

# LINKAGE OF CLIMATE CHANGE AND ENERGY SECURITY: IMPLICATIONS ON INDIA'S NATIONAL SECURITY

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IN THIS PAPER, the author has made an attempt to analyse the growing severity of two closely linked issues of climate change and energy security and its possible repercussions on India's national security. In recent times there has been a lot of debate and discussion over the linkage of energy security and climate change. In this debate, national security has become a key element on the possible effects and policy responses to energy security and climate change. As energy security and climate change have in recent times gained increasing attention, so its security implications became the focus of concern for our country.

As an emerging power with a lot of development needs, India faces a huge challenge to manage the vulnerability to the impacts of climate change and energy security. Climate change and energy security concerns create significant challenges for India as it has the potential to threaten national security of the country. On the one hand India does not want any constraints on its development prospects in which energy has a key role to play while on the other hand, it faces a tough challenge partly due to international pressure and partly to national security concerns over the issue of climate change. Climate change and energy security will play key roles in the future security environment of our country.

Like many other countries, India is also currently facing the dual problems of ensuring energy security and climate change. India will therefore need to save and devote even more resources for meeting economic well-being needs with greater environmental sustainability. Broad-based economic and social development is ultimately the answer. Economic pricing of energy and other resources will be a key to switching to a more



sustainable development path. Managing energy needs for a rapidly growing economy will be at the heart of the response and India's voluntary endeavors towards climate change.

To meet the increasing energy demand, there has been an enormous burning of fossil fuels which is a major cause for global warming. Dealing with the problems of climate change requires a substantial reduction of carbon dioxide emissions. India is the fifth largest GHG emitter in the world, accounting for approximately 4.7% of total global emissions, while China has become the largest emitter with 23% of total GHG emissions. In 2005, India's total GHG emissions was 1,866 MtCO<sub>2e</sub> compared with China's total emissions at 7,234 MtCO<sub>2e</sub>; India's per-capita GHG emissions was 1.7 MtCO<sub>2e</sub> compared with China's per-capita emissions at 5.5 MtCO<sub>2e</sub>. Reducing emissions would create serious problems for national energy policies and energy security and would lead to economic, social as well as political problems for different countries.

#### **CONCEPTUALISING THE PROBLEM OF ENERGY SECURITY AND CLIMATE CHANGE**

Energy is essential to improving the quality of life and opportunities in developed and developing nations. The principal energy-related challenge is access to energy, which has two distinct facets: ensuring energy supply to meet the growing demand of fuelling economic growth; and providing access to lifeline levels of clean commercial energy for the poor. To date coal remains the most realistic option for power generation in the short to medium term even though an increase in the supply of coal is constrained by the ability to raise domestic production. More than 400 million people do not have access to electricity and more than 700 million depend on non-commercial biomass for cooking. Therefore, ensuring sufficient, reliable and environmentally responsible supplies of energy at prices reflecting market fundamentals is a challenge for countries and for mankind as a whole. India is a major producer of Carbon dioxide.

Therefore, the significant challenge for India is to work out a compromise between, on the one hand, the implementation of its national development goals and on the other hand, a substantial contribution to the efforts to stop the global challenge of global warming.

Climate change is the result of rapid economic development - mainly because of manifold increase of industrial, population consumption of fossil fuel and amazing change in the land terrain (settlement/infrastructural change and use of land). The scientists world wide conducted a number of studies and came up with findings more or less similar regarding the implications of climate change. Since these studies are futuristic, the variation in the findings with a wide probability could be misused by politicians and parochial nationalists and mercantilist for their national objectives. That itself is a threat to global and particularly regional security.

Climate change and energy security together is projected to have severe adverse effects on India's development as it compounds the pressures on natural resources and the environment associated with rapid urbanization, industrialization, and economic growth. It can directly impact the environment for the survival of humanity, and of course it also has an unavoidable influence on military security.

Energy Security and Climate change together could have significant geopolitical impacts around the world, contributing to poverty, environmental degradation, and the further weakening of fragile governments. Climate change will contribute to food and water scarcity, will increase the spread of disease, and may spur or exacerbate mass migration. Besides, they can pose a threat towards the achievement of the Millennium Development Goals and economic development, and could precipitate migration, environmental degradation or unsustainable use of natural resources, including water stress and scarcity, deforestation, desertification and land degradation.



The energy security and climate change problem is a development problem, and must be comprehensively solved in the framework of sustainable development. International cooperation on climate change must start from correctly handling the triple relationship between economic growth, social development and protection of the environment, and must place guaranteeing economic development and strengthening sustainable development to its core. It must have saving energy, improving the energy structure and strengthening ecological protection as its focus, and have scientific progress as a support, so as to continuously raise the capacity of international society to mitigate and adapt to climate change.

#### IMPLICATIONS ON NATIONAL SECURITY

This section will shed some light on the possible implications of climate change and energy security on the security of India by giving examples. Climate change and energy security together is projected to have severe adverse effects on India's development as it compounds the pressures on natural resources and the environment associated with rapid urbanization, industrialization, and economic growth.

- a. Water resources availability and river water disputes. For instance in the context of the Indus Waters Treaty between Pakistan and India, which regulates the water-sharing of the Indus River, whose river basin lies on Indian territory, increasing water shortages due to global warming, might raise fears in Pakistan that its share of the benefits of the Indus Waters Treaty will evaporate.
- b. Food production. Food production in Western and Central India will be adversely affected not only by an increase or decrease in the overall amounts of rainfall, but also by shifts in the timing of the rainfall.
- c. Reduced output of agricultural commodities

such as wheat, rice and maize. Agriculture will be affected worst in the coastal regions of Gujarat and Maharashtra, where agriculturally fertile areas are vulnerable to inundation and salinization.

- d. Raising sea level due to warming continental ice shelves. The rise in global sea levels - due to the melting of polar ice caps and glaciers around the world - is expected to result in the submergence of low lying areas: including river deltas, coastlines and small islands. This situation places highly populated regional cities like Mumbai, Kochi and Mangalore at risk. The effect of glaciers melting on recharge potential of aquifers in the Ganga basin and its effects on the transboundary aquifer systems, particularly in the arid and semi-arid regions is also another concern.

INTERNATIONAL COOPERATION ON CLIMATE CHANGE MUST START FROM CORRECTLY HANDLING THE TRIPLE RELATIONSHIP BETWEEN ECONOMIC GROWTH, SOCIAL DEVELOPMENT AND PROTECTION OF THE ENVIRONMENT, AND MUST PLACE GUARANTEEING ECONOMIC DEVELOPMENT AND STRENGTHENING SUSTAINABLE DEVELOPMENT TO ITS CORE.

- e. Change of monsoon pattern
- f. Extreme weather events such as floods and draughts. The coastal states of Maharashtra, Goa and Gujarat face a grave risk from sea level rise, which could flood the land. Goa will be the worst hit, losing a large percentage of its total land area, including many of its famous beaches and tourist infrastructure.
- g. Submerge of coastal and low land areas and even displacement of population.
- h. Supra-national migration. The issue related to climate change such glacial lake bursts, floods and cyclones can also result to migration inflows from Bangladesh, Nepal and Bhutan.
- i. Spread of diseases. In arid areas of western



Rajasthan and Gujarat, malaria epidemics have often followed excessive rainfall.

- j. Implications on coastal infrastructure. The impact of the rise in sea level due to climate change on coastal infrastructure like ports could turn out to be a huge economic loss to the country's exchequer. The ports in high risk zones that could sustain relatively greater damage are in vulnerable locations of Andhra Pradesh, Orissa and West Bengal on the east and Gujarat and Mumbai on the west coast.
- k. Threat to Biodiversity. One of the largest breeding colonies of the Greater Flamingo lies in the saltwater marshes and mudflats of the Rann of Kutch in Gujarat. As global warming causes a rise in sea level, these marshes and mudflats are likely to be submerged. The habitat of the endangered Lesser Flamingo and Indian Wild Ass, both found in the Rann of Kutch, could also be lost.

#### **MEASURES TO RESOLVE THE SERIOUS CHALLENGE**

India cannot take the issue concerning climate change and energy security lightly owing to its serious national security implications. The climate change and energy security demands India to take up certain measures that would help meet the increasing energy demand and at the same time reduce emission of Green House Gases (GHG), which remains the main cause for the severity of climate change.

Faced with the huge challenge of meeting its rapidly increasing energy demand and the reduction of the emission of GHG, India is focusing sharply on both energy efficiency improvements as well as tying up energy resources at the global level – either through purchases on the international markets or through equity investments in global assets. India would also be keenly interested in acquiring clean and efficient energy technologies. Besides, India would also be quite interested in participating in international initiatives to further develop solar and biomass technologies given its large endowments as well as

strong technical skills that it has available within.

The Indian Government has already undertaken or planned for several policies and initiatives that encourage sustainable energy growth both in terms of improved efficiency of use and in terms of its environmental implications. Several policies and measures have for example focused on improving energy efficiency, enhancing renewable and clean energy forms, bringing about power sector reforms, promoting clean coal technologies, promoting cleaner and less carbon intensive fuels for transport, and addressing environmental quality.

Another alternative to reduce the use of fossil fuels would be to adopt Solar-based power technologies that have practically no form of emissions. This alternative would also lead to energy security by cutting back on coal and oil requirements to meet final demand. India has also dedicated \$1 billion to expand solar power infrastructure within the Nehru National Solar Mission programme. However, the opportunities to substitute India's fossil-fuels-dependent path of development with low-carbon solutions are hardly realistic. So far, none of the developing countries have addressed the challenge of providing electricity with low-carbon solutions.

The efforts needed to address the climate change problem include mitigation of GHG emissions on one hand, and building of adaptive capacities on the other in developing countries to cope with the adverse impacts of climate change on various sectors of the society and economy enabled and supported by technology and finance.

#### **NOTES:**

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