

YEAR END REVIEW: COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH (MINISTRY OF SCIENCE & TECHNOLOGY).

Relevant for: Science & Technology | Topic: Achievements of Indians in science & technology

Ministry of Science & Technology

Year End Review: Council of Scientific and Industrial Research (Ministry of Science & Technology).

Posted On: 18 DEC 2018 5:02PM by PIB Delhi

The Council of Scientific and Industrial Research (CSIR) today is one of the largest public funded R&D organisations in the world, covering a wide spectrum of science and technology areas. It has a dynamic network of 38 national laboratories, 39 outreach centers and five units. CSIR's R&D expertise and experience is embodied in about 4000 active scientists who are ably supported by about 7000 scientific and technical personnel. CSIR has the Prime Minister of India as the Council's head.

The year 2018 has been of great significance for CSIR. Some of the major achievements during the year are as follows:

CSIR Incubation Centres

CSIR is creating entrepreneurship through world class translational research and is setting up "Incubation Centres" which would work in identified domains. The CSIR Incubation Centres are a multipurpose facility.

- CSIR-CFTRI, a mentor for the food & food processing industries, has established a Technology incubator, "Nutra-Phyto Incubation Centre", in collaboration with the Government of Karnataka for working with/incubating industries in the domain and take them forward towards successful commercial ventures.
- CSIR's constituent laboratory, CSIR-Centre for Cellular and Molecular Biology (CCMB), Hyderabad, has opened an Atal Incubation Centre wherein it is offering its scientific expertise, infrastructure and business management to the start-ups. At present 15 companies are being incubated.

India's first biofuel-powered flight: CSIR Technology for Aviation Grade Biofuel

A historic flight powered by indigenously produced aviation biofuel based on patented technology of CSIR-Indian Institute of Petroleum (IIP), Dehradun completed journey from Dehradun to Delhi on August 27, 2018. With this maiden flight India joined the exclusive club of nations using biofuel in aviation. The use of bio jet fuel, apart from reducing greenhouse gas emissions by about 15 percent and Sulfur Oxides (SOx) emissions by over 99 percent, is expected to provide indigenous jet fuel supply security, possible cost savings as feedstock availability at farm level scales up, superior engine performance and reduced maintenance cost for the airline operators.

Successful Inaugural Flight of SARAS PT1N

SARAS PT1N (14 seater) designed and developed by CSIR-National Aerospace Laboratories (CSIR-NAL), a front line aerospace research laboratory of the CSIR was flown successfully on 21.02.2018. The primary objective of PT1N is to evaluate system performance in about 20 flights and the data collected from this shall be used to freeze the design of 19 seater production version aircraft - SARAS MkII.

CSIR-NAL gets Rs. 100 crore plus order from HAL for manufacture of composite components for LCA-Tejas:

Composite technology is one of the critical technologies that make the LCA a 4th generation fighter aircraft. CSIR-NAL's collaboration with LCA program started from technology demonstrator (2 aircrafts) to prototype development (5 aircrafts) to limited series production (8 aircrafts) and IOC standard production aircrafts (SP1 to SP20). The initial IOC order of 20 sets is nearing completion. This homegrown technology developed by CSIR-NAL was used in realizing primary air-frame components of LCA like Fin, Rudder, Wing Spars and Fairings, Centre Fuselage and Main Landing Gear components.

CSIR-NAL and BEL ink Technical Collaboration Agreement for Electronic Target System (ETS), a modern training aid meant for enhancing marksmanship of Defence and Paramilitary forces during live firing exercises on the field.

Drishti Transmissometer: Deployment across Indian Airports

Drishti is an Indigenous - Innovative –Cost effective visibility measuring system -- First of its type and CSIR-National Aerospace Laboratories (CSIR-NAL) is the only organization to have developed this technology in the country. It is useful for airport operations and gives information to pilots on the visibility at the runway. Drishti Transmissometers have been installed at a number of airports across the country.

CSIR Mission on Sickle Cell Anaemia

CSIR is implementing a Mission on Sickle Cell Anaemia. The project envisages managing genetic burden of Sickle Cell Anaemia and understanding genetic basis of differential response to Hydroxyurea Therapy, Drug discovery and development for management of SCA, Genome editing and stem cell research approach for the treatment of SCA and development and on-ground implementation of an affordable, accurate and accelerated diagnostic kit.

CSIR's new patented Clot buster, PEGylated Streptokinase set to revolutionize the treatment of Strokes

Ischemic stroke is a condition caused by a dysfunction in the supply of blood to the brain due to emboli, thrombus or atherosclerosis occurring in cerebral arteries. Surprisingly, the prevalence of stroke is much higher in India than the West and about 87% of all strokes are ischemic strokes. CSIR-IMTECH and Epygen have entered into an agreement for the latter to develop PEGylated Streptokinase for treatment of Ischemic Stroke.

CSIR-IGIB and Dr Lal Path Labs enter into partnership to enable Diagnosis of Prevalent Genetic Diseases

Genetic diseases, though are individually rare, cumulatively affect a large number of individuals, estimated to affect over 70 million Indians. CSIR-IGIB has entered into an agreement with Dr Lal PathLabs, for licensing of 27 genetic tests developed by it for commercial application. These tests are expected to be launched over the year.

Non-vascular self-expandable stents

Stents are used in the treatment of numerous biliary tract diseases, ranging from benign biliary diseases to malignant strictures. Two types of biliary stents find extensive use: plastic stents and self-expanding metallic stents. Amongst these while the self-expandable metal stents offer longer patency their prohibitive cost makes them unaffordable. CSIR-NCL in collaboration with a start-up has developed a new class of self-expandable stents based on a novel scroll design. These stents have been made with simple polymer-metal composites unlike the shape memory alloy based stents. These stents could be made a much lower costs than the currently available ones. Process for transferring the technology to two companies is on.

CSIR's Divya Nayan for Visually Impound

CSIR-Central Scientific and Industrial Organization has developed a Personal Reading Machine named- Divya Nayan, for Visually Impaired which can read any printed and digital books available in Hindi and English. Divya Nayan has been tested with a number of visually impaired people with different age groups and has gained wide popularity.

Smart India Hackathon 2018: A non-stop 36-hour digital product development competition among Engineering/Technology Students

CSIR actively participated in Smart India Hackathon-2018-Software Edition and successfully organised 36-hour Grand Finale at CSIR-NCL, Pune. CSIR was a 'Premier Partner' in this initiative. After multiple rounds, finally, 318 students and 75 mentors from various engineering colleges across the country gathered to showcase their talent, while working on the problem statements. After rigorous interactions with all the shortlisted teams, finally three teams received awards i.e. of Rs. 1,00,000/- (Winner), Rs. 75,000/- (1st Runner up) and Rs. 50,000/- (2nd Runner up). Additionally, three more teams were selected for the "Persistent Inspiration Award", "KPIT Award" and "Deloitte Innovation Award".

CSIR teams up with NVIDIA to set up AI innovation centre in Delhi

The CSIR-CEERI - Nvidia Centre of Excellence (CNCoe) will be powered by a five-petaflop AI supercomputer, India's first industrial AI supercomputer, at CSIR-CEERI's New Delhi campus. This CNCoe is significant because it brings together Nvidia's cutting-edge AI platform with vast industrial scientific research expertise and capability from CSIR-CEERI. This combination will enable researchers and industry across the country to advance their AI systems development. This CNCoe has the potential to usher in a culture of AI based innovations in a variety of application domains.

AI based Movement Detection System to Boost Border Security

CSIR-CSIO, Chandigarh has developed a technology which can differentiate human movement from that of vehicles and cattle to check terrorism, drug influx and ensure full-proof border security. The system is based on Artificial Intelligence (AI) –driven warning system. It generates an alarm and sends sky information via email and text message to the registered users.

Development and licensing of affordable Water Disinfection System OneerTM

CSIR-Indian Institute of Toxicology Research (CSIR-IITR), Lucknow has developed technology for "Drinking Water Disinfection System" with Trade name "OneerTM". It is useful for continuous treatment of water. The technology of "Drinking Water Disinfection System" was transferred to M/s Bluebird Water Purifiers, New Delhi. Oneer developed by CSIR-IITR will provide safe and clean drinking water at a cost of just 2 Paise / Ltr. The Community level model is of 450 LPH capacity. It can be scaled up to 5000 to 1 lakh L/day;

CSIR and DoT partnership for establishing a nationwide Time Stamping & Time Synchronization network and traceability of Time Signal.The primary purpose of

synchronizing the telecom network with IST time stamp is to enable the security agencies to overcome the difficulty in analyzing and correlating the cyber events in this era of greatly increasing network speed with advancement of telecom technology (2G to 3G to 4G to 5G etc.).The project will be implemented in two phases.

Technologies for Milk testing licensed to REIL, Jaipur - An effort towards Make in India Mission. The detection of adulterants in the milk has been the need of Dairy industry, which could be addressed through the technological intervention. These technologies have been approved by FSSAI for use and will help in checking adulteration in milk and will ensure purity of milk and milk products for consumption by all.

CSIR-CIMAP designated as Coordinating Center on Medicinal Plants by Indian Ocean Rim Association (IORA) .The IORA is an association of 21 countries and 7 dialogue partners which have identified 6 areas of cooperation including medicinal plants.

CSIR Aroma Mission

The CSIR Aroma Mission is envisaged to bring transformative change in the aroma sector through desired interventions. It is aimed at development of superior aroma crop varieties and their agro-technologies and assessment of their suitability for the large scale cultivation in specific agro-climatic regions;

In 15 months since the project was launched, an area of about 2119 hectare has been brought under cultivation of aromatic plants across the country under the project.

CSIR Phytopharmaceuticals Mission

The CSIR Phytopharmaceutical Mission is envisaged to bring transformative change in the medicinal plants sector through captive cultivation of selected medicinal plants, including rare, engendered and threatened species, production of quality planting material and development of region specific agro technologies; technology packages for production of GMP grade medicinal plant extracts; and phytopharmaceutical development from important medicinal plants.

In the first year of project implementation, mass multiplication of quality planting material and captive cultivation of target plant species up to an area of 120 hectare in different states/districts has been achieved. Further, plants of 25 Rare, Engendered and Threatened (RET) species have been collected for genebank.

Catalysis for Sustainable Development (CSD) Mission

The Indian Chemical Industry is the 3rd largest contributor to the overall chemical industry in Asia and the 8th largest chemicals producer worldwide with estimated size of about US\$ 100 billion contributing about 6.7% of the Indian GDP. Chemical industry worldwide relies mostly on fossil feedstock. Due to geopolitical reasons, limited availability and fluctuations in price of these feedstock, it might be precarious to depend on them for our future needs. Thus, it is imperative

to focus on alternative and renewable feedstock for chemicals synthesis. This mission mode program addresses this vital issue and intends to develop chemical products and processes utilizing renewable raw materials (in-edible biomass, carbon dioxide (CO₂), water and shale (natural) gas) instead of the conventional fossil fuels. CSIR Mission Mode project entitled **“Catalysis for Sustainable Development (CSD)”** has been launched for duration of 3 years.

Innovative Processes and Technologies for Indian Pharmaceuticals and Agrochemical Industries (IMPROTICS)

CSIR has launched a Mission Mode Project on "Innovative Processes and Technologies for Indian Pharmaceuticals and Agrochemical Sector Industries (INPROTICS-Pharma and Agro)". The project aims to develop cost effective, profitable processes for key drugs and agrochemicals. In case of pharmaceuticals, new or non-infringing processes that are free to operate shall be developed. Thus this proposal wishes to serve the country with its contributions to 'Make in India' program and also toward better health and food security for all Indians.

CSIR Mission on ‘Safety and Security of Vital Installations’

CSIR has recently launched a mission on ‘Safety and Security of Vital Installations’ which envisages to address following issues: Earthquake Hazard quantification studies in Uttarakhand; Design and development of efficient slope stabilization measures of mitigate landslide hazards for the safety of vital installations in hilly regions of NW Himalayan Belt; Safety of Hospitals particularly in seismic prone zones; To evolve blast and impact resistant design of Hardened Aircraft Shelter with layered configuration for a specified threat; Structural Health Monitoring (SHM) through innovative solutions consisting of smart video camera system, smart video surveillance system, Real-time system for identification of outsiders; Border security management system based on intelligent multi-sensor approach; and Active Fire Protection System for the design and development of customized fire safety and security solutions for Hospitals.

CSIR *has already prepared Earthquake Risk Index Map of the City of Dehradun* which can be used to prepare for facing the expected Earthquake event in its aftermath.

CSIR Mission on Development of Fast, Durable and Energy Efficient Mass Housing Scheme

The mission is aimed at developing and deploying at a scale in partnership of stakeholders the prefabricated technologies for construction of fast, durable, energy efficient and affordable interventions for mass housing. Efficient design of precast structural panels using various materials will be developed to achieve desired performance such as light weight (50% reduction), improved fire rating (minimum 2hrs), durability (70-80years), cost effective (25% lesser compared to lowest available) with reduced cycle time of 5-7 days compared to existing 16-19 days. The mass housing schemes are planned to be developed suiting to socio-cultural requirements in different geo-climatic regions across the country. The developed technology(ies)/ know-how(s) will be demonstrated by 3D virtual displays and by prototype demo units for the purpose of end to end training and needful deployment.

CSIR Mission on Technologies for Robust Structural Health Monitoring of Critical Infrastructure and Conservation & Restoration of Heritage Structures

The mission comprises of two verticals namely Robust Structural Health Monitoring Technologies for Critical Infrastructure Management (Vertical 1) & Conservation and Restoration of Heritage Structures (Vertical 2). Mission Vertical 1 is aimed at developing technologies for structural health monitoring of critical Infrastructure using advanced signal processing, machine learning techniques combining with IOT and cloud-enabled technologies for early detection of damage in civil infrastructure. Vertical 2 of the mission is aimed at developing state-of-the-art technologies for conservation and restoration of heritage structures. Guidelines for conservation and restoration of heritage structures in India will also be prepared.

Waterless Chrome Tanning Technology- a Game Changing Technology

Chromium is the most sought after tanning agent with about 2.0 billion sq. ft. of leather being made in India. About 20 thousand tons of chrome tanning agent is discharged in the wastewater. In order to overcome the problem, CSIR-CLRI has developed waterless chrome tanning technology.

The waterless tanning technology has now found PAN INDIA acceptance, with tanners in all clusters enrolling for its adoption. The technology has been put to use in about 50 tanneries in the country. This is truly a game changing technology that has emerged from the CSIR through CLRI.

Zero liquid discharge leather technology

A zero wastewater discharge process technology based on Electro-oxidation (EO) has been developed for the first part of the leather manufacturing process, the pre-tanning processes. The potential environmental benefits and potential social impacts for India includes: No discharge of wastewater from tanneries; The possible reduction of cost will be about Rs. 96 million per annum from reduction in the cost of wastewater treatment; This system does not result in generation of sludge (about 160 tons' sludge per annum) and less average annual fatalities due to release of H₂S. The technology has been transferred to M/s Leayan Global Pvt Ltd, Kanpur; M/s Royal Tanners, Kanpur; and AN Leathers Pvt Ltd, Agra.

High Grade Gelatin from and Protein Hydrolysate from Raw Hide and Skin Trimming Wastes

Gelatin is widely used in the pharmaceutical industry to make capsules for drugs as well as in the food industry to make jelly candies, ice cream, and as thickening agent in cakes and soups. Leather processing generates huge amount of raw trimming wastes. CSIR-CLRI has developed technology for making high grade gelatin from waste material-trimmings of raw hide. The technology developed by CSIR-CLRI is towards complete utilization of proteinous constituents present in the trimmings. This technology is exclusively licensed at a cost of Rs. One Crore to M/s Anipro Manufacturing Company for making gelatin and protein hydrolysate within India.

Coal dust collecting and briquetting system

It is pertinent to collect the dust from mine roads and put it to alternative use not only for reducing air pollution but also for improving the health of local populace. Road dust collecting system has been developed. CSIR-CIMFR has transferred the patented technology to M/s Tata Motors Limited, Mumbai.

Smart Electricity Meter

CSIR-CSIO, Chandigarh has developed Smart Electricity Meter which is first of its kind, indigenous and self-monitoring. The new meter costs five times less than the existing meter and is best suitable for Indian climate. This meter gives a real-time hourly reading as well. The technology has been transferred to M/s Atsuya Technologies, Mumbai.

Training Aid to Sharpen Shooting Skills of Defence Personnel

CSIR-NAL, Bengaluru has designed Electronic Target System (ETS), a technically superior and cost-effective solution for police, paramilitary and defence personnel looking at acquiring sharp shooting skills in small fire arms as well as honing efficiency in tactical field firing in association with BEL, Bengaluru

Phytopharmaceutical for Glucocorticoid-induced Osteoporosis

Globally glucocorticoid is the third biggest cause of osteoporosis. CSIR-CDRI has developed a standardized fraction of *Cassia occidentalis* Linn. for the treatment of glucocorticoid-induced osteoporosis and muscular atrophy. Technology licensed to M/s Pharmanza Herbals Pvt Ltd., Gujarat for further development and commercialization as a Phytopharmaceutical drug. The product is under development in Phyto-pharmaceutical mode and would be available in Indian and the U.S. market after completing necessary studies as per the regulatory guidelines

Safe Disposal of Municipal Solid Waste utilising high temperature plasma

The technology has been developed for effective & eco-friendly disposal of municipal solid waste material generated on daily basis and generation of fuel gas containing predominantly CO and H₂ utilizing high temperature (>3000 °C) Plasma arc. The technology has been licensed to M/s Positronics Innovation Pvt. Ltd, Kolkata, WB for commercialization on non-exclusive basis for a period of 5 years.

Development of Solar Tree/Artifacts for generation of power utilizing lesser ground area

Solar Power Tree is the perfect solution to the question of availability of the land in the future for generating solar power - It take up only a fraction of land consumed by conventional systems. To bring visibility to solar technology and to enhance the beautification of a site, CSIR-CMERI has developed solar artifacts.

Attapatram is of 1kWp capacity and can provide 0.5kW electricity for 3 hours. These can be installed in the beaches, river banks, parks and even in the lawn of a bungalow.

Solar Flora is of 3kWp capacity and can be installed in the road side, parks and other

remote areas to provide electricity.

Surya Banaspati is of 5kWp capacity and can be installed in the road side, parks and other remote areas to provide electricity.

The technology has been transferred to 9 Industries for commercialization in non-exclusive basis for a period of 5 years.

Intelligent & powered wheel chair

CSIR-CMERI developed system has immense societal value for the physically challenged people, old age population for mobility and rehabilitation purpose. Intelligent & powered wheel chair design provides enhanced mobility and stability and capability to turn full 360 degrees in any narrow corridor. The Technology has been transferred to Indian Industry for commercialization for a period of 5 years.

Large Scale Production of Graphene Oxide

Graphene oxide is extensively used in energy storage devices, polymer composites, desalination of water, conducting ink, aqueous lubrication, nano-coolant, additive for phase change materials, etc. Graphene oxide is not toxic and hazardous for the environment. The cost of commercially available graphene oxide is very high and scaled-up production of graphene oxide at reasonable price without compromising the quality is a challenging task. The technology developed by CSIR demonstrates the production of graphene oxide starting from natural flake graphite. The Technology has been transferred to one Indian Industry for commercialization for a period of 5 years.

Salivary Fluoride Detection Kit

The indigenous salivary fluoride level detection kit and sensor station is unprecedented in its kind towards diagnosis of salivary fluoride level for the welfare and betterment of the society. It protects from Dental Caries; helps in remineralization; protects against tooth decay; and helps prevent premature tooth loss. The Technology has been transferred to two Indian Industries for commercialization for a period of 5 years.

Boring machine based on trenchless technology

Trenchless construction limits the amount of excavation and the surface repairs needed after digging. Available imported machines are of large capacities for big projects and very expensive. No such machine is being manufactured indigenously. To address this gap, boring machine based on trenchless technology has been designed and developed.

The developed machine can bore upto 14 m length and 160 mm dia. holes under the roads and buildings for laying sewer/ pipe lines and cables. The developed machine is affordable and can be used by small/middle class contractors. It is light in weight, portable and requires low maintenance and Suitable for both wet and dry boring. The technology has been transferred to M/s Techno Industrial Marketing, Uttarakhand

Glass Textile Reinforced Concrete Crash Barrier System

As of today, the most popularly used crash barrier is made up of reinforced concrete, which has high rigidity but poor energy absorption. When a vehicle collides with such crash barrier, the vehicle is seriously damaged and occupants may be fatally injured due to the impact of the collision. Keeping in mind the safety of road users, a ready to use pre-fabricated Glass Textile Reinforced Concrete Crash Barrier System has been designed and developed. The developed crash barriers are lighter in weight, flexible and elastic with ability to absorb the energy of vehicle impact. It would provide improved safety to the vehicle passengers and result in less damage to the impacting vehicles. Technology has been demonstrated and negotiation are underway for technology transfer.

Indigenous 4-axis controller for multi-process micro machine

CSIR has developed a low cost micro machine test bed which houses an indigenously developed controller, software and graphical user interface that can conduct four micromachining operations i.e. micro turning/ micro milling/ micro drilling/ micro patterning in a single desktop system (60 cm X 60 cm). The developed system can be used by small and medium scale micro-machining industries such as Surgical tool industries, Jewellery making industries etc. besides skill development in engineering colleges for imparting training on CNC machine operations. Technology has been transferred to two industries on non-exclusive basis

Graphene Based Aqueous Lubricant

Technology for production of graphene based aqueous lubricant has been developed to replace graphite-based imported lubricant extensively used in hot-forging industries. Graphene oxide has several applications in the areas of energy storage and conversion, automotive and aerospace composite materials, coatings and corrosion, biomedical and structural engineering, defense, sensors, electronics, etc. Developed Graphene production technology (200g/batch) has been transferred to a specialty chemical company, Auropol Pvt. Ltd., Kolkata, West Bengal.

Micro Fuel Cell

Micro fuel cell is a power source for electronic devices that converts chemical energy into electrical energy. The scaled down fuel cells can be used in electronic devices such as digital cameras, radios, toys and other low power applications. CSIR has developed cost effective, simple and easy to fabricate micro fuel cell for use in low power applications. Technology has been transferred to M/s Victor Industries Pvt. Ltd., Sangli, Maharashtra on non-exclusive basis.

MoU signed between CSIR-NPL and HPCL for indigenous development of petroleum certified reference materials (CRMs) to save big chunk of foreign exchange through import substitution for CRMs.

This will not only ensure maintaining highest standard quality ecosystem for petroleum products used by all stakeholders including common man but also will save vital foreign exchange through import substitution for Certified Reference Materials (CRMs) which play a pivotal role for the calibration of laboratory testing equipment for quality assurance.

Technology on Recycling of Waste Plastic into Useful Tiles developed by CSIR-NPL licensed to NRDC

India generates about 15,000 tonnes of plastic waste every day its safe disposal is a huge challenge and big menace to environment, this technology offers a cost-effective solutions in solving the societal problems and produces wealth from the waste.

CSIR-IMTECH forges Partnership with Merck to establish a High-End Skill Development Centre. This will be first of its kind, Academia-Industry-led, 'High End Skill Development Centre' in Chandigarh that has been established to augment Government of India's initiative for skilling India in the area of Life Science.

CSIR's Skill Development Initiatives

- CSIR has launched an Integrated Skill Development Initiative for gainful utilization of its state-of-the-art infrastructure and human resources through specific industry-oriented skilling programmes. Some major highlights of CSIR Integrated Skill Initiative during the year 2018 are as follows:

o Nearly 19,000 candidates trained under CSIR Integrated Skill Initiative during the year 2018 at CSIR laboratories in various S&T domains;

- o CSIR-CLRI has skilled nearly 3000 artisans in different leather trades pan India with financial support from institutions like National Scheduled Castes Finance and Development Corporation (NSFDC).
- o CSIR-CSMCRI entered into a MoU with Andhra Pradesh State Skill Development Corporation (APSSDC) to train 12500 fishermen of nine districts of Andhra Pradesh;
- o CSIR-NEIST Integrated Skill Initiative Program have been selected under **NABARD's Joint Liability Group** (JLG) Promotion scheme for bank loans;
- o CSIR-CSIO's Indo-Swiss Training Centre, won the first prize in Manufacturing & Engineering Sector in the State Level Competitions of India Skills Chandigarh 2018.
- o CSIR and Andhra Pradesh Scheduled Caste Co-operative Finance Corporation Ltd. (APSCCFC) have signed an Agreement for Skill training and Entrepreneurship in Leather Sector. The initiative is set to benefit 10,000 Scheduled Caste Candidates from Andhra Pradesh, creating income generation assets to the households and thus enabling social and economic development. An investment of Rs. 30 Crore is being made by APSCCFC in next 2-3 years.

CSIR Scientists Connecting with School Students

CSIR has launched a program named JIGYASA in collaboration with the Ministry of Human Resource Development. The Programme envisaged to connect 1151 Kendriya Vidyalayas with 38 National Laboratories of CSIR. In the calendar year 2018 CSIR already implemented more than 200 programmes targeting nearly 27,000 students and 2,500 teachers from Kendriya Vidyalaya;

CSIR reaching North East Region

- **CSIR-Industry Meet for North East Region: CSIR Technologies and Knowledgebase for Creating and Supporting MSMEs and Start-ups in North-Eastern Region at Guwahati. About 100 industries for NER and 50 Scientists from CSIR participated in the event. Around 8 handshakes happened between Industry and CSIR during the event for future collaboration.**
- CSIR-NEIST has transferred the agro-practice on mushroom cultivation to 30,000 beneficiaries as well as the spawn production technology to 20 entrepreneurs/NGOs and generated employment to over 5000 people. The income to the beneficiary ranged from Rs. 10,000/month to Rs. 1,50,000/month from cultivation of mushroom from October to March, in a given year.

International Affairs

Bilateral Cooperation

CSIR's International S&T linkages were further fostered and expanded through launch of new cooperation arrangements and implementation of existing programmes with leading academic and research institutions abroad. Several high level interactions between senior officials and scientists of CSIR and from partner countries including Republic of Korea, Germany, Chinese Taipei, Japan, Bangladesh, Ethiopia were held to identify cooperation priorities and pursue them further. Capacity building programmes for training and advanced exposure were offered to researchers and officials from Bangladesh (Oceanography). A joint workshop with Germany on "Sustainable Water Supply and Wastewater Management (disposal & re-use) - Research for Sustainable, Affordable Solution" was held at Delhi In addition to many institute level cooperation arrangements, six (6) new cooperation programmes were launched by concluding cooperation MoUs.

CSIR Lab Level Partnership Initiatives

Twinning Project between CSIR and Metals Industry Development Institute (MIDI), Ethiopia kick started in March 2018. Ethiopia to implement a Capacity Building programme to Transform MIDI that provides for capacity building of MIDI researchers in CSIR for a period three years at a cost of US\$ 6,806,000. The principal objective of this transformation program is to enhance the competitiveness of the metal and engineering industry.

In addition to participating in the international cooperation programmes of CSIR and developing their own partnership programmes, CSIR institutes actively participated in the inter-governmental programmes, both bilateral and multilateral, that are administered by DST/ DBT/ ICMR. Thirty two (32) collaborative research projects were funded to CSIR institutes for implementation with partners from Germany (6), Russia (6), UK (5), France (4), Japan (4), Republic of Korea, Austria, Hungary, Vietnam, Switzerland, Norway and Malaysia.

• Capacity Building Programmes

- During the Executive Session of the Commonwealth Heads of Government Meeting (CHOGM), held in London on 19-20 April 2018, Prime Minister of India announced “India will champion capacity building programs through the Commonwealth, to help Small Island Developing States (SIDS) acquire the capacities to use modern technologies like remote sensing or multi beam hydrography, to better manage their ocean based national wealth. For this CSIR-National Institute of Oceanology (CSIR-NIO) with funding from MEA (under ITEC) has launched four (4) training programs.
- Seven (7) young and bright CSIR scientists were awarded Raman Research Fellowships to pursue research in the Centres of Excellence abroad.
- Under CSIR – The World Academy of Sciences (TWAS), CSIR offered Twelve (12) Doctoral Fellowships and seven (7) Post-Doctoral Fellowships to researchers from developing countries to pursue research at CSIR institutes.

CSIR has been conducting research in frontier areas of science such as Energy and Engineering, Mining and Minerals, Generic Drugs and Chemicals, Aerospace and other areas of strategic concern. CSIR contributions to drugs and pharma segment are outstanding - ***Eleven of the 14 new drugs developed in independent India are from CSIR.***

Pioneer of India's intellectual property movement, CSIR's patent portfolio is focused at solving the problems faced by masses through desired S&T intervention and carving out global niches for the country in select technology domains on the other. In the year 2017-18, CSIR was granted 171 Indian and 376 Foreign patents.

KSP/GK

(Release ID: 1556479) Visitor Counter : 556

END

Downloaded from **crackIAS.com**

© **Zuccess App** by crackIAS.com

crackIAS