

Biotechnology will usher in the next revolution, similar to IT revolution: Dr. Alka Sharma, Senior Advisor, Department of Biotechnology

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Dr. Alka Sharma, Scientist and Senior Adviser Department of Biotechnology has said that Biology will steer the next technology revolution in the world. Speaking at a workshop for journalists on BioE3 Policy: Biotechnology for Economy, Environment and Employment organised by Press Information Bureau, Chennai, she said the Union cabinet on the 24th August 2024 approved the policy which would enable bio-based processes for clean, green and prosperous India and set a bio-revolution in the next 30 years.

Explaining the need for the policy, Dr. Sharma said the unsustainable pattern of material consumption, resource utilization and waste generation has led climate change related problems such as burning forests, melting glaciers and a drastic decline in biodiversity. Pointing to waste generation, she said plastic waste is a huge problem, out of 8.7 tonnes of plastic waste produced between 1950 and 2021 only 11% has been recycled which is making out planet unsustainable. These challenges are being addressed by the BioE3 policy by harnessing the power of high performance biomanufacturing.

Stating that the policy was formulated after wide ranging consultation with all stakeholders, Dr Alka Sharma said it is aligned with the Union Budget 2023-2024 emphasis on green growth and the Prime Minister's vision of net zero carbon emission. She said one of the overarching approaches is to set a path towards biobased chemical from petro-based chemicals to make out planet sustainable.

Listing the salient features of the policy Dr Sharma said focus on Biomanufacturing would be on 6 sectors including Bio-based chemicals and enzymes, functional foods and smart proteins, precision biotherapeutics, climate resilient agriculture besides carbon capture and its utilization, futuristic marine and space research.

Bio-Enablers including Bio-Artificial Intelligence (AI) Hubs, Biomanufacturing Hubs and Bio-foundries will be set up nation-wide to augment discovery and translational research *across the six sectoral verticals* prioritized under biomanufacturing initiative. These cross-cutting Bio enablers will be used for bridging the gap between '*lab-to-pilot*' and '*pre-commercial*' scale manufacturing of commercially viable bio-based products, she said

Prof. Guhan Jayaraman, I.I.T. Madras spoke about the science behind Bioprocess engineering/Biomanufacturing. He said apart from nurturing employment, creating a sustainable environment, the BioE3 policy would also create employment opportunities for a skilled work force. Listing the challenges, Prof Guhan said transition towards green fuels is a major challenge of biomanufacturing. He said the key bottleneck being lignocellulose, several biotechnology-based methods are being tried to break lignocellulosic bonds to produce sustainable high value molecule as well as fuels. A rich source of lignocellulose being wheat/rice straw, he said this will open up employment in the rural sector, since it would be economical to set up biomanufacturing units near the source of the raw materials.

Dr. Dharani, NIOT, Chennai made a presentation on Ministry of Earth Sciences initiative on "marine living and non-living resource exploration" and the diverse opportunities that exist in the Marine

Biotechnology sector. Dr. Dharani also informed about the Deep Ocean mission of the Ministry of Earth Sciences and the objective of the Deep Ocean Mission Vertical 3 and Vertical 6 to harness the marine bioresource through engineer and biotechnology means.

Dr. A. Vamsi Krishna, Department of Biotechnology spoke on Space Biomanufacturing which is one of the sectors under the Biomanufacturing initiative of DBT. He said with the Space sector opening up and Space tourism becoming a reality by 2050, Space Biomanufacturing is being pursued by many countries world over. He said there are twin challenges of micro gravity and radiation in space are to be tackled in the first instance. Further physiological changes in the astronauts after a prolonged stay in space are to be addressed before this sector becomes a reality.

Additional Director General, Press Information Bureau, M. Annadurai, in his key note address, said the centre is organising workshop on BioE3 Policy in various parts of the country to educate the media on the path breaking policy initiative of the centre, which will set a bio-revolution in the next three decades.



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