भौतिक अनुसंधान प्रयोगशाला, अहमदाबाद

Physical Research Laboratory, Ahmedabad

https://www.prl.res.in/prl-eng/prlat75

58_PRL Ka Amrut Vyakhyaan

Wednesday, 07 September 2022

@ 04:00 PM (IST)

"From Ocean Science to Blue Economy"

Dr. Shailesh Nayak

Director, National Institute of Advanced Studies, Bengaluru.

https://youtu.be/YLyptEuDNVE

58_PRL ka Amrut Vyakhyaan

Title: "From Ocean Science to Blue Economy"

Speaker: Dr. Shailesh Nayak

Director, National Institute of Advanced Studies, Bengaluru.

On Wednesday, 07 September 2022

Abstract

The 'Blue Economy' has been defined as an ocean-dependent economic development to improve quality of life of people while ensuring inclusive social development as well as environmental and ecological security. India has been committed to advance the "Blue Economy" and several programs have been initiated to promote blue economy in the country. The knowledge about seabed, marine mineral and energy resources, fishery resources, natural hazards in the Exclusive Economic Zone (EEZ), legal continental shelf (LCS) as well as High Seas is a pre-requisite for growth and development. The marine fish catch is about 3.7 million tons for last several years. The exploration of deep-water fishery indicated availability of about 3.3 million tons. Many new grounds of fishery between 200-2000 m have been identified. The technological challenges of harvesting, post-harvesting and processing for product development must be undertaken for commercialization of deep-sea fishery. Geophysical and bathymetric surveys of the EEZ, LCS and High Seas have provided information about placer minerals on the coast and nearshore waters, gas hydrates on continental shelf areas as well as manganese nodules, hydrothermal systems, and cobalt crusts in High Seas. The investment in developing technologies for harnessing these resources has been made as a part of 'Deep Sea Mission.' Similar investment needs to be made in developing human resources. The resultant increase in anthropogenic activities on the coast along with impacts of climate change will affect the environment and ecology of the coastal zone. The coast is also vulnerable to many hazards such as cyclones, storm surges, tsunamis, coastal erosion, sea level rise, etc. The managing coastal zone for ensuring ecological and livelihood securities along with advancing developmental activities is a challenge. The coastal and marine spatial mapping including coastal vulnerability should be used to understand risks involved, and accordingly, developmental activities should be planned. Regular satellite-based monitoring of coastal ecosystems is a vital requirement of such planning. There is now consensus that macro-economic decisions about the blue economy will need environmental data. The economic growth prospects in the ocean beyond 2030 will be limited without large investments to support ocean environments. We need to develop a framework to bring together disparate data sources by developing an accounting system for oceans. Lastly, we need to set up an institutional framework for implementing activities related to blue economy. We need invest in building infrastructure, human resources, finances, and governance system. Such investments in sustainable development of oceans will pay rich dividends for future generations for the benefit of humanity.

The Speaker

Dr. Shailesh Nayak is currently the Director of the National Institute of Advanced Studies, Bengaluru, Chancellor of the TERI School of Advanced Studies and Editor-in Chief of the Journal of the Indian Society of Remote Sensing. He obtained Ph.D. degree in Geology from the M.S University of Baroda in 1980. He was 'Distinguished Scientist' in the Ministry of Earth Sciences and President, International Geological Congress during 2015-2017. He was the Secretary, Ministry of Earth Sciences, Government of India, during August 2008-2015, and provided leadership for programs related to earth system sciences. He has been credited with launching many research programs related to monsoon, air-sea interaction, changing water cycle, atmospheric chemistry, coastal vulnerability, climate services, polar science, etc. He had set up HPC system having 1.1 Peta flops capacity for weather and climate research and operations. He had restructured meteorological activities in the country and thus improved weather and hazard related services.

He had set up the state-of-the-art tsunami warning system for the Indian Ocean in 2007 in just two years time, and providing tsunami advisories to the Indian Ocean rim countries. He pioneered in development of algorithms and methodologies for application of remote sensing to coastal and marine environment, and generated baseline database of the Indian coast, and developed services for fishery and ocean state forecast. The generation of detailed information on the Indian coast has influenced the development of policy for zoning of coastal zone for regulating coastal activities.

He is Fellow of the Indian National Science Academy, New Delhi, Indian Academy of Sciences, Bengaluru, National Academy of Sciences, India, Allahabad, International Society of Photogrammetry & Remote Sensing and Academician of the International Academy of Astronautics, Paris. He has been awarded Honorary Degree of Doctor of Science by the Andhra University in 2011, Assam University in 2013 and Amity University in 2015. He was conferred the prestigious ISC Vikram Sarabhai Memorial Award 2012, Bhaskara Award for 2009, Harinarain Lifetime Achievement Award - 2013, R C. Misra Lifetime Achievement Award -2020 and Lifetime Geospatial Leadership Award - 2019, for his outstanding contributions in remote sensing and GIS. He has published about 200 papers in peer-reviewed journals.

PRL@75 · INDIA@75 · Azadi Ka Amrit Mahotsav

About PRL

The Physical Research Laboratory (PRL), known as the “cradle of space science” in India, is one of the premier research institutes founded in 1947 by Prof. Vikram Sarabhai, a renowned Cosmic Ray Scientist, a great visionary and institution builder. PRL played a seminal role in producing a highly motivated cadre of space scientists and the technologists of highest international repute. The first scientific rocket launched from Thumba on 21st November-1963 and many other rockets launched thereafter contained payloads developed at PRL. Dr. Sarabhai initiated many of these scientific and technical activities at PRL which eventually led to the formation of the Indian Space Research Organization (ISRO). Therefore, PRL is known as the “cradle of space science” in India. Further, the research in the area of Plasma Physics expanded to the formation of the Institute of Plasma Research (IPR).

As an institution PRL is unique in that it conducts fundamental research in a wide range of research areas from the Earth to the cosmos, and comprising Astronomy and Astrophysics; Solar Physics; Space and Atmospheric Sciences; Theoretical Physics; Geosciences; Atomic, Molecular and Optical Physics, Astrochemistry; and Planetary Sciences and Space Exploration. PRL is one of the rare research institutes of international repute wherein research in such diverse fields of sciences is carried out using several state-of-the-art experimental facilities that exist under one umbrella.

Along with the ongoing research, several new initiatives have been taken up during the last few years. The Multi-Application Solar Telescope (MAST) at Udaipur Solar Observatory has been operationalized. PRL initiated scientific programmes in frontier areas of research, which include a search for exo-planets, laboratory studies of interstellar grains, laboratory synthesis of cold astromolecules and experimental studies in the field of quantum optics. PRL is also developing several scientific payloads as a part of ISRO’s larger vision and contributing to roadmap for competitive scientific exploration of the solar system and beyond. In particular, PRL has been contributing significantly not only in building instruments for space missions, such as Chandrayaan-1, Chandrayaan-2, AstroSat and upcoming Aditya-L1, Chandrayaan-3 and planetary and space missions, but also by bringing out new and insightful science results.

PRL contributes to several national and international research programmes and to human resource development through its Doctoral and Post-Doctoral Programmes, capacity building programmes, such as UN Course on Space Science, and science and engineering internship programmes. PRL contributes significantly to society through its Outreach Programmes by periodically organizing science exhibitions and Open Houses, planned visits of students of various school and college to PRL, and popular talks at various institutions to not only share the excitements of the advancements of contemporary scientific findings but also to encourage students to take up sciences as their research career.

PRL@75 · PLATINUM JUBILEE · INDIA@75 · Azadi Ka Amrit Mahotsav