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RESEARCH ARTICLE

UTILISATION OF NATURAL RESOURCES & ITS ROLE IN SUSTAINABLE DEVELOPMENT- IN INDIAN PERSPECTIVE.

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Abstract

India which is a country of diversity, about which it is, said that after every 100 km the taste of water and the language changes. Country in which there are 22 official languages according to Article 345 of the constitution, it is the seventh-largest country in the world, with a total land area of 3,287,263 square kilometres (1,269,219 sq mi).India measures 3,214 km (1,997 mi) from north to south and 2,993 km (1,860 mi) from east to west. It has a land frontier of 15,200 km (9,445 mi) and a coastline of 7,517 km (4,671 mi).

India it is said to be rich in natural resources which has so many minerals and very fertile land for agriculture it has, in abundance water resources in form of rivers like Ganga ,Brahmaputra Yamuna Kaveri etc which provides it power and water for irrigation facilities.

Yet as compare other Asian countries like Malaysia, Thailand Japan Hong Kong and last but not the least China which are revamped by the level of development in their countries our country is still lagging behind them in various sectors.
If our leaders wish to break the shackles of poverty and unemployment then according to the need of our they should try to focus on the optimum utilisation of natural resources, which will lead to sustainable development in India.

This research paper aims to bring out the various natural resources for which other countries in world yearns and which are present in abundance in our country, natural resources which are underutilised and areas in which these resources are scattered still to be explored.

Natural resources in india:-

The total cultivable area in India is 1,269,219 km² (56.78% of total land area), which is decreasing due to constant pressure from an ever-growing population and increased urbanization. (Natural resources in India)

India has a total water surface area of 314,40 km² and receives an average annual rainfall of 1,100 mm. Irrigation accounts for 92% of the water utilisation, and comprised 380 km² in 1974, and is expected to rise to 1,050 km² by 2025, with the balance accounted for by industrial and domestic consumers. India's inland water resources comprising rivers, canals, ponds and lakes and marine resources comprising the east and west coasts of the Indian ocean and other gulfs and bays provide employment to nearly 6 million people in the fisheries sector. In 2008, India had the world's third largest fishing industry.

India's major mineral resources include Coal (fourth-largest reserves in the world), Iron ore, Manganese, Mica, Bauxite, Titanium ore, Chromite, Natural gas, Diamonds, Petroleum, Limestone and Thorium (world's largest along Kerala's shores). India's oil reserves, found in Bombay High off the coast of Maharashtra, Gujarat, Rajasthan and in eastern Assam meet 25% of the country's demand. (Datt)

Sustainable development:-

Sustainable development means attaining a balance between environmental protection and human economic development and between the present and future needs. It means equity in development and sectoral actions across space and time, Cruz et al (2007). It requires an integration of economic, social and environmental approaches towards development. Sustainable urban development refers to attaining social equity and environmental protection in urbanization while minimizing the costs of urbanization.

Concept of sustainable urban development:-

UN General Assembly convened a conference on the "human environment" at Stockholm in June 1972, which came out with guiding principles on "human environment". It emphasized that man has the fundamental right to environment of quality and also that he has a responsibility towards protecting the environment for present and future generations. It also maintained that natural resources of the earth must be safeguarded for the benefit of present and future generations. About a decade later, to address the issues concerning continuing depletion of natural resources and unsustainable development, the World Commission on Environment and Development was created in1983. Popularly known as Brundtland Commission$(1983)^2$, it described sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". After twenty years of Stockholm Declaration, the UN Conference on 'Environment and Development' (also known as 'Earth Summit') was held at Rio-de Janeiro in 1992 that adopted an action plan, popularly known as 'Agenda 21'. The agenda 21 promised to reduce poverty, provide clean water and health care, and protect the natural resources and so on. Also to be noted that some of the Millennium Development Goals[3] (see UNDP) have urged for ensuring environmental sustainability and reduction of the percentage of the population under extreme poverty. Similarly, explaining implications of climate change for sustainable development the Intergovernmental Panel on Climate Change notes (IPCC) the importance of social and environmental equity in development. Thus all the major world conferences and initiatives taken so far on environment and development have stressed on economically viable development, socially equitable development and protection of the environment for attaining sustainable development.

Sustainable **urban** development specifically means achieving a balance between the development of the urban areas and protection of the environment with an eye to equity in employment, shelter, basic services, social infrastructure and transportation in the urban areas. With rapid expansion of urban population around the world there has arisen a wide awareness about minimizing the environmental costs of urbanization. Concerns are raised at environmental damages and depletion of non renewable resources and rising levels of pollution in urban areas. In recent times cities have become places of urban environmental degradation and wasteful use of resources, which is proving to be costly to generations present and future. In order to mitigate the problem we require to minimizing the depletion of non-renewable resources and resort to environmentally sustainable economic development. But this has to be done in ways that are socially, economically and politically acceptable. While planning for sustainable development of the towns, we should also take into account the factor of climate change. According to this, ensuring environmental sustainability means taking steps, which include a) integration of the principles of sustainable development in the policies and programmes of the country, b) reversal of loss of environmental resources, c) reduction of the proportion of people without sustainable access to safe drinking water, d) improving the lives of slum dwellers.

2. World Commission on Environment and Development (WCED) known by the name of its Chair Gro Harlem Brundtland was convened by the United Nations in 1983.

3. Millennium Development Goals (MDGs) are eight goals to be achieved by 2015 that responds to the world's main development challenges. These are drawn from the targets and actions contained in the Millennium Declarations in the UN Millennium Summit in September 2000.

Role of natural environment and climate change in sustainable urban development of india:-

When we are planning for sustainable development of the towns, we should also take into account the factor of climate change. Explaining implications of climate change for sustainable development the Intergovernmental Panel on Climate Change notes [4]"Sustainable development represents a balance between the goals of environmental protection and human economic development and between the present and future needs. It implies equity in meeting the needs of people and integration of sectoral actions across space and time." (Cruz et al, 2007). One of the greatest challenges that the world is facing today is climate change. Climate change is the variation in the earth's global climates over time. It involves changes in the variability or average state of the atmosphere over durations ranging from decades to millions of years. These changes can be caused by dynamic process on earth, external forces including variations in sunlight intensity and more recently by human activities. Human influences can be by increase in CO2 levels due to combustion of fossil fuels, aerosols, cement manufacture etc. Other factors like ozone depletion, animal agriculture and deforestation also change climate. The effect of climate change can be found on among other things, on rising sea level that may accelerate coastal erosion, on increasing temperature, on increase in intensity of natural disaster, and very importantly on vector borne diseases. There has been an increasing trend in the annual mean temperature in India. In recent decades the east coast has been experiencing fewer rainy days while the northwest has been experiencing heavy summer monsoon. There have also been some extreme climatic events like heat wave, intense rain, floods and droughts in India. Researchers have documented the increase in frequency of hot days and multiple-day heat waves in the past century. There has been record rainfall in Mumbai, India on 26 to 27 July 2005, which led to loss of large numbers of lives. Consecutive droughts between 2000 and 2002 caused crop failures, mass starvation and affected millions of people in Orissa.

Also, increased water stress poses to be a major problem for India. Accelerated glacier melt is likely to cause increase in the number and severity of glacial melt-related floods, slope destabilisation and a decrease in river flows as glaciers recede.

4. For detailed discussion on climate change see the report of Intergovernmental Panel on Climate Change, the source can be found under Cruz et al. (2007) in the reference.

The researchers have predicted that with the current trend in the melt of glaciers, the Ganga, Indus, Brahmaputra and other rivers could likely become seasonal rivers in the near future and affect the lives of people residing around them (Cruz et al, 2007). Thus, it is likely that climate change will hamper sustainable development of India as it increases the pressures on natural resources and the environment associated with rapid urbanisation, industrialisation and economic development. In order to reduce the effect of climate change, we need to include climate-proofing concepts in national development initiatives. Urban areas mostly face problems of air quality pollution, green house gases, and unsustainable consumption and of inadequate sanitation and water supply.

Thus translated into policy initiatives, environmental sustainability of urban form should aim at energy efficiency in transport and buildings, optimal planning solutions in terms of locations, distances and spaces, which will reduce air and noise pollution. It should also aim at sustainable management of sanitation and water supply, promote equity in provision of services and of course reduce deforestation.

The recently announced National Action Plan on Climate Change by the Prime Minister in June 2008 visualises to make economic development of India energy efficient. All these concerns, questions and initiatives about sustainable environment and climate change have resulted in experiments and debates over city forms that are sustainable. Before discussing the relevant city forms it would be pertinent to discuss the sustainable management of urban basic services and the inefficiency in the land policy in India and its implications for sustainable city form and development in India.

Areas to which are to be given emphasis for sustainable development in india Deficiencies:-

Sustainable city planning should aim at achieving social and environmental equity while improving the lives of the people. For that to happen we need to have a sustainable city form as well as provision and proper management of the services. Thus, in order for a city or urban area to be sustainable it needs to produce and manage basic services like water, waste, energy, and transportation in a way that it conforms to the principles of sustainable development. In other words, the city should be able to produce and distribute the services in an economic, environment friendly and equitable way. Cities in the developing countries are deficient in the provision of basic services that pollute the

environment. It is to be noted that though there are some differences between cities and between rich and poor nations, in general urban infrastructure systems are designed without much attention to environmental and social impacts. Mostly the deliveries of the services like water, energy, waste, transportation, are based on non-renewable energy sources (Pinderhughes, 2008). Moreover, the inequality in the provision of these services is very high. Indian cities are characterized by high density of population, deficiency in services and air pollution. Let us see the status regarding these in India. In urban India in 2001, 69[5] per cent of the households had safe drinking water, 61[6] per cent of the households had their latrine facilities within their houses and only 35 per cent of the households had closed drainage facilities.(*Census* 2001)[7].Eighty-eight per cent (88%) of the urban households had electricity and only 0.2 per cent had solar energy in 2001(Census, 2001).[8] In Delhi, the capital city of India, 77[9] per cent of the urban households had tap as source of drinking water, 63[10]per cent had their latrine facilities within their premises and 52 per cent of the households had closed drainage.facilities[11] Delhi generated 5922 tonnes of solid waste per day in 2004 − 05[12].

Air pollution has become a major problem in Indian cities. Taking the case of Delhi, we find that there are around 54 lakh vehicles in Delhi. Around 70 per cent of the air pollution in Delhi happens to be due to.vehicles[13]. It has been found in a World Bank study based on 1994-95 air quality data that around 10,000 people die every year prematurely due to air pollution in Delhi[14] alone. According to Delhi Medical Association the incidence of asthma in Delhi is ten times the national average (Centre for Science and Environment). Densities of Indian cities are very high. Management of the basic services should be done keeping in mind the deficiency in the services, the environmental impacts and the inequality in the provision of the services. Thus we have two issues here, the first one is covering the deficiencies in services and the second one involves how to provide the services in an environment friendly way. We discuss some of the options for alternative and environmental management of the services.

5. For detailed discussion on climate change see the report of Intergovernmental Panel on Climate Change, the source can be found under Cruz et al. (2007) in the reference.
6. 68.7 per cent had tap water, 16.2 per cent had hand pump and 5.1 per cent had tube well.
7. 14.6 percent had pit latrine and 46.1 per cent had water closet.
8. See Census of India 2001, Series-1 India, Analytical Reports on Housing Amenities.
9. See Census of India 2001, Series- 1 India, Analytical Reports on Housing Amenities.
10. See Statement 1.1 of Census of India 2001, Series-1 India, Analytical Reports on Housing Amenities.
11. 15.2 per cent had pit latrine and 47.4 per cent had water closet, See Statement 3.1 of Census of India 2001, Series-1 India, Analytical Reports on Housing Amenities
12. See Statement 3.2 of Census of India 2001, Series-1 India, Analytical Reports on Housing Amenities.
13. Source: Central Pollution Control Board of India.
14. See White Paper on Pollution in Delhi with an Action Plan

Management of water supply:-

For the sustainable development of the country our government should give proper emphasis on the adequate management of water supply.The effect of climate change on water supply will be negative in almost all the countries. Thus care should be taken that energy efficient alternative systems are innovated. As for efficient practices, water consumption can be limited by using raw water, recycled water for gardening and landscaping. In the state of Vermont, U.S.A., a wastewater treatment system uses a series of tanks containing plants and other organisms to naturally clean wastewater that serves 500,000 people per year (Pinderhughes, 2008). There have been other scattered evidences of use of wastewater but the example of a city doing it on large scale is rare. In India the water from Sewage Treatment Plants (STP) in factories are used for landscaping and gardening. However, in developing countries the main challenge is to provide clean drinking water to all the urban residents adopting sustainable water management practices. Rainwater harvesting has its possibilities for partially managing water supply.

Conservation of old water bodies like lakes, ponds can be made for increased and sustainable water supply. It has been considered as an optional reform under Jawaharlal Nehru National Urban Renewal Mission (JNNURM) in India. In Delhi itself, one after another marshlands and water bodies are being converted in residential areas, garbage dumps, and petrol pumps and so on, the latest victim being the Jahangirpuri marshland (Hindusthan Times,

2008). Marshlands recharge ground water substantially. Much is yet to be done regarding this in India. Other environmentally sustainable methods can be explored.

Management of waste:-

Waste management practices should be started from the production and distribution stages of economic activities through reuse and recycling. Reuse of things like metals, glass, paper, plastic, textiles, organic waste and water will reduce demand for energy, raw materials, fertilizers and fresh water sources (Pinderhughes, 2008). However, care should be taken that hazardous wastes do not go for recycling. Plastic should be used less.

In Delhi more than 5000 tonnes of municipal solid waste is generated everyday, which is disposed of in landfills. Too much land is being consumed for disposal and is creating danger of ground water contamination. As such the department of environment of the government of India recommended that other 'best practices' in waste management should be adopted in a large scale. The practices include, vermiculture, pelletisation, aerobic composting and so on. A research study by NEERI has recommended mechanical composting as the viable option for such a huge amount ofwaste[15]. The Supreme Court of India, hearing public interest litigation on solid waste management of Delhi directed the Municipal Corporation of Delhi to improve the system.

Management of energy:-

Energy management practices should be encouraged in the planning of buildings and the city form. Buildings and city forms that are energy efficient and use sustainable energies like solar and wind energies should be considered. There are fragments of evidences in India of settlements using solar power, water recycling techniques and waste management practices. But in general the environment friendly techniques are yet to be practiced in urban areas, especially in large cities where the differences would be felt. City forms should be such that it uses energy efficient transport.

Reduction in inequality:-

Management of basic services in the cities should reduce inequality in services between rich and poor. The concept of commercial viability does not hold for social services always. City form should take into account social conditions also. The ability of urban poor to pay for the full cost of water supply would remain low in India. Thus reduction in grant of the government and introduction of private sector in this sector is likely to make the situation worse. It is also well known that much of the subsidized schemes in the past have gone to the middle and high-income areas (Kundu and Thakur, 2006).

15. See White Paper on Pollution in Delhi with an Action Plan.

Conclusion:-

And for a nation which wants to achieve sustainable development there should be optimum utilisation of natural resources and natural environment although India has made significant progress in terms of its achievements across the pillars of sustainable development, many problems continue to persist. New threats are also posing new challenges to the country. Though there has been reduction in poverty levels in the country, there is a need to step up efforts for further poverty eradication and inclusive development. The depletion of natural resources and deterioration in environmental quality needs to be addressed on an urgent basis.

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