turmoil and war in Europe and emerging new technologies and knowledge on economy.

More specifically energy needs – water stress need a compact tool kit to tackle that and continue to have increase in agriculture growth. 60 per cent of population resides in rural areas. Their livelihood and aspiration of better life style will need continuous attention at all levels. While climate resilient practices and climate related services will play its own role – energy and water needs are key to make them success.

With just 4% of the world’s water supply but 18% of its population, India counts as one of the world’s most water‐stressed countries. And India’s rapid economic ascent in recent years has increased demand for both energy and water, putting these [interconnected resources](https://www.iea.org/topics/energy-and-water) under increasing pressure and making the nexus between them central to the country’s energy security and transition goals.

Agriculture accounts for 80% of India’s water demand. Water is also critical to its energy sector, particularly for electricity generation. The development of India’s power sector over the next two decades will take place against a backdrop of increasing water stress, climate change and rising water demand from its agricultural, residential and industrial sectors. A continuation of current trends in water usage would put [projected demand for water far ahead of the available supply](https://niti.gov.in/writereaddata/files/document_publication/2018-05-18-Water-Index-Report_vS8-compressed.pdf) and threaten the country’s energy output.

**Energy:**

Major areas which need attention is low use of installed capacity. If we take example of Gujarat – Coal based power station of Gandhinagar has installed capacity of 630 MVM while actual production 267 MVM i.e. 42.4% output. Similarly Ukai TPS is at 22.4% output. Vanakbori 28.4% per cent. Lignite based ILPAS is at 36.6%. Similar situation prevails in other states. Hence while we do have capacity – it is not fully used / produced.

**Water Harvesting Structures:**

We have had a very useful massive programme of water-shed – which involved construction of “Water Harvesting Structures”. States like Maharashtra, Gujarat or Rajasthan have more than 1,00,000 ponds check-dams etc. But it seems that many of check-dams and community village ponds are silted and not used.

**Irrigation Potential:**

Similarly we had low use of irrigation potential created by medium and major dams. Further there are evaporation losses, slippages, leakages, growing of bush in canals so and so forth. It is estimated that on an average 40 per cent of created irrigation potential is used. How can we make full use of irrigation potential?

**Connect Solar System to Electric Grid:**

Solar system is popular – but needs huge investment despite subsidized. Rural families abandon its sole use because it fails when cloud comes or rains and it provides interrupted energy supply –at night it does not function. Hence they want electric power supply. But wherever solar system is connected with electricity grid – there is no problem. Can this be done at all the places?

**Food loss and food waste:**

It is well-known that there is food/ produce loss from farm gate to market point is upto 40 per cent. Food wastage from market point to consumer is another 10 per cent. How can we bring it down below 5 per cent? We have technology – expertise and resources for that.

**Flood prone areas:**

There are single day and multiple days heavy rains episodes. Can we introduce in Building Bye Laws – that all premises will have internal Recharge Wells. Further to cover all existing buildings – of both public and private separate enactment can be made by PWD. Our highways are higher level to adjoining areas. Hence floods take in the fields. PWD need set up similar recharge systems.

**Public Distribution Scheme:**

Under MSP – food – produce are procured and sent for distribution under fair price shop scheme – under Public Distribution Scheme.

There is need to look at entire public distribution system. Today for Gujarat produces 43.78 lakhs tonnes of wheat and 21.48 lakhs tonnes of rice. But for PDS scheme it gets all wheat and rice these from Punjab – Haryana incurring huge transport loss and transit loss and storage loss. Gujarat MSP itself can procure what is locally needed and distribute it locally. Same applies to other states also.

**How can we re-arrange out PDS system?**

**Way Forward:**

* What we need to do is to develop next 25 years – 2022-47 plan – to make rural livelihood prosperous in Amrit Kal.
* We need to deliberate on all above different facets of current policies and schemes and include efficient use of existing and future resources and come out with action points with critical path.
* We need to critically appraise ourselves with current floods and it’s after effects on two third of Pakistan. Similarly shortage of “Gas” and its prices shooting up and its impact on lifestyle and manufacturing activities – as they are being impacted in Europe and develop our own.

Simulation models – to meet similar challenges if they visit us.

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