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GREEN TECHNOLOGIES

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Abstract: This is a study on the various renewable energy technology options for a use of various green technologies in today era. Technology allows people to become more efficiently and to work more intelligently that were not possible before. The knowledge for conserving natural environment and resources , green technology is used. It is an alternative to improve the national economy without harming the environment. This paper explains the contribution of green technology in the sustainable development of agriculture sector as well as infrastructure for the country like India.

KeyWords : Green technology, Green buildings, Sustainable development, Bio fuel, Organic farming

What is actually GREEN TECHNOLOGY?

Green Technology is a pretty new concept in respect to the environment protection timeline. It is all about the best ways and methods that preserves our natural resources and sustainability of life on our planet earth. It is important to bring technological change for promoting green growth with reduced cost. This paper focuses on environment friendly technological changes specially in developing countries. This paper will answer the questions that why developing country should undertake innovation policies, what types of policies should be undertaken regarding the present technologies

GREEN INNOVATION

Need to focus on Developing nations

Innovation should be defined in terms of solving problems through improvement in technologies, organizational and marketing improvement. Pollution can be reduced by improving recycling and energy efficiency in buildings, by using thermal insulation and new materials. In fields of agriculture by changing techniques to mechanical irrigation. Transport infrastructure and urban design are another two fields where we can work on pollution. New technologies should use wind, geothermal, biomass, hydropower, hydrogen fuels and carbon-capture and storage(CCS) for better tomorrow.

TOOLS FOR GROWTH OF GREEN TECHNOLOGY: The U.S. and Mexico:

Because of limited resources with increase in environmental and other development needs it is important to choose the best projects, those with the highest returns on public investments and private resources harnessed by regulation. U.S. is the world leader in the use of quantum methods in marketing policies and other environmental regulations. Also, Mexico is a developing country that is known for its regulatory processes for environmental and other policies regarding the future generation.

U.S regulatory system:

Regulations aims to establish requirements about the technologies used in present scenario(which are legal and which are not). For example, a regulation issued by EPA to implement the Clean Air Act might determine what amount of pollutants would effect the human health and the environment. It also tells firms how much sulfur dioxide they can legally emit into the air, and what the penalty will be if they emit too much. BCAs (Benefit Cost Analysis) and RIAs(Regulatory Impact Analysis) are systematic processes for calculating and comparing benefits and costs of a project or regulation.

The key elements of a high-quality BCAs are:

- Market failure regarding the new or existing green technologies.
- Description of the alternatives considered,
- Identification of possible unanticipated consequences,
- The scope of the costs addressed,
- Discussion on the scope and nature of the benefits considered,
- Appropriate comparisons of regulatory outcomes occurring at different times, and
- The treatment of uncertainty.

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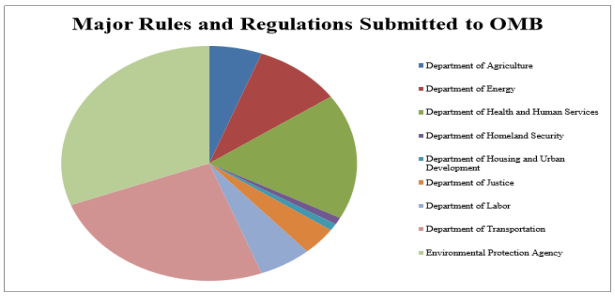
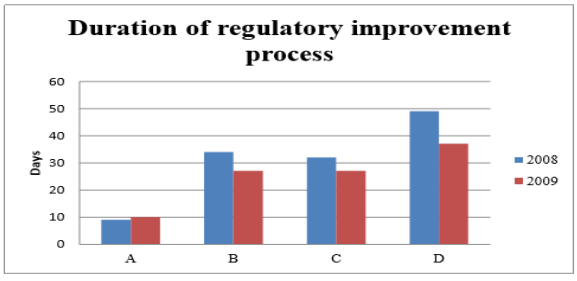
RIA analysis the consequences of the regulation, and a description of the key non-quantified, non-monetized costs and benefits. Formal guidelines for the preparation of RIAs have been issued by the OMB(Office of Management and Budget), the EPA, and other regulatory agencies.



***The Mexican Regulatory System*:**

Even though Mexico is counted under those countries which scores low in political stability and Absence of Violence/Terrorism, Control of Corruption and rule of law, Mexico still scores reasonably well in the area of Regulatory Quality. According to the General Law of Ecological Equilibrium and the Protection of the Environment (referred to as LGEEPA), initially adopted in 1988, with multiple reforms the preliminary norms of this law are given below, such as:

- "To guarantee the right of every person to live in an environment that is appropriate for their development, health, and well-being. "
- "Preservation, restoration, and improvement of the environment."
- "The sustainable use, preservation, and when necessary, the restoration of the ground, water and additional natural recourses, so that the acquisition of economic benefits and society's activities can be compatible with the preservation of the ecosystems."
- "The prevention and control of air, water, and ground pollution."



Key:

Route A: Total approval with final effects
Route B: Preliminary approval + Final approval
Route C: Adjustments and corrections + Total approval with final effects
Route D: Adjustments and corrections + Preliminary approval + Final approval

Source: "Redesign of the Regulatory Improvement Process", COFEMER, July 26, 2010.

GREEN BUILDING

As compared to the convectional buildings, Green buildings optimizes energy efficiency, uses less water, conserves natural resources, reduces overall impact to the environment. It is also known as sustainable building designed to meet some objectives such as building a better environment, use the resources efficiently ,and provide cost savings. This ecofriendly house is the modern method of construction which uses unskilled labour, locally available material and takes less construction time.

INTRODUCTION

In this modern world of high energy prices and climate change, it is very important that buildings uses fossil fuels as the alternative source of energy against these rapidly rising prices. Fossil fuels provide 95 percent of the world's commercial energy supply whereas renewable energy sources supply less than 3 percent. The green buildings focuses on the "three R's" of environmental conservation viz., reduce, recycle and reuse. The key to creating suitable sustainable place is to minimize usage of energy and resources, focus on sustainable energy, minimize waste and pollution and make the place suitable for humanity as well as environment. So to conserve the natural resources we can approach the green technologies in infrastructure.

FUNDAMENTAL PRINCIPLES OF GREEN BUILDING AND SUSTAINABLE SITE DESIGN:

Key Strategies and Technologies:

- Efficient use of space, reuse vacant places, renovations to maximize future flexibility and reuse expanding useful life. Identify and protect valuable Greenfield.
- Reduce urban heat island effect by maximize the use of previous surface, reducing site development footprints, using light colored roofs ,pavings and walkways.
- Natural shading of buildings with trees and other landscapes. Use of solar energy, natural daylight and natural ventilation.
- Recognize the site which is least time consuming and most preferable for environment.
- Water preservation and ground water quality by using shrubs, drought resistant, fertilizers, pesticides or herbicides.
- Optimize solar orientation and design the building to maximize penetration of natural daylight into interior spaces. Provide shades or daylight controls where needed.

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Indian Green Building Council

In India an organization is formed in 2001 to apply green technologies in infrastructure. Indian Green Building Council (IGBC) licensed Leadership in Energy and Environmental Design(LEED) Green Building Standard from U.S. Green Building Council and responsible for certifying LEED-New Construction and LEED-Core and Shell buildings in India. Today, India has more than 267 certified green buildings, which are fully operational and functional. IGBC promotes and focuses on a whole new building approach to sustainability, based on recognizing performance in the following five key areas:

- Development in sustainable site.
- Saving water
- Improving Energy efficiency
- Selection of material.
- Indoor environmental quality

Green buildings are economically viable. India can reach and capable of completing milestone of using green technologies ,setting new environmental landmarks. The use of locally available bamboo as a reinforcing material for construction of beam/slab/wall is more economical and at the same time environmental sustainable. So it is necessary to develop our approaches on improving our technologies and other sources to provide a better understanding of the challenges of land use planning and management. Research is also needed to examine the relationship between the benefits of green revolution technology contributed individually and the sum of benefits in interaction with each other.

REDUCTION IN POVERTY VIA ECOLOGICAL AGRICULTURE

In India, watershed development programs have become the model of integrated genetic and natural resource management specially for dry land agriculture for raising income of farmers. Micronutrient contained in soil was deficient such as boron and sulphur but adding these micronutrients to the soil resulted in 28 to 70 percent increase in crop yields. This situation contributes to the growth of farm income by raising the investible capacity of the farmer .Agriculture plays a fundamental role in the economy of a country like India. It accounts for19% of GDP and employs a 60% proportion of the labour force. Since agriculture sector creates both backward and forward linkage through the income linkage, any agriculture shock createsimpact on the whole economy. It is very important
to increase benefits from agriculture sector, because it is the key to reduce poverty. Continued agricultural growth is a necessity, not an option for the nations growth.. About 70%of the population of India lives in rural areas and majority of farmers depend upon agriculture as their primary source of income . In 2007, the World Bank report has laid emphasis on the agriculture development for poverty alleviation and has advised to put this sector in the centre of development agenda, if the world wants to halve poverty by 2015**.**

Rural renewable energy

In India, Renewable energy sector growth during the last Decade has been significant, even for electricity generation from renewable sources. Today's renewable energy technologies has been the best substitute for improving the quality of living life of rural households in terms of lighting and cooking, producing bio-fertilizers and food production activities. For farmers, this technology is a feasible option because it provides sustainable energy services to meet their energy needs in the agriculture sector. In the long-term, these sustainable energy sources will help to meet the energy requirements of the large rural population of India. Renewable energy and eco-friendly technology also helps small and medium enterprises to process high value cash crops. One of the studies shows that, this energy significantly reduces the farm fuel usage.

Organic farming

Organic farming system has soils of higher physical and biological and in many cases chemical quality than that of the other conventional farming systems. When productivity in terms of inputs applied and outputs obtained and social costs of conventional farming are considered, organic alternative has been found to be economical and significant. Organic agricultural practices are based on a maximum harmonious relationship with nature aiming at the non-destruction of the environment. A study of 200 farmers in Himachal Pradesh during the period of 3 years found that the total cost of production of wheat and maize was lower under organic farming and the net income was 2 to 3 times higher. For GT, organic farming is the fastest growing fields of the food sector. As organic farming forms 1-2% of the total food market share, it becomes one of the most important energy saving sources in food sector. The main benefit is the protection of land in terms of the quality of the land which can be decreased due to the other inorganic farming.

Biogas, Bio fuel, Biomass

Biogas is the product of anaerobic digestion of organic matters by the bacteria called methanogenic . Biogas utilizes organic agricultural waste and converts it into fertilizers and fuel. Direct impacts of biogas are agriculture residue, fuel wood, livestock manure, and

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kerosene savings. Biogas also improves household or communal sanitation and solves the problem of indoor air pollution . Bio fuel is bio-diesel and bio-ethanol. It is a positive impact by converting wasteland to farmland with some crops . In India, if all available sugarcane molasses is utilized, 0.8 million kiloliters of ethanol thus produced can replace 9% of current petroleum requirements. Main sources of biomass are animal waste and trees. Agriculture residues and wastes are converted to thermal and electric energy through processes like gasification and cogeneration. The biomass fuels are also suitable for highly efficient power generation cycles based on gasification. Steady increase in the size of biomass and biogas technologies has contributed to declining fixed unit costs.

CONCLUSION

This study is carried out on various technologies taking into consideration the ecological and the mineral resources so that the technologies can be widely carried out. Since it has been proved that these technologies are widely useful and cost effective so the must be taken into practice. Also the subsidies have to be worked out for these new technologies to flourish.

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