SPACE TECHNOLOGY FOR SUSTAINABLE DEVELOPMENT

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Abstract

The use of Space Science and Technology based data is gaining popularity for its authentication, accuracy, and precision. This study aimed to explore the use of Space data in various sectors by increasing international cooperation for achieving sustainable development goals in Bangladesh. A report showed that about 16.8% of all outsourced online workers in the world are from Bangladesh and it is the second after India. Space data plays vital roles in early warning and disaster effects management. Bangladesh has launched a Space satellite (Bangabandhu satellite-1) and is using the data in telecommunication and weather forecasting.

Introduction

The use of Space Science and Technology based data is gaining popularity for its authentication, accuracy, and precision. Now it is time to ensure access to space data for multipurpose uses in various sectors to achieve benefits. The country upgraded from Least Developed Country to lower-middle-income country in 2018 and Space Science and technology has the potential to provide benefits in all seventeen points of SDG.

Most of the developing countries including Bangladesh have the opportunity to realize the SDGs' goals including no poverty, zero hunger, health, and quality education through developing space knowledge-based human resource those who can utilize space data efficiently in getting socio-economic development. The objective of the study focused on the use of Space data in various sectors by increasing international cooperation for achieving sustainable development goals in Bangladesh.

Climate Change

Satellite images enable direct observation of the land surface at repetitive intervals, making possible the evaluation of the static and dynamic attributes of land cover. The observation can help to identify areas at risk and to better plan, monitor, and assess afterward as well as to mitigate climate change impacts.

Space Data: a useful tool for application in different Sectors

Human Resource Development

The space science and technology based educational institutes have to be set-up to develop human resources experts as well as include space education in national curriculum in junior schools.

Food Security

High-resolution satellite remote sensing data combined with satellite navigation data from the space technology provide spatial information regarding water and food using precision irrigation and precision farming techniques.

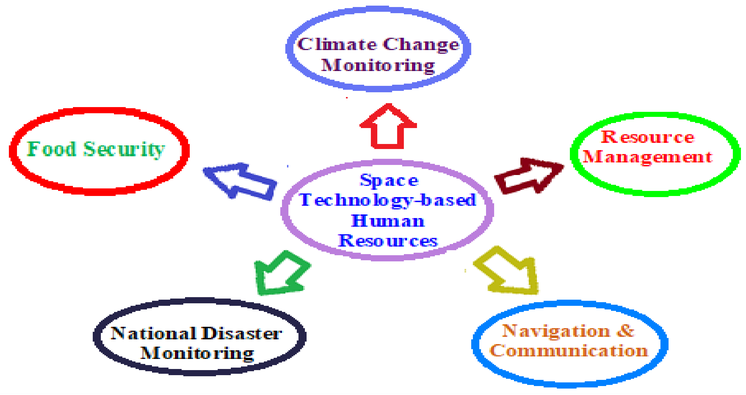

Figure 1: Applicability of Space-based knowledge in different sectors for sustainable development.

Navigation and Communication

The satellite communications use in the transfer of information between ships and shore and also deliver the latest weather forecasting for the safety and security of the fishermen at sea.

Floods, Droughts & Cyclones

Space technology applies to address the long-term effects of floods, droughts and cyclones, and facilitate immediate humanitarian emergencies in flood-affected areas. Space technology plays a crucial role in disaster management including effective responses to relief operations.

Use Space data in Our Research for assessing Climatic Change

The study has used station-based earth temperature, mean sea level, rainfall and humidity data for accessing the impacts of climate change in water quality and sea-level rise in coastal areas of Bangladesh due to the unviable of space data. The accessibility of Space data in this regard would be significant impacts on the research finding as the data are more authentic in maintaining precision and accuracy.

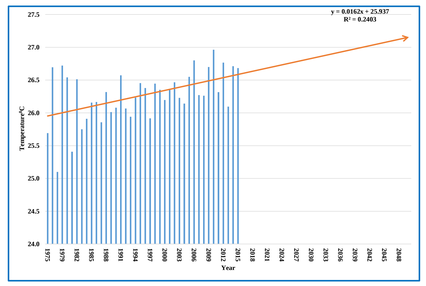

Figure 1. Average temperature increased at Khepupara station, a coastal region of Bangladesh during 1975 and 2015.

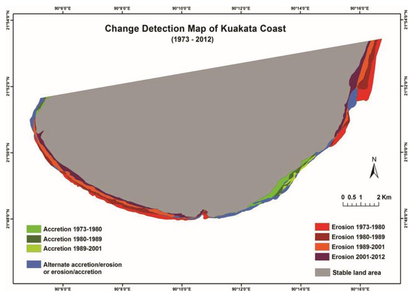

Figure 2. Satellite image of shoreline erosion in Kuakata, a coastal region of Bangladesh from 1973- 2012.

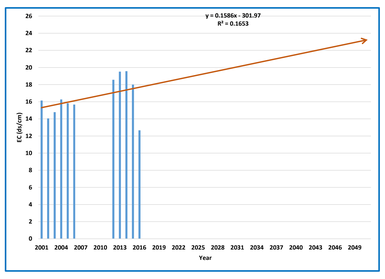

Figure 3. Salinity increases (interns of EC) in coastal areas of Bangladesh (2001-2050).

Bangladesh status in Space Technology

The Bangladesh Space Research and Remote Sensing Organization (SPARRSO) is a state agency established for astronomical research and application of space technology in Bangladesh. It works closely with NASA and ESA in environmental and meteorological research. The country has launched the Bongobondu-1 satellite recently, and it has already connected to different TV channels and monitored agroclimatic conditions and water resources in Bangladesh.

A report showed that about 16.8% of all outsourced online workers in the world are from Bangladesh, and it is the second after India, where the Indian is about 24.6%. The export revenue of the business process outsourcing (BPO) industry has been growing rapidly, and more than 40,000 educated workers are employed in this sector.

Conclusions

Access to space data will be a useful tool for applying in different sectors including food security, navigation, and telemedicine, agriculture, disaster and risk management, climate change associated problems including sea-level rise, inundation, salinity intrusion, surges, and wave overtopping. The telecommunication network, satellite TV channels, and internet service systems are getting benefits from the geostationary communications satellite (Bangabandhu satellite-1). A report showed that about 16.8% of all outsourced online workers in the world are from Bangladesh, and it is the second after India, where the Indian is about 24.6%. The study results showed that the salinity and shoreline erosion increased in coastal areas of Bangladesh in the last forty years. Access to space data in climate, disaster, and resources management research will be a great help in the sustainable development of Bangladesh.

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