THE ROLE OF TECHNOLOGY FOR SUSTAINABLE DEVELOPMENT

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Abstract:

"Technology role in sustainable development" is the role of technology to prevent the 'exploitation' of the resources of the earth purely for wealth and riches. It is to respect the environment and provide a healthy space for those who reside here. It is to make sure we know when enough is enough. Global sustainability encompasses an economic dimension, an environmental dimension and social dimension, both at national and international level. The complexity of the interrelationships between environmental, economic and social changes makes it very difficult to develop promising strategies to deal with them. Policy makers need to ensure and manage these three challenges successfully and to provide the guidelines to move forward.

Although technology has often been regarded as the source of many problems, it nevertheless represents one of the key opportunities to cure them through a number of channels. The right technologies to make development sustainable are already available today – the challenge is deploying them in the right way. In this context the key challenge is to create links between the people with the ideas. The present study has been undertaken to assess the role of technology in sustainable development and to find the impulse of mankind towards sustainability.

Keywords: *Sustainable development, Technology for sustainable development, Strategy for sustainability, Economic development*

Introduction

The modern world is faced with the challenge of global, shared responsibility for development tuned to the needs of people and of nature, as well as with the understanding that the planet Earth must be adequately preserved equally for the present and for the future generations. There are strong ethical reasons for the present generation to meet own needs without compromising the development opportunities of the future generations. This reasoning is based on the fundamental principle of moral justice that all people have equal rights and broadest freedoms provided that they do not contradict the freedom of others. The right of the present generation to use resources and to enjoy a healthy environment must not compromise the same rights of future generations.

Sustainable Development Strategy means sustainable development as targets-oriented, long-term (continuous), comprehensive and synergetic process with impacts on all aspects of life (economic, social, environmental and institutional) at all levels. Sustainable development is focused on developing models which provide quality response to social-economic needs and interests of citizens, and at the same time eliminating or significantly reducing impacts which are a threat or damage to the environment and natural resources. The long-term concept of sustainable development implies continued economic growth, but such growth that brings with it not only economic efficiency and technological progress, but also a higher share of cleaner technologies and innovation in the society as a whole and corporate social responsibility, enabling poverty reduction, long-term better use of

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resources, improved health and quality of life and pollution reduced to the carrying capacity of the environment, prevention of future pollution and preservation of bio-diversity. One of the most significant objectives of sustainable development is generating new employment and reducing unemployment rates, as well as reducing gender and other inequalities, promoting employment of the young and the disabled and persons from marginalized groups.

Sustainable development also implies the need to harmonize the different aspects of development and the contradictory motifs included in individual sectoral programmes. Effective resolution of such conflicts requires a certain level of political will and dedication. Key pre-requisites for the acceptance and adoption of concepts of sustainable economic and social development and their successful implementation include adequate leadership, broad political, social and media support, and a social consensus on the need to accept the concept. In this context, strong political will, dedication of the government and public support are the most direct factors of success. One of the features of sustainable development is greater public participation in environmental decision-making. Adequate public participation means more than declarative will expressed by the government but also special incentives, above all prompt information and education so that the public is in a position to objectively influence the outcomes that it is interested in achieving.

The United Nations Conference on Sustainable Development (UNCSD) was organized in pursuance of General Assembly Resolution 64/236 (A/RES/64/236), and it took place in Rio de Janeiro, Brazil from 20-22 June 2012 to mark the 20th anniversary of the 1992 United Nations Conference on Environment and Development (UNCED). The 10th anniversary of the 2002 World Summit on Sustainable Development (WSSD) was held in Johannesburg.

At the Rio+20 Conference, World leaders, along with thousands of participants from Governments, the private sector, NGOs and other groups, came together to shape how we can reduce poverty, advance social equity and ensure environmental protection on an ever more crowded planet to get to the future we want. The Conference focussed on two themes: (a) a green economy in the context of sustainable development poverty eradication; and (b) the institutional framework for sustainable development. In Rio+20, Seven priority areas highlighted requiring priority attention these include decent jobs, energy, sustainable cities, food security and sustainable agriculture, water, oceans and disaster readiness.

Defining Sustainable Development

Sustainability is about doing all that we do today as societies and economies with three considerations in mind:

- Environmentally - ensuring that resources are not consumed faster than they can be replenished
- Economically - supporting prosperity and growth and
- Socially - respecting the values, culture and human needs of communities.

Sustainable development meets the needs of the present without compromising the ability of future generations to meet their own needs. Seen as the guiding principle for long-term global development, sustainable development consists of three pillars - economic development, social development and environmental protection.

Role if Technology in Sustainable Development

"Technology role in sustainable development" is the role of technology to prevent the 'exploitation' of the resources of the earth purely for wealth and riches. It is to respect the environment and provide a healthy space for those who reside here. It is to make sure we know when enough is enough.

The right technologies to make development sustainable are already available today – the challenge is deploying them in the right way. In this context the key challenge is to create links between the people with the ideas, those working on the ground with the local knowledge of how it might work and the financers to back them.

Technology as a Driving Force for Sustainable Development

The complexity of the interrelationships between environmental, economic and social changes makes it very difficult to develop promising strategies to deal with them. Although technology has often been regarded as the source of many problems, it nevertheless represents one of the key opportunities to cure them through a number of channels.

The importance of technology innovation for economic sustainability in terms of wealth creation and competitiveness is undisputed, both by increasing productivity and by providing new products. In practice, however, economic growth has rather stagnated in the most advanced countries, despite great technology advances.In the last twenty years, many improvements have been achieved towards environmental by means of technology responses. The reduction of SO2 and other emissions, the stabilisation of energy consumption, the introduction of the catalyst for cars or the improvements in fuel efficiency of many applications are just a few examples. The initial add-on or end-of-pipe technologies have been increasingly replaced by more integrated solutions under the headline of "clean technologies", reducing further the environmental impact. Once this is widely achieved, the next target will be to introduce technological solutions which do not even contain the risk and the possibility to create direct or secondary environmental problems.

The third sustainability dimension- social sustainability – has not fully benefited from the process of technological change during the last years. Due to the inter-relatedness mentioned above, this has started to represent a major obstacle to the achievement of environmental and economic sustainability.

So, whereas some optimism seems to be justified with regard to the beneficial role of technological innovation for environmental sustainability and growth, it becomes also evident that we have not yet been able to develop technologies which fulfil sustainability in its broader sense. The development of such "sustainable technologies" should be the priority for the next years.

The Potential of New Technologies for Sustainable Development

Technology is a double-edged sword. It is both a cause of many environmental problems and a key to solving them. It is a matter of fact that the technologies of the past, still dominating in transport, energy, industry and agriculture, are undermining our basic life supporting systems – clean water, fresh air and fertile soil. However, in each of these sectors there are new technologies available or emerging that may, if widely used, essentially solve the environmental problems.

Thus, new technologies have the potential to

contribute to a decoupling of economic growth from pressure on natural resources. The fact is that we face a choice between technological change at historically unprecedented rates or a change in atmospheric composition unlike any experienced since the dawn of humanity. During the 1990s we have seen a substantial diffusion of renewable energy and transport technologies and further progress in industry and agriculture technology, not least biotechnology. The most promising for immediate investment is energy saving technologies in housing and the tertiary sector. A systematic introduction of best available technology could reduce the use of energy with 20-50 per cent. New technologies for waste management offers a great potential; the most recent investment in this sector shows a utilisation of more than 90 per cent of the energy content of waste. Even more fundamental are new technologies for "up-stream" resource management in industry, offering strong synergies for productivity in production, quality in goods and services and efficiency in the use of natural resources. In this way a dematerialisation can be brought about in a larger scale. In agriculture organic farming is increasing with 20 per cent a year, in spite of subsidies to traditional, non-sustainable farming methods.

Yet, in other cases the growth is not self-sustained. There are still significant obstacles to be overcome to reach the stage where the diffusion of renewable energy technologies is independent of government interventions and where these technologies have made a major inroad into the energy market. The extent to which more efficient technologies will be adopted by the market depends largely on the relative future price relations between different sources of energy, government policies to benchmark or to set standards for eco efficiency and voluntary commitments by industries. It is also of vital importance to consider consumer's preferences for eco efficient products as well as consumer protection.

Objectives

1. To study the role of Technology for sustainable development
2. To assess the contribution of Government and Society in promoting new technology for sustainability

Research Methodology

The empirical research has been carried out to find the role of Technology for sustainable development and to assess the contribution of both Government and Society in promoting new technology for sustainable development.

Sample & Sampling technique

The Sample size comprised 439 Scientists working at different levels from 'B' to 'G' of a Research and Development organization involved in development of critical technologies for Defense Services in India. Scientist 'B' being the young & at low level are working directly on Technology development with creative mind. Scientist 'G' being the senior & at higher level with vast experience of nearly 30 years and mostly heading a Research & Development organization. **Stratified random sampling** technique is used in the current study.

Data collection

Primary data was collected through well structured questionnaire covering key questions. 457 responses received and 18 failed data integrity test. Total 439 responses were considered.

Analysis and Interpretation

Chart 1 : Respondents Profile

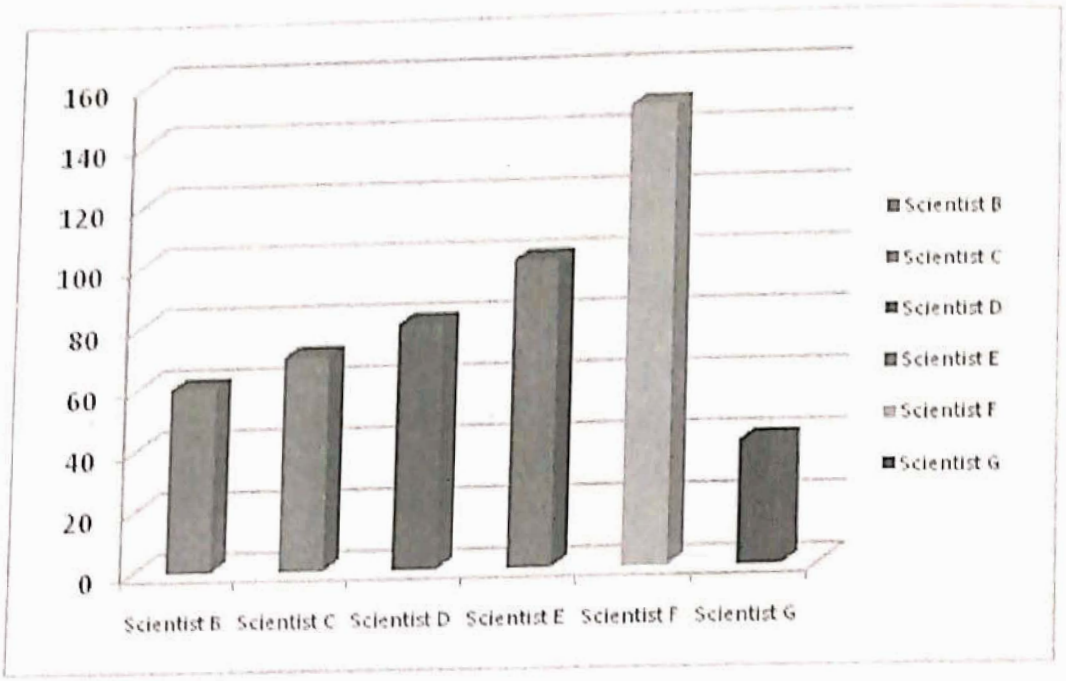
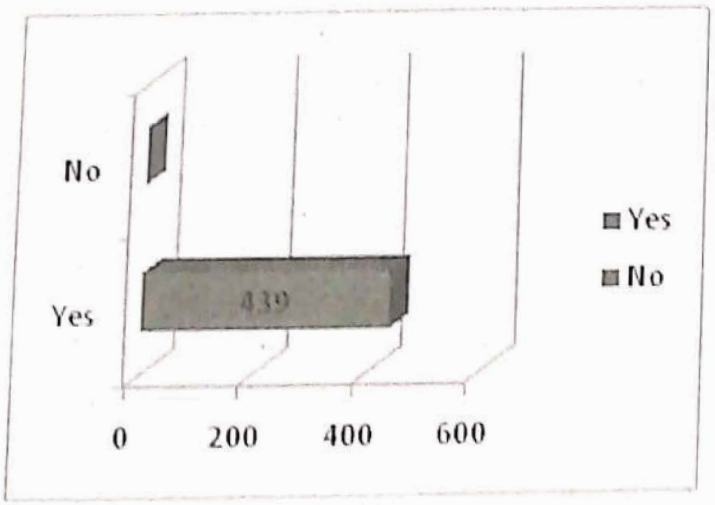


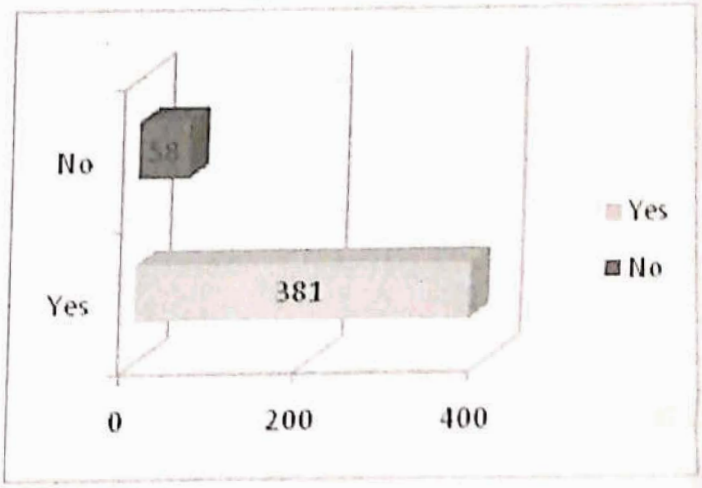
Chart 2 : Need of Technology for Sustainable Development



Source: Primary Data

All the (100%) respondents agreed that there is a need for Technologies for sustainable development. There is a strong need for Technology for sustainable development and Technology plays a significant role for sustainable growth.

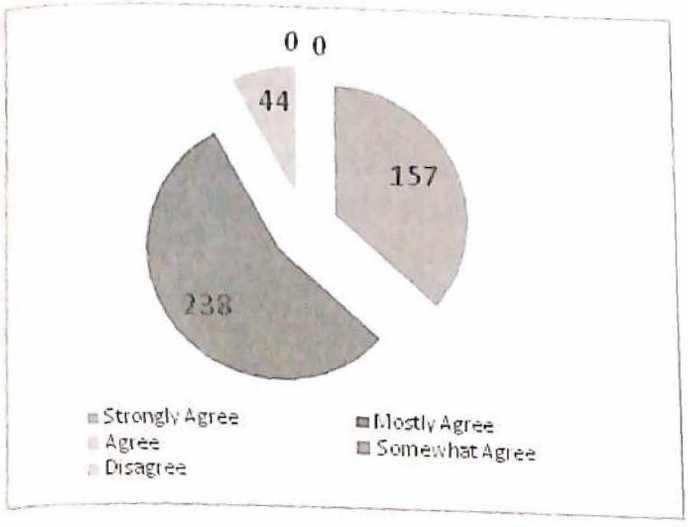
Chart 3 : Sacrifice for Larger Development



Source: Primary Data

Majority, 87% of respondents do not mind little destruction to nature to achieve larger goals. The people are ready to withstand minor destruction to environment due to Nuclear power plants, etc., establishment of which are essential.

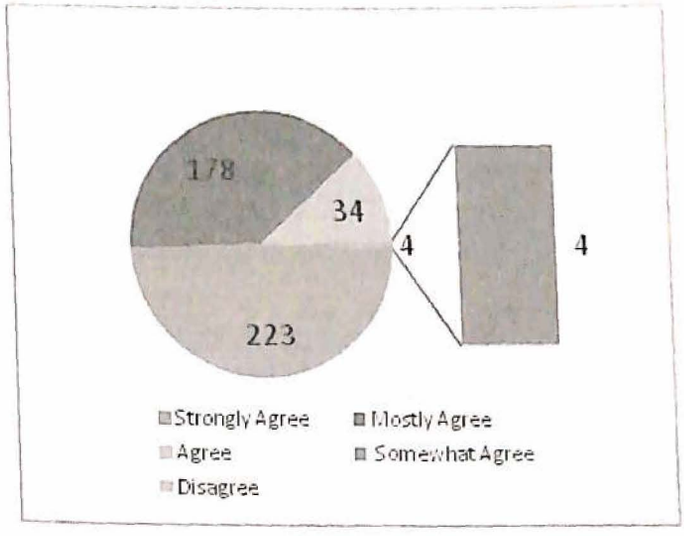
Chart 4: Deterioration of life



Source: Primary Data

90% respondents believe that the man life observed that with extensive utilization of natural resources, environment will be spoiled with release of poisonous gases and make man life difficult.

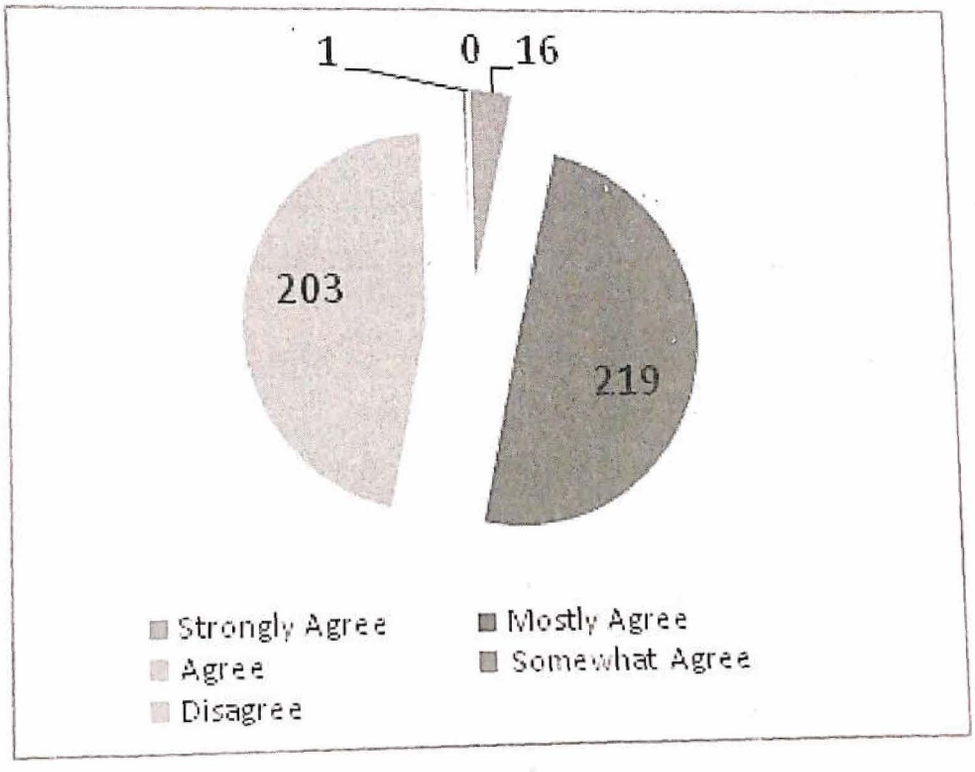
Chart 5 : Depletion of non renewable energy



Source: Primary Data

Over 91% respondents believe that fossil will deteriorate in another 20 years at this ratef u e l will not last beyond 30 years. It should of exploitation of natural resources. It can be noted that non renewal energy sources like fossil fuel (Petroleum products) will exhaust rapidly in 30 years.

Chart 6:Sacrifice for future by changing life style



Source: Primary Data

96% of the respondents are willing to sacrifice for the sake of future by changing their life style. It can be said that the respondents are willing to change their life style for sustainable development.