



NSDC CONNECT

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ISSUE 10

SKILLING FOR SUSTAINABILITY

GREEN JOBS THAT MITIGATE CLIMATE RISK



TRANSFORMING WASTE

GREEN JOBS AND CIRCULAR ECONOMY IN INDIA



OVERCOMING GLOBAL RISKS

BUILDING A RESILIENT FUTURE THROUGH INNOVATION & COOPERATION

PROPELLING INDIA INTO A GREEN FUTURE SKILLING ECOSYSTEM FOR GREEN JOBS



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Welcome to the latest and tenth issue of NSDC Connect, one of its kind platforms for skill development discourse in India!

This month, we dive deep into the rapidly growing domain of green jobs, exploring their promise to create a more sustainable future for India, planet earth, and all the people in it.

The growing threat of climate change necessitates a skilled workforce equipped to address environmental challenges. Our spotlight article this month sheds light on sustainability through green jobs in transport, construction, renewable energy, water security, and carbon capturing in the fight against climate change. It explores how skilling initiatives at National Skill Development Corporation (NSDC) can empower individuals to contribute to a greener future by participating in the construction of eco-friendly buildings, developing renewable energy solutions, and implementing sustainable waste management practices.

Through our deep dive article on Waste Management and Circular Economy, we explore the finer contours of the drive toward sustainability in the sectors. From job opportunities, to innovation, and even challenges, in this article we present a comprehensive understanding of the green jobs landscape in the waste management.

Moving further, we bring an analysis of interconnected global risks that require comprehensive and coordinated endeavours by multiple stakeholders, both public and private, to mitigate the challenges. Through localized strategies, breakthrough initiatives, collective actions, and cross-border coordination, global leaders can adeptly navigate forthcoming uncertainties and cultivate greater resilience. More importantly, through targeted skill development initiatives, we can prepare our young, creative, and optimistic workforce to tackle these challenges and assure a clean, green, and inclusive future for all.

To gain further insights into the green jobs landscape, we present an exclusive interview with Dr. Anant Shukla, a leading expert in the field. In his detailed interview titled, "Cold Chain Technology: Bringing A Systems Approach for Green Transition", Dr. Shukla shares his valuable perspectives on the

future of green jobs in India, the skills required to succeed in the sector, and the role of skilling initiatives in driving a sustainable future. On behalf of our team at NSDC, I would like to extend my gratitude to Dr. Shukla for sharing his insights and wisdom with our readers.

In addition to the above in-depth articles, we bring you a compilation of news bytes related to the skilling ecosystem in India, keeping you informed about the latest developments.

This issue also features a report on the recently concluded IndiaSkills Competition, a four-day event organized by NSDC in New Delhi. Featuring 61 skills, with 47 competitions held onsite and 14 conducted offsite, IndiaSkills is rightly considered to be the Skills Olympics of India.

Green jobs encompass a diverse range of occupations focused on environmental protection, clean energy production, resource conservation, and sustainable practices. These jobs not only contribute to environmental well-being but also offer exciting career opportunities for the Indian youth.

We believe that by equipping individuals with the right skills and fostering innovation in the green jobs sector, we can collectively pave the way for a more sustainable and prosperous future for India.

As you delve into this edition of NSDC Connect, we encourage you to explore the exciting possibilities that green jobs offer and consider how you can contribute to building a greener tomorrow.

Your feedback is always valuable for us!

Warm regards,



VED MANI TIWARI
CEO, NSDC

NSDC Connect embodies NSDC's values: Integrity, Innovation, Inclusion, and Impact. We aim to provide trustworthy, innovative, and inclusive content that aims to make a positive impact on education and skill development. Join us in reimagining a better future.

SKILLING FOR SUSTAINABILITY: GREEN JOBS FOR BUILDING A CLIMATE-RESILIENT FUTURE



The spotlight article for this issue explores India's ambitious journey towards energy independence and climate resilience with a focus on green jobs. From fostering renewable energy and eco-friendly construction to enhancing water management and sustainable forestry, these roles not only mitigate climate change impacts but also promise economic growth. In this article we navigate through policy frameworks, sector-specific insights, and the transformative potential of green jobs in building a sustainable future for India, aligned with global efforts towards environmental stewardship.

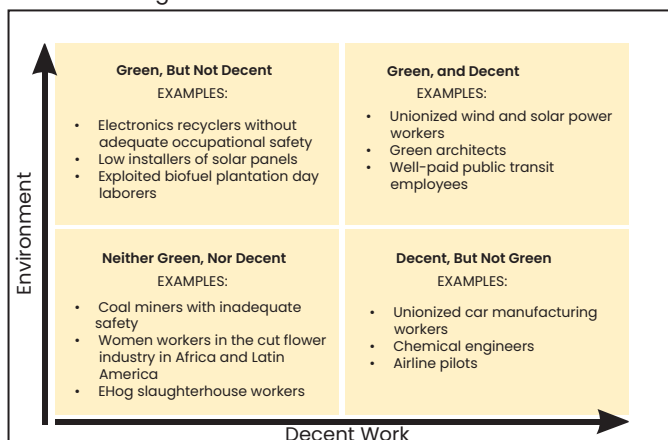
Introduction

As India takes up the mission of making itself energy independent before 2047 with an emphasis on Mission Circular Economyⁱ, the alarm bells of climate change are ringing louder than ever. In the last couple of years alone, we have witnessed scorching heatwaves, devastating floods, and depletion of ground water. Climate change is a stark reality – record-breaking temperatures are just the tip of the iceberg. As the world faces the pressing challenges of climate change and dwindling natural resources, the significance of green jobs takes centre stage. But what are green jobs, and why they are the need of the hour?

In a nutshell, green jobs are defined as job roles focused on sustainability and environmentally friendly activities and Skill Council for Clean Jobs (SCGJ) defines ‘green jobs’ as a **category of employment that directly benefits the planet and contributes to environmental well-being**. These jobs involve using or developing renewable energy sources, conserving resources, promoting energy efficiency, managing waste responsibly, and supporting sustainable development and hence would have worldwide impact.

In many sectors from energy to construction and transport, government programmes and the rise of ESG (Environmental, Social, & Governance) investments, are accelerating the endeavours towards net zero targets. Green jobs help improve energy and raw materials efficiency, limit greenhouse gas emissions, minimize waste and pollution, protect, and restore ecosystems, and support adaptation to the effects of climate change. At the enterprise level, green jobs can produce goods or provide services that benefit the environment, for example green buildings or clean transportation. However, these green outputs (products and services) are not always based on green production processes and technologies. Therefore, green jobs can also be distinguished by their contribution to more environmentally friendly processes. For example, green jobs can reduce water consumption or improve recycling systems. Yet, green jobs defined through production processes do not necessarily produce environmental goods or services. Another aspect of understanding Green Jobs is whether the role itself adheres to the principles of dignity at work. As the matrix below illustrates, sometimes while a job role may produce green goods/services or follow green processes, it may still not adhere to the a ‘decent work’ paradigm.

Figure 1: Definitions of Green Jobs



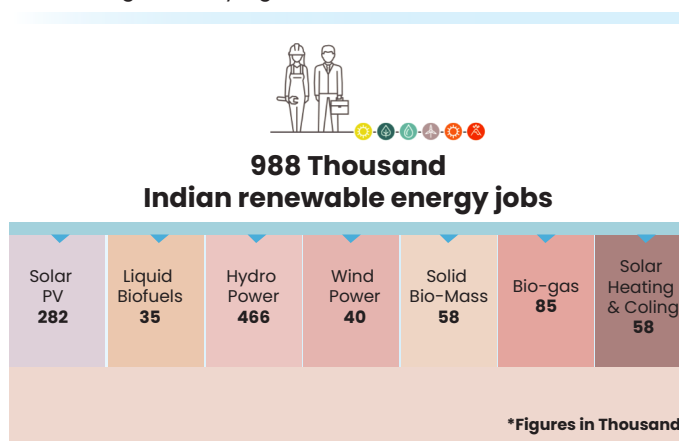
Source: Green jobs: Working for people and environment, World Watch Report

Irrespective of which definition of Green Jobs one might subscribe to, its importance and need for wider adoption cannot be understated, particularly for India. With its growing population and rapid development, the need for a sustainable economic model is paramount. A green economy that prioritizes renewable energy, resource conservation, and clean technologies is no longer a luxury, but a necessity. The urgency of a green economy in India is driven by multiple factors. Climate change poses a serious threat, with extreme weather events and rising sea levels jeopardizing India's future. Additionally, India's dependence on fossil fuels creates environmental damage and air pollution, impacting public health and economic productivity. Embracing a green economy presents a win-win situation for India. It can address environmental challenges, create new jobs in sustainable sectors, and ensure long-term economic growth and energy security. Delaying this transition only increases the risks and puts India's future at stake.

Green jobs discussions in India began in 2009, when the Ministry of Labour and Employment established the “Multi-stakeholder Task Force on Green Jobs and Climate Changeⁱⁱ” with support from the International Labour Organization (ILO), to address employment and labour market dimensions of environment related policies and strategies. Created in 2015, under the aegis of NSDC, the Skill Council for Green Jobs (SCGJ) and is promoted by the Ministry of New and Renewable Energy, Ministry of Power, and Confederation of Indian Industry (CII). Today, SCGJ acts like a bridge between the Government of India, State Governments, academia, and industry for developing strategy & implementing programmes for skills development, correlated to Industry needs but more importantly to be the channel to reflect the best international practices in India. Skill Council for Green Jobs is one of the most recently launched initiatives of the Government of India aligned to the National Skill Development Mission.

Policy Frameworks for Green Job Growth

Figure 2: Key Figures on Green Jobs (Global)



Source: International Renewable Energy Agency (IRENA), 2021-2022

International Labour Organization (ILO) has calculated that the measures taken to reach a green economy by decarbonizing the production and use of energy will lead to job losses of 6 million as well as the creation of some 24 million new jobs – a net increase of 18 million jobs resulting from changing the energy mix to renewable energy and taking up energy efficiency

opportunitiesⁱⁱⁱ. Also, the move to more sustainable agricultural practices can both reduce emissions as well as enhance the decency of work in agriculture by introducing additional opportunities for wage employment, for example medium and large organic farms, as well as allowing small holders to diversify income sources through conservation agriculture.

Policy intervention towards green jobs is necessary to:

- ensure the maximum amount of potential green jobs are created,
- the labour force is skilled and ready to assume this employment,
- and workers who are in industries negatively affected by greening are provided with support and opportunities for skills development and training so they can effectively transition to new employment.

There is significant scope for policies in the world of work to advance environmental sustainability, and for environmental sustainability to enhance decent work conditions. This encompasses many policy fields including development and employment policy, energy policy, industry policy, training, and skills development, as well as sectoral level policies and policies at different jurisdictional levels. This broad array means that in addition to a policy mix; policy coherence and coordination are also critical issues in the successful implementation of policies for promoting green jobs.

For analysis purposes three broad areas are helpful in distinguishing green jobs policies:

- Policy influencing the demand for green jobs
- Policy influencing the supply of workers to undertake green jobs
- Institutional arrangements

The Energy Conservation Act 2001, which promotes energy efficiency and conservation, has been amended in August 2022. The bill now also focuses on deploying renewable energy sources, introducing the national carbon market, realizing carbon trading, and authorizing the utilization of non-fossil energy resources to achieve decarbonization and the Sustainable Development Goals as outlined in the Paris Agreement.

The Union Budget 2022–23 has a “green focus”, with climate action being highlighted as one of the underpinning pillars of the budget, along with the Prime Minister’s Gati Shakti infrastructure masterplan, inclusive development, and energy transition. By supporting the clean energy technologies, transitioning to circular economy, reducing carbon emissions/intensity, and mobilizing green finance we are already charting the way towards saving the earth for the generations to come.

To fructify this there is also a proposal by NITI Aayog of a Just Transition Fund, which can be created through fundraising from multilateral organizations, levying taxes, and other ways to fund research, skilling, and economic diversification in geographies and sectors affected negatively by greening.

3. Greening the Economy: A Sector-by-Sector Look

India, the world's third largest emitter, sees a green future^{iv}. Despite low per capita emissions and energy access challenges, a green transition offers economic revival. Experts predict millions of new jobs and economic growth. A “Green New Deal” proposed by the World Economic Forum states that “India’s transition to a net zero economy can save lives, catalyse new industries, create over 50 million jobs and contribute more than \$15 trillion in economic impact” (WEF 2021, 4). Prime Minister Modi’s 5-point strategy prioritizes renewables, electric vehicles, and ambitious emissions reduction targets by 2030. India is actively working towards a net-zero future by 2070.

Let us delve into a sector-by-sector breakdown and explore how the green economy is transforming various industries and creating new job landscapes.

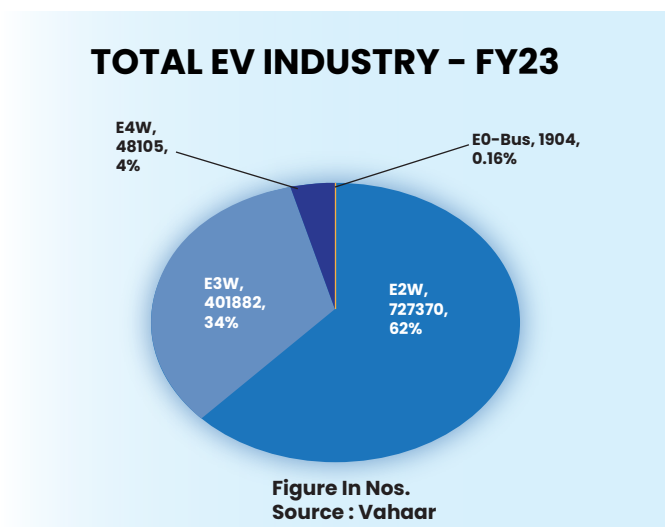
3.1 Green Transport

The transport sector, a cornerstone of global development, faces a critical challenge: reducing its significant contribution to greenhouse gas emissions and air pollution. Fortunately, the recent surge in electric vehicles and sustainable public transport in India is creating exciting job opportunities. The National Skill Development Corporation (NSDC) is strategically aligning skill development programmes to bridge the skills gap for this green transformation.

The electric mobility revolution is driving job creation in EV manufacturing, battery production, charging infrastructure development, and specialized EV maintenance technicians. Similarly, the expansion of public transport with metro rails and electric buses creates opportunities for construction workers, engineers, and operational staff.

On the micro-mobility front, the surge in cycling and e-scooters is fuelling demand for urban planners who can design safe and efficient cycling infrastructure, as well as mechanics specializing in these solutions. Beyond vehicles, urban planners promoting walkable cities, logistics specialists optimizing supply chains for reduced emissions, and researchers developing clean transportation technologies all contribute to a greener future, creating jobs at various levels.

Figure 3: EV Sales, Year-on-Year Trends



TOTAL EV INDUSTRY - FY22

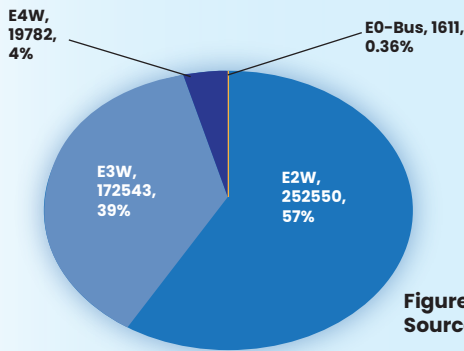


Figure In Nos. Source: Vahaar

TOTAL EV INDUSTRY - FY21

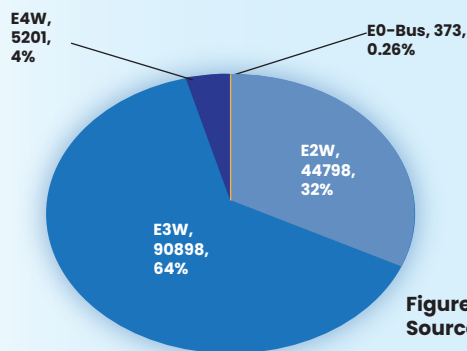


Figure In Nos. Source: Vahaar

Source: VAHAN Portal (This data includes subsidies and non-subsidies sales)

Investing in green jobs training programmes for transportation is essential to ensure a skilled workforce to navigate this exciting new era of sustainable transportation. This transition presents a win-win situation as it addresses environmental concerns.

3.2 Green Jobs in Cutting-Edge Renewable Energy

India's energy landscape has seen a surge in renewables over the past five years, fostering confidence in their ability to play a significant role. The booming renewable energy sector in India (solar & wind) is creating various job roles in this sector – installation, maintenance, operations, project management, etc.

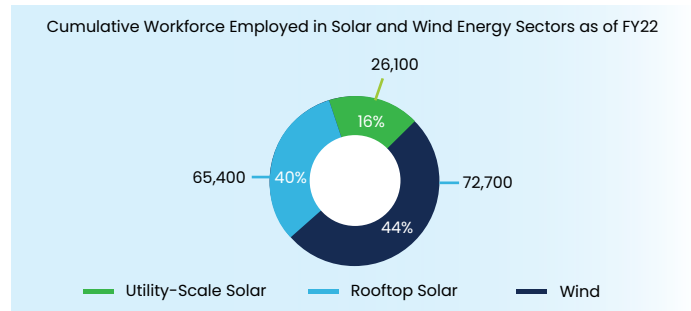
- An estimated renewable energy potential in the nation is about 900 GW from commercially exploitable sources; Wind – 102 GW, Small Hydro – 20 GW, Bio-energy – 25 GW, and 750 GW solar power^v.
- Globally, India ranks fourth in renewable energy capacity and wind power, and fifth in solar power capacity.
- As of May 2022, 40% of India's total installed energy capacity of ~400 GW is from non-fossil fuel-based sources, and the Government aims to increase this share to 57.2 per cent by 2026–27.
- As per international commitments, the Government aims to increase its current renewable energy generation capacity to 500 GW by 2030.

According to the National Electricity Policy, the energy demand is estimated to be 817 GW by 2030^{vi}. Of the 817 GW, 50 per cent could come from just solar and wind energy sources – 280 GW from solar and 140 GW from wind. This will create many new jobs in the sector. The planning commission NITI Aayog is

creating a roadmap for India's clean energy transition and requires firm targets from the Ministry of Power on the exact energy mix to achieve 500 GW by 2030, as well as for the 2070 net-zero target.

In the financial year 2022, the solar and wind energy sectors added 52,700 new workforces in project development roles^{vii}. This is eight times more than the previous year. 99 per cent of the new workforce (52,100) were employed in the solar energy sector, with the wind energy sector showing growth (600 new workers).

Figure 4: Cumulative workforce employed in solar & wind energy



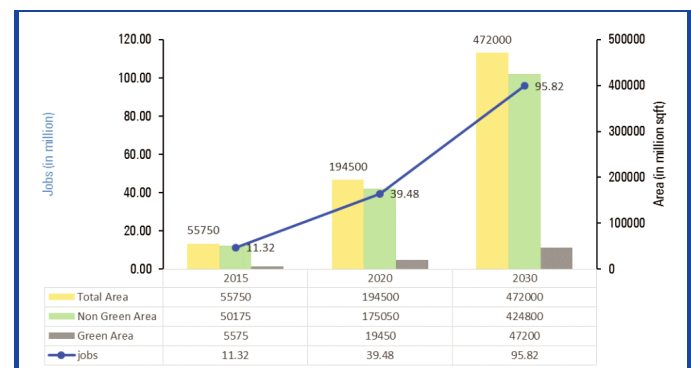
Source: Council on Energy, Environment, and Water (CEEW), 2022

The solar and wind energy sectors employ about 164,000 workers as of FY22, showing a 47 per cent increase from previous year, 84 per cent of this workforce is in the solar energy sector. 100,000 people were trained by SCGJ in the renewable energy sector as of financial year FY22, with 500,000 cumulative trainees across the green business domain. (India's Expanding Clean Energy Workforce 2022 study).

3.3 Transforming Construction with Green Jobs

Construction industry in India is undergoing a green revolution, driven by a focus on sustainability and environmental responsibility. This shift is not simply good for the planet, it is also creating exciting new job opportunities for a skilled workforce to address global issues. Organizations like IGBC and GRIHA offer green building certifications, encouraging eco-friendly construction. These certifications require skilled professionals like architects, engineers, and construction workers trained in green building techniques. These programmes equip workers with the knowledge and skills necessary to implement green construction techniques and contribute to sustainable building projects.

Figure 5: Jobs Growth Forecast in Green Construction Sector by 2030



Source: Skill Council for Green Jobs, India

Green building practices prioritize using energy-efficient materials throughout the construction process. This could involve using recycled steel, sustainably harvested wood, or energy-efficient windows and insulation. Reducing energy consumption not only minimizes a building's environmental impact but also translates to lower operational costs for occupants. Additionally, responsible waste management plans help ensure proper disposal and recycling of construction debris.

Green construction offers a diverse range of jobs, from green building design professionals to skilled workers installing renewable energy systems on buildings. These roles require specialized skills and certifications, such as Green Building Specialist or LEED Certification. Recognizing this need, various institutions offer specialized training programmes in green building practices.

Attracting skilled labour in green construction is a challenge. Training programmes are crucial to bridge this gap. Broad-based training that equips workers with a strong understanding of green building principles, not just specific technologies, is key. Trainings that focus on the entire lifecycle of green technologies, from installation to disposal, ensures a future-proof workforce. By embracing green construction and investing in skills development, India can create a skilled workforce to build a sustainable future while transforming the jobs in the process.

3.4 Empowering Change: Green Jobs for a Water-Secure India

India's urban population is booming, placing immense pressure on water resources. By 2050, water scarcity is expected to worsen, with per capita availability dropping significantly. Most cities lack 24/7 water supply, and wastewater management remains a major challenge^{viii}.

This crisis presents a unique opportunity for green jobs in water management, such as Water Warriors and Resource Guardians. These jobs range from water treatment specialists ensuring clean water supplies to smart irrigation technicians minimizing agricultural water waste to water resource management experts will be crucial for developing sustainable water management plans for cities and rural areas. To bridge the skills gap, training programmes are essential to equip workers with the expertise to implement sustainable solutions, like rainwater harvesting, wastewater treatment, and efficient irrigation.



embracing a holistic approach to water management and green jobs creation.

3.5 Carbon Capture through Forests and Oceans in the Fight Against Climate Change

Forests are critical in the fight against climate change^{ix}. As a world leader in forest cover (24%), India is well-positioned^x. However, conservation efforts are essential to protect these natural carbon sinks. New green jobs, like Forest Conservation Specialists and Sustainable Fishery Management Professionals, are emerging to address this challenge.

Figure 6: India's Forest Carbon Stock

Component	(in million tonnes)			
	Carbon Stock in forest in 2021	Carbon stock in forest in 2019	Net change in Carbon stock	Annual change in Carbon stock
Above Ground Biomass	2,319.9	2,256.5	63.4	31.7
Below Ground Biomass	718.9	700.8	18.1	9.1
Dead wood	47.7	35.8	11.9	6.0
Litter	107.3	127.9	-20.6	-10.3
Soil	4010.2	4,003.6	6.6	3.3
Total	7,204.0	7,124.6	79.4	39.7

Table 9.1 Forest Carbon Stock under different pools and changes wrt previous assessment

Source: India State of Forest Report, 2021, Forest Survey of India

NSDCs skill development programmes can empower individuals for these green jobs in domains such as forest resource management, tree plantation, wildlife conservation, sustainable fishing practices, aquaculture, and post-harvest fish processing.

Through these programmes we can try to protect biodiversity. Healthy forests and oceans provide habitat for diverse species, maintaining the delicate balance of our planet's ecosystems. Forests help regulate water flow, preventing floods and ensuring clean water supplies. Marine ecosystems play a vital role in the water cycle. Sustainable forestry and fisheries support local communities and provide valuable economic resources.

NSDC: Transforming India's Future Through Skilling and Innovation

India's ambitious climate goals hinge on creating a skilled workforce for its green transition. The National Skill Development Corporation (NSDC) plays a crucial role in achieving this. NSDC, along with government, businesses, and organizations takes lead in defining "green jobs" and the necessary "green skills" across different sectors. This clarity will help identify training needs and map green jobs in current and future occupations.

NSDC can drive green job creation by, strengthening industry collaboration; partnering with green industries for training, and recruitment ensures skills align with industry needs, enhancing training infrastructure; upgrading training facilities, and networks ensures wider access to green skills training, and localized green skilling; conducting training programmes based on specific regional green job requirements ensures a skilled workforce where it's needed most.

To create a strong network for green jobs, we need better communication and collaboration between government departments. Right now, there is a committee focused on achieving the Paris Agreement goals (AIPA), but it does not involve the ministries that oversee skills training and employment. If these ministries were included, they could work together to create policies that ensure green jobs are available

and people have the skills to fill them. This would make achieving our green goals much easier.

On top of that, we need a national team specifically dedicated to green jobs. This team could define what exactly "green jobs" are, figure out which industries need them most, and estimate how many jobs will be created. They could also share success stories and best practices from different areas of the country, so everyone can learn from each other. This kind of coordinated effort is key to making green jobs a reality for everyone in India. Continuous skill development and innovation are crucial for success. By equipping our workforce with the right skills and fostering innovation in green sectors, India can become a global leader.

Building a Brighter Future

The potential of green jobs in India is transformative. By creating a skilled workforce for these jobs, we can achieve sustainable development, addressing environmental protection, economic growth, social equality, and create millions of new opportunities. Combating environmental challenges and building a lasting future for all requires prioritizing green jobs. By working together, governments, talent, and businesses can create a greener future. This includes transforming companies, workplaces, and the entire job market to be more environment friendly. These efforts will lead to good jobs, responsible



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TRANSFORMING WASTE INTO OPPORTUNITY: THE ROLE OF GREEN JOBS IN INDIA'S CIRCULAR ECONOMY



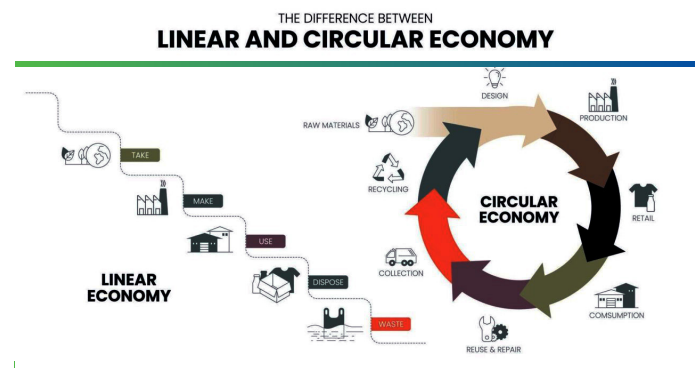
Introduction

Traditionally, economy has followed a linear pattern of production and consumption “take-make-consume-throw away.” However, as the scarcity of raw materials becomes more pronounced, this consumer-driven model is proving unsustainable. Sustainable development, which encompasses economic growth, social progress, and environmental respect, is a key aspect of the circular economy. This model emphasizes the transition from waste management to resource management and promotes sustainable consumption.

The EU Commission has taken the lead on this initiative, adopting the principle of a circular economy in June 2014. Countries like the Netherlands, Germany, and Finland aim to be global leaders in this field by 2025. These countries have robust recycling systems and promote industrial symbiosis, where waste from one industry becomes raw material for another.

In the late 1970s, Walter R. Stahel, a pioneer of industrial sustainability, introduced the term “cradle to cradle.” This design concept aims to reduce waste by focusing on products that are safe for both humans and the environment. The concept gained popularity through the book “Cradle to Cradle: Remaking the Way We Make Things,” written by an architect William McDonough, who was introduced as the “father of the circular economy” in 2017 at the World Economic Forum.¹

Figure 1: Linear and Circular Economy Model



Source: Newsletter, Progressive Investment Management

“Waste generation is closely linked to GDP, as higher economic activity typically results in more production and consumption, thereby generating more waste”². Many fast-growing economies, including India, are struggling to manage this rapid increase in waste. The circular economy offers a solution to these challenges by promoting sustainable resource use and reducing waste, thus supporting both economic and environmental well-being. By addressing issues of resource scarcity and ensuring the availability of materials without overburdening the earth, the circular economy fosters a more sustainable and resilient economic system.

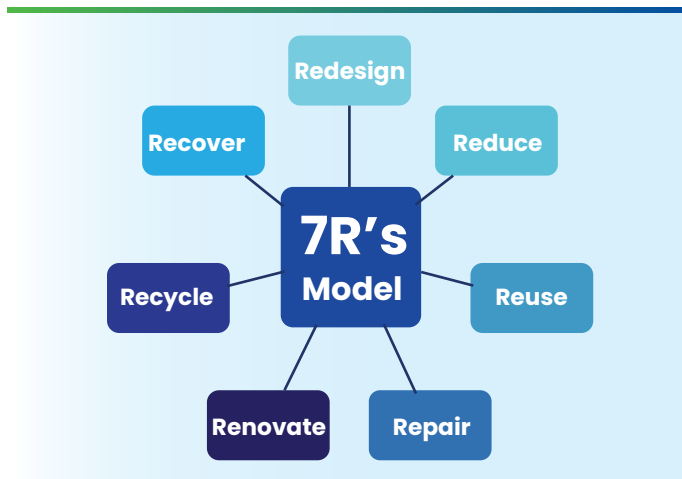
Circular Economy And Waste Management

India's rapid technological advancement has spurred economic growth and urbanization. This growth has significantly increased the consumption of goods and services, doubling waste generation over the last decade. As one of the world's top ten countries generating municipal solid waste (MSW), India produces over 62 million tons of waste annually. Of this, only 43 million tons are collected, with 12 million tons treated before disposal, while the remaining 31 million tons are simply discarded in wasteyards. Most waste remains untreated and unaccounted for, with inadequate waste collection, transport, treatment, and disposal posing major environmental and public health concerns.³

However, this challenge also presents a unique opportunity for India to create green jobs and drive economic growth. India's focus on the circular economy advanced significantly with the 2014 launch of the Swachh Bharat Mission, which aimed at universal sanitation and improved waste management. The mission emphasized cleanliness, recycling, resource recovery, and waste-to-energy projects, highlighting the creation of green jobs in waste collection, segregation, recycling, and composting.

The realization of a circular economy vision hinges significantly on the creation and proliferation of green jobs. Green jobs play a pivotal role in promoting the 7R of the circular economy: Reduce, Reuse, Recycle, Redesign, Remanufacture, Refurbish, and Repair. These principles are the foundation of a circular economy, aiming to extend the lifecycle of products, reduce waste, and foster resource efficiency.⁴ For India to successfully transition to a circular economy, it needs a workforce skilled in these areas, capable of innovating and implementing sustainable practices across various sectors.

Figure 2: 7Rs of Circular Economy Model



Green & Decent Jobs in Waste Management

A circular economy underscores the necessity of adopting 7R principles in the design of new ventures, business parks, and industrial clusters. A stable and supportive policy ecosystem is critical, but it is the green jobs that will drive the actual implementation and operationalization of these principles. By skilling, upskilling, and reskilling, India can build a workforce that not only meets the demands of the circular economy but

also thrives in it. Moreover, the economic benefits of green jobs extend beyond environmental sustainability. They contribute to economic growth by creating new industries and revitalizing existing ones through sustainable practices.

According to the World Economic Forum and International Labour Organisation, the number of informal workers working in the waste management and recycling sector globally is 15 to 20 million. Case studies, mostly from Latin America, Africa and Asia, have shown that most informal workers suffer from low and unstable incomes, inferior working conditions, job insecurity, and a lack of social recognition.⁵ Despite sanitary workers' invaluable economic and environmental contributions to a successful transition to a green economy, this transition will not automatically be just and inclusive without implementing decent work policies for them and transforming their existing occupations into green jobs.

Figure 3: Hazardous Working Conditions in Waste Management



The thriving informal waste economy involves activities such as hawking, where itinerant waste buyers go door-to-door purchasing 'dry' waste items from households. These items are then sold to middle dealers, who in turn sell them to main dealers and manufacturers of recycled goods. While hawking and dealing in waste is a male-dominated activity, they fundamentally rely on women in households who separate and sort waste items for reuse and sale.

Waste picking, on the other hand, involves men, women, and children. Sweepers, among the most deprived and vulnerable of the city's poor, include both men and women. In much of South Asia, the low social status of people working with waste is compounded by the belief that such work is predestined.⁶

Figure 4: Sanitation workers in personal protective equipment for safety and good health



Greening the jobs of informal workers in urban waste recycling should not merely be considered as a favour. It is not just about improving the precarious work conditions of waste pickers and sorters who are stuck at the bottom end of the workforce due to their limited skills and low educational attainment. Efforts to provide them with decent work conditions should be based on their essential tacit knowledge and specific skills accumulated over time, despite being subjected to low incomes, poor working conditions, and social stigma. Technical skills, such as understanding how to sort recyclable materials, cannot be easily replicated by capital-intensive technologies.

Informal Recycling Workers (IRWs) possess analytical skills to process different types of materials found in recyclable waste and assess the market value of useful parts without using calculators. Additionally, their communication skills can be harnessed to effectively change the sorting behaviour of waste producers, such as households, thereby increasing the rate of sorting at source. Involving waste pickers and sorters at both the planning and management stages of recycling projects is crucial to acknowledge their contribution in creating a sustainable economy.

Aligning Circular Economy with Sustainable Development Goals

Green jobs in the waste management sector are crucial for India to achieve its Sustainable Development Goals (SDGs). A holistic approach, integrating green jobs with the principles of a circular economy, can pave the way for a better and more inclusive future for all.

Figure 5: 17 Sustainable Development Goals



Source: United Nations-
Department of Economic and Social Affairs Sustainable Development

The circular economy, with social and ethical concerns at its heart, offers a transformative pathway for sustainable development. If managed well, it has the potential to create new and decent jobs, ensure equitable management of resources, and combat inequalities and societal crises by fostering resilient and thriving local economies. This approach aligns directly with several SDGs:

1. SDG 6 (Clean Water and Sanitation): Effective waste management and recycling reduce pollution and protect water resources, ensuring access to clean water and sanitation.
2. SDG 7 (Affordable and Clean Energy): Circular economy promote the use of renewable energy sources and improve energy efficiency, contributing to affordable and clean energy for all.

3. SDG 8 (Decent Work and Economic Growth): By formalizing informal labour and creating decent green jobs, the circular economy supports sustainable economic growth and decent work opportunities.
4. SDG 11 (Sustainable Cities and Communities): Sustainable waste management practices enhance urban resilience, making cities more sustainable and liveable.
5. SDG 12 (Responsible Production and Consumption): The circular economy encourages responsible production and consumption by reducing waste, promoting recycling, and maximizing resource efficiency.
6. SDG 13 (Climate Action): Green jobs contribute to climate change mitigation by reducing greenhouse gas emissions through sustainable waste management and recycling practices.
7. SDG 14 (Life Below Water): Reducing plastic and other waste prevents marine pollution, protecting life below water.
8. SDG 15 (Life on Land): Sustainable waste management practices protect terrestrial ecosystems, promoting biodiversity and preventing land degradation.

While these goals have a clear connection to the circular economy, other SDGs also benefit indirectly. For example:

1. SDG 1 (No Poverty): Green jobs provide economic opportunities for marginalized communities, helping to lift them out of poverty.
2. SDG 3 (Good Health and Wellbeing): Improved waste management reduces environmental health risks, contributing to better health and wellbeing.
3. SDG 5 (Gender Equality): Formalizing waste management jobs can empower women, who play a critical role in household waste separation and sorting.
4. SDG 10 (Reduced Inequalities): A circular economy fosters equity among socially backward groups by providing equal access to resources and safe, decent jobs.

When applied in a holistic manner, prioritizing both people and the planet, a global circular economy can drive the achievement of the SDGs. It allows us to reimagine our economy and international relationships, fostering a just and equitable world. Although a circular economy alone cannot ensure peace and justice, it provides a framework for sustainable development that respects environmental boundaries while promoting social inclusion and economic resilience.

Circular Economy's Role in Shaping Tomorrow

The circular economy stands as a beacon of hope for sustainable development in our rapidly changing world. As we navigate the complexities of economic growth, environmental stewardship, and social equity, embracing a circular economy framework becomes increasingly imperative. It not only promises to transform waste management but also serves as a catalyst for inclusive growth through the creation of green jobs.

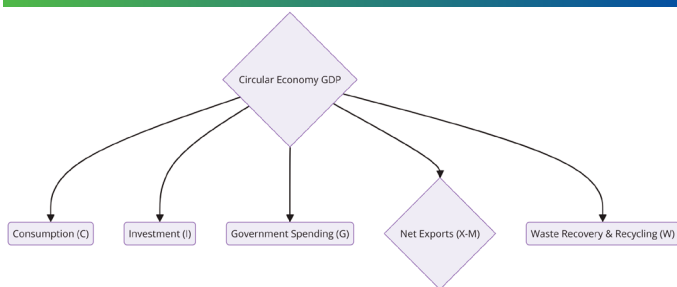
The role of green jobs in waste management cannot be overstated. By formalizing and upskilling the workforce involved in recycling and waste recovery, it not only improves working conditions and safety but also harness untapped

potential for economic advancement. Where traditional methods prevail, there is a pressing need to transition to specialized technical skills. These skills will empower workers with deep knowledge of waste processing and value extraction, aligning them with the demands of a modern circular economy.

To ensure a future ready workforce, skilling assumes paramount importance. By investing in skill development tailored to waste management, it prepares individuals for sustainable livelihoods while ensuring the efficient utilization of resources.

Looking ahead, the circular economy is poised to bolster the GDP of the country. A simple equation encapsulates its impact: Circular Economy GDP = C + I + G + (X - M) + W, where W represents the value added by waste recovery and recycling initiatives.

Figure 6: GDP equation encapsulating the value added by waste recovery and recycling initiatives.



This equation underscores how integrating circular practices not only conserves resources but also drives economic growth through innovation and sustainability.

Conclusion

By integrating the value added from waste recovery and recycling initiatives into national economic frameworks, countries can foster long-term prosperity while safeguarding the environment and promoting social well-being. Therefore, the circular economy stands at the forefront of economic discourse as societies pursue resilient and future-ready solutions to global challenges.

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YOUTH EMPLOYMENT IN INDIA: TRENDS, ASPIRATIONS AND SKILL READINESS



Introduction

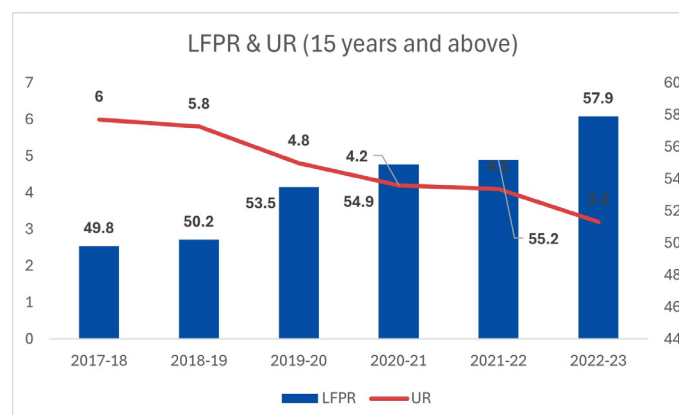
A recent report, titled, 'India Employment Report 2024', jointly released by the Institute for Human Development (IHD) and the International Labour Organization (ILO), focusses on youth employment trends in India and brings to light some crucial insights from the overall labour market and employment scenario in India. It sets the challenges involved in youth employment against the emerging economic, labour market, educational and skilling trends in India over the last two decades. The increase in education levels among Indian youth is not only reflective of their rising aspirations and employment outlook but also emboldens India's dynamic growth which is projected¹ to reach a GDP (Gross Domestic Product) of US\$26 trillion (at current prices) and a per capita income of over US\$15,000 by 2047-48. While GDP is one critical indicator of India's growth story, it is imperative to assess it in conjunction with other important economic indicators like Worker Population Ratio (WPR), Labour Force Participation Rate (LFPR), health of MSMEs, and net payroll additions to the Employee Provident Fund Organisation (EPFO) among others. Presently, India is enriched with one of the largest and youngest working populations across the globe which places it at an advantage in the global economy for the next decade to come.

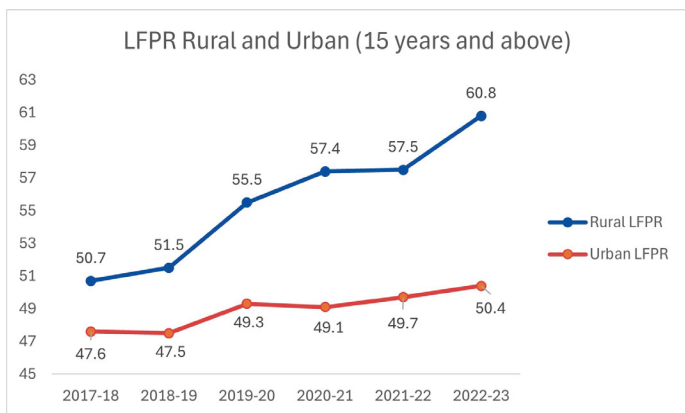
Employment Rates and Jobs

The Periodic Labour Force Survey (PLFS) Annual Report 2022-23ⁱⁱ has highlighted India's increasing LFPR between 2017-18 and 2022-2023. In rural areas, LFPR increased from 50.7% in 2017-18 to 60.8% in 2022-23 while for urban areas it

increased from 47.6% to 50.4% in the same time period. LFPR for males in India increased from 75.8% in 2017-18 to 78.5% in 2022-23 and corresponding increase in LFPR for females was from 23.3% to 37%. The participation rate of rural females climbed significantly from 24.6% to 41.5%, contributing to the overall LFPR increase from 49.8% to 57.9%. The rise in education levels, with increasing senior secondary education and higher education enrolment for females since the early 2000s, is expected to lead to more rewarding workforce participation in the future. Due to rising enrolment in Higher Educational Institutes (HEIs), youth LFPR in urban areas remained consistent, but youth LFPR in rural regions increased from 38.1% to 45.9%. Overall, this trend shows that more people are participating in the workforce, particularly young women and people living in rural areas.

Figure 1: India's LFPR (Overall, Rural, & Urban)



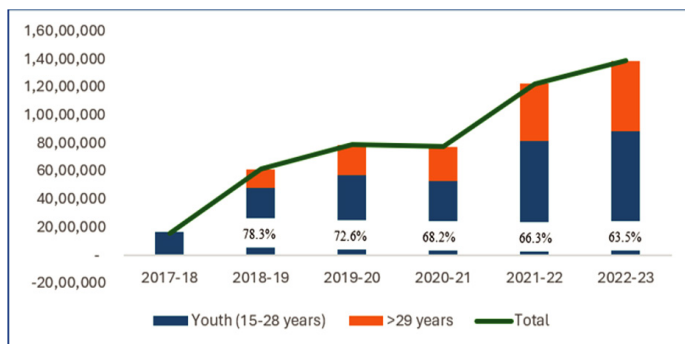


Source: Periodic Labour Force Survey (PLFS) Annual Report 2022-2023

During this period (between 2017-18 and 2022-23), the overall Unemployment Rate (UR) decreased from 6% to 3.2%, showing encouraging developments in both urban and rural areas for both genders. In rural areas, UR decreased from 5.3% in 2017-18 to 2.4% in 2022-23 while for urban areas it decreased from 7.7% to 5.4%. UR for male in India decreased from 6.1% in 2017-18 to 3.3% in 2022-23 and corresponding decrease in UR for female was from 5.6% to 2.9%.

The EPFO also witnessed a considerable increase in yearly net payroll additionsⁱⁱⁱ, doubling from 6.11 million in 2018-19 to 13.85 million in 2022-23, showing a quick recovery from the Covid-19 pandemic. In FY 2022-2023^{iv}, EPFO added 13.9 million net members with an increase of 13.22% compared to the previous financial year 2021-22. Further, age analysis shows that the age group of 18-25 years constitutes 56.6% of total new members added during the month of March 2023, indicating that majority of the members joining organised sector workforce of the country are first-time job seekers.

Figure 2: EPFO Trends



Source: EPFO Official Website

Furthermore, as noted in a NITI Aayog report^v, gig economy—which is being driven by the increasing use of smartphones and internet—has emerged as a major employer, creating jobs for 7.7 million workers by FY2021-22.

Growth of MSMEs

India is also armed with a growing strength of Micro, Small and Medium-sized Enterprises (MSMEs). There are 63 million Micro, Small, and Medium sized Enterprises (MSMEs) in India, of which 97.7% are micro enterprises^{vi}. With an annual growth rate of 18.5% from 2019 to 2020,

these MSMEs have experienced rapid growth. In the upcoming years, it is anticipated^{vii} that their number will rise to 75 million at a CAGR of 2.5%. As of June 2024^{viii}, total number of registered MSMEs on the Udyam Portal increased from 5.7 million in November 2021 to 45.8 million. This demonstrates a more than eight times increase in the number of formalized businesses, with microbusinesses making up the vast majority of the overall businesses. Total employment generated has reached 198 million. Women owned MSMEs constitute 20.5% of Udyam Portal registrations, contributing 18.7% employment and 10.2% turnover. Various initiatives support their growth and empowerment in the sector.



As per a report by CRIF High Mark, a credit bureau, in FY2022-23, total loan disbursements to the MSME sector were ₹ 37.29 trillion, a 5% rise over the year before and 182% over FY2020-21. Furthermore, as of October 2023^{ix}, more than 114,000 Startup India initiatives have created over 1.2 million jobs opportunities. With a ₹1,970 billion outlay^x, the government's Production Linked Incentive (PLI) Scheme has approved 746 applications in 14 sectors, including 176 MSMEs in sectors such as Bulk Drugs, Medical Devices, Pharma, Telecom, White Goods, Food Processing, Textiles & Drones. This has led to over ₹1,030 billion in investments till November 2023, generating ₹8,610 billion in production and sales, and creating over 678,000 jobs.

Focus on Women and Youth

As of June 2024^{xi}, the Deendayal Antyodaya Yojana-National Rural Livelihood Mission (DAY-NRLM) has successfully registered 5.60 million new Self-Help Groups (SHGs), revived 800,000 old SHGs, and continued to support 2.02 million existing SHGs, totalling 8.4 million SHGs with 89 million total members. This initiative has significantly contributed to women's empowerment across economic, social, and political spheres. Empowerment outcomes include enhanced financial literacy, decision-making abilities, social networking, asset ownership, and livelihood diversification. Various independent studies have also confirmed the improvements in self-esteem, education, participation in village institutions, and access to government schemes as some of the impacts under DAY-NRLM. 'Lakhpati Didis', a more recent initiative aims to transform 2 million SHG members into 'Lakhpati' women, or women earning at least ₹100,000 per year, by equipping them with marketable skills like plumbing, LED bulb manufacturing, and drone operations.

Interestingly, youth employment in India has seen significant improvements over the past few years, paralleling the growth of the youth population. From 2017-18 to 2022-23, the unemployment rate for youth (ages 15-29) dropped from 17.8% to 10%, and their LFPR expanded from 38.2% to 44.5%.

The participation of youth in higher education in India has seen significant growth, particularly among females. According to All India Survey on Higher Education (AISHE) 2021-2022^{xii}, between 2014 to 2023:

- The total enrolment in higher education has increased to nearly 43.3 million in 2021-22 from 41.4 million in 2020-21.
- There has been an increase of around 9.1 million in the enrolment from 34.2 million (26.5%) in 2014-15.
- The female enrolment has increased to 20.7 million in 2021-22 from 20.1 million in 2020-21.
- There has been an increase of around 5 million in the female enrolment from 15.7 million (32%) in 2014-15.
- The Gross Enrolment Ratio (GER) has increased to 28.4 in 2021-22 from 23.7 in 2014-15.
- Female GER has increased to 28.5 in 2021-22 from 22.9 in 2014-15.
- Between 2014 to 2023 the total number of Universities / University level institutions registered was 1,168, Colleges 45,473 and Standalone Institutions 12,002.

In all, 341 Universities/University level institutions have been established since 2014-15. This is reflective of the expanding educational infrastructure which will positively impact the enrolment rate in future years.

Along with education, vocational skilling has been a focus on government initiatives in order to enhance overall employability of the young students. The Skill India initiative, launched in 2015, has significantly enhanced the employability of Indian youth by providing them with skills aligned with industry and government standards under the National Skills Qualifications

Framework (NSQF). It offers courses across 40 sectors and has registered over 13.9 million participants. The flagship Pradhan Mantri Kaushal Vikas Yojana (PMKVY)^{xiii} and the PM Vishwakarma Scheme (PMVS)^{xiv}, launched to support artisans in traditional trades, have collectively enrolled nearly 7.68 million candidates across various trades and regions.

Additionally, the National Apprenticeship Promotion Scheme (NAPS) has seen more than 2.5 million youth apprentices receive training since the inception of National Apprenticeship Promotion Scheme in 2016, till 31st July 2023. Around 260,000 apprentices have completed training in FY 2023-24. The number of active establishments subsequently increase from 6,755 in 2018-19 to 40,655 in 2023-24^{xv}. Most apprentices come from technical and vocational backgrounds, with 36% being ITI graduates. The bulk of apprentices are concentrated in ten industrialized states and are primarily engaged in sectors like automotive, IT-ITeS, retail, electronics, and production & manufacturing, with roles like electrician, fitter, and retail trainee associate being the most popular. In FY 2023-24, more than 900,000 apprentices enrolled are in the age group of 23-26. Women apprentices have also increased from 22,427 in 2018-19 to 148,000 in FY 2022-23, registering a 7-fold increase in last five years.

Government's impetus on financial inclusion is visible in the achievement of schemes like Jan Dhan Yojana and Mudra Yojna. As of November 2023^{xvi}, Pradhan Mantri MUDRA Yojana (PMMY) had issued over 444.6 million loans, predominantly benefiting women entrepreneurs (69%) and individuals from SC/ST/OBC categories (51%), and approximately 21% of the total loans have been sanctioned to New Entrepreneurs. As of August 2023^{xvii}, under the Pradhan Mantri Jan Dhan Yojana (PMJDY) over 500 million beneficiaries have opened their bank accounts with a total deposit balance of ₹2,035.05 billion. Notably, 56% of these account holders are women, with 67% based in rural and semi-urban areas.



Conclusion

In FY 2023-24^{xviii}, India's vibrant economy remained resilient with 7.6% growth rate of GDP with double-digit growth rate of Construction sector (10.7%), followed by a good growth rate of Manufacturing sector (8.5%). The growth story is consistently underpinned with strategic developments including:

- Hosting 1,500 Global Capability Centres (GCCs)^{xix} representing 45% of the global share and making it a prime candidate to become the "office of the world".
- Identification of 300,000 health sector jobs in countries like Australia, Germany, and Canada.
- And a remarkable growth of startup ecosystem significantly contributing to job creation, with startups alone generating over 1.2 million direct and indirect jobs^{xx} in the last decade.

According to Nasscom's Strategic Review 2023^{xxi} report, India has also been ranked first in the world for talent and sourcing within the technology sector globally and has consistently enjoyed a leadership position in its ability to establish technology operations around the world. The pool of digital talent with expertise in areas of Cloud Computing, Artificial Intelligence (AI), Big Data, and Internet of Things (IoT) has grown at a CAGR of more than 35% over the past four years.

These elements collectively underscore India's dynamic progression towards becoming a leading global economy with substantial advancements in technological capability. The way ahead is still full of challenges but with a diverse and large demography like India's, the solutions also need to be diverse and unique. Consistent efforts in line with the sustainable development goals will further place India strongly among the developed nations of the world.

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OVERCOMING GLOBAL RISKS: BUILDING A RESILIENT FUTURE THROUGH INNOVATION



Introduction

In the 21st century, humans are crossing all frontiers of development and technological advancements, and yet, human life on earth is not without its challenges and complexities. Every day, human life progresses but on a delicate balance between mortality and human ingenuity. History is witness to how global catastrophic risks like meteors, super volcanoes, earthquakes, pandemics, and resource scarcities, have always existed. Moreover, since the onset of industrialization, the planet has also been inflicted by a lethal mix of catastrophic events stemming from human-made disasters. Advancement of technology coupled with intensifying geo-political disputes also continues to pose the risk of severely damaging our planet's life-supporting conditions and in turn, our wellbeing.

Global Catastrophic Risks And Their Implications

Nick Bostrom and Milan Cirkovic in their bookⁱ on Global Catastrophic Risks have defined the term 'global catastrophic risk' as an event with "the potential to inflict serious damage to human well-being on a global scale." This definition encompasses a wide range of events i.e., pandemic outbreaks, nuclear disasters, global tyrannies, unrestrained scientific experiments, and economic crises. Despite the diverse nature of these risks, they are intertwined by numerous connections and similarities. For example, numerous catastrophic events inflict substantial damage through their secondary effects on societal

order, indicating that the risks of social upheaval and collapse are linked to phenomena such as nuclear terrorism or pandemic outbreaks. Likewise, ostensibly disparate events such as large asteroid impacts, volcanic super-eruptions, and nuclear warfare would all inject vast quantities of soot and aerosols into the atmosphere, profoundly impacting the global climate. The presence of such causal interconnections underscores the prudence of examining multiple risks in a holistic manner.

Global Challenges Foundationⁱⁱ, a non-profit organization operating out of Stockholm, Sweden, has categorised multitude of these risks and identified them under five categories:

1. Climate change
2. Large-scale environmental degradation
3. Weapons of mass destruction
4. Technology induced risks
5. Natural catastrophes

The foundation recommends effective management of these risks by ensuring global cooperation with a focus on bringing diverse stakeholders together and exploring efficient decision-making models along with robust implementation strategies on a global scale.

The World Economic Forum (WEF)ⁱⁱⁱ, is well-known for bringing together important leaders from industry, politics, academia, and civil society every year in Davos, Switzerland, to discuss pressing global issues. Professor Klaus Schwab founded the WEF in 1971 with the goal of improving world

circumstances by bringing together leaders to work together on joint projects that impact global, regional, and sector-specific goals. Since 2006, the WEF has been publishing Global Risk Report every year with an analysis of the most important risks facing the globe in the areas of technology, geopolitics, the environment, society, and the economy.

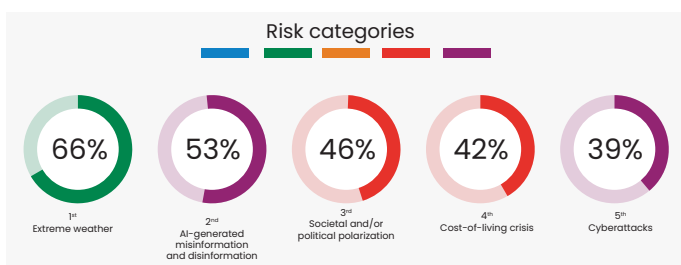
WEF has defined “Global risk” as “the possibility of the occurrence of an event or condition which, if it occurs, would negatively impact a significant proportion of global GDP, population or natural resources.” On the same lines, the WEF’s Global Risks Report series explores the complexities of the current global landscape, characterized by rapid technological advancement, economic instability, climate crises, and geopolitical tensions. The findings provide an important in-depth analysis on how the dynamics between different events contribute to a volatile global environment marked by conflicting narratives, diminishing trust, and heightened insecurity.

The series of annual reports assess critical risks spanning a range of next two and ten years, encompassing challenges such as climate change, economic volatility, and technological disruptions, amidst a backdrop of waning international collaboration. Latest edition of the report, Global Risks Report 2024^{iv}, contains insights from approximately 1,500 global leaders and 200 experts and emphasize the imperative for inclusive dialogue and decisive action to mitigate risks and foster resilience.

Building on past editions^v, this report underscores the interconnected nature and enduring impact of global risks, advocating for a collaborative, multistakeholder approach to address them effectively. Leveraging data from the Global Risks Perception Survey (GRPS) 2023-2024, which gathers perspectives from a diverse global community, the report provides decision-makers with a comprehensive perspective on imminent and long-term challenges in the global risk landscape.

The risks have been grouped into five categories: Economic, Environmental, Geopolitical, Societal, and Technological.

Source: Global Risks Report 2024, World Economic Forum



The GRPS 2023-2024 have highlighted several key risks: Extreme weather events were rated the topmost environmental risk, with a 66% rating. In the technological domain, AI-generated misinformation, and disinformation (53%) and cyberattacks (39%) were identified as major threats. Societal and political polarization (46%) and the cost-of-living crisis (42%) topped the list of societal risks. Notably, societal polarization ranks among the top three risks in the short term and ninth over the long term, indicating its persistent impact.

Figure 2: Global Risks landscape: an interconnections map



Source: Global Risks Report 2024, World Economic Forum

Figure 2 depicts how different global risks are deeply interconnected, creating a complex web of challenges that can have far-reaching impacts on the world. These risks, spanning economic, environmental, geopolitical, societal, and technological domains, often amplify and exacerbate one another, leading to cascading effects that can destabilize global systems. For instance, climate change not only threatens ecosystems and biodiversity but also exacerbates economic instability, triggers mass migrations, and intensifies geopolitical tensions. Extreme weather events can disrupt supply chains, leading to food and resource shortages, which in turn fuel social unrest and conflict.

Technological advancements, while offering significant benefits, also pose risks such as cyber threats, misinformation, and job displacement. These technological risks can undermine societal trust and cohesion, further complicating efforts to address other global challenges like economic inequality and political instability. Geopolitical shifts, including conflicts and trade disputes, can disrupt international cooperation, making it more difficult to coordinate responses to global risks. This lack of cooperation can hinder progress on critical issues such as climate change mitigation, pandemic preparedness, and economic recovery.

Four Structural Forces As An Analytical Tool

The latest edition of the Global Risk Report released in 2024 applies a four structural forces approach to better analyse different factors shaping the global risk landscape, i.e., technological acceleration, geostrategic shifts, climate change, and demographic bifurcation. In examining the interactions among these structural forces, the report identifies four emerging global risks anticipated to evolve over the next decade.

Firstly, significant changes to Earth systems pose considerable risks, potentially resulting in involuntary migration, persistent health challenges, outbreaks of infectious diseases, and economic downturns. Secondly, concerns surrounding AI technologies encompass risks such as misinformation, displacement of jobs, cyber threats, biases in decision-making, and their application in military contexts.

Thirdly, the report underscores the enduring risk of inadequate economic opportunities impacting human development, encompassing issues like unemployment, economic instability, erosion of human rights, societal polarization, and internal conflicts.

Lastly, organized crime emerges as a latent but potentially escalating risk, exacerbated by economic downturns, cyber vulnerabilities, involuntary migration, unemployment, and geopolitical tensions. Overall, these identified risks highlight the intricate interplay among structural forces and their profound implications for global stability and resilience in the decade ahead.

Risk Reduction Measures

To mitigate these complex risks and strengthen adaptive capacities on a global scale the report advocates for proactive measures and collaborative strategies. As per the Global Risks Report 2024, based on the level of cooperation needed, approaches to addressing global risks has been clubbed into four broad categories:

- 1. Localized strategies** which focus on enhancing community preparedness to manage global risks within national borders. This approach emphasizes public awareness campaigns, educational initiatives, financial instruments, and national and local regulations. These strategies are often implemented independently, requiring less extensive cooperation. The public and private sectors, alone and in partnership, can play a role in scaling local responses, bringing down costs and expanding risk reduction capabilities to all. This was well demonstrated during the recent COVID-19 outbreak which tested the capacity of national health systems across the world. Indian government proactively carried out a national level awareness and regulatory campaign^{vi} to contain the viral spread and performed better^{vii} at it than most western countries.
- 2. Breakthrough endeavours** involve significant research and development (R&D) efforts aimed at pioneering new technologies, medical advancements, or innovative risk management approaches. For instance, initiatives like the Intergovernmental Panel on Climate Change (IPCC) illustrate the impact of global collaboration on tackling environmental challenges. R&D also plays a critical role in preparing for extreme weather events, natural disasters, and systemic environmental changes by fostering global research networks and knowledge sharing.
- 3. Collective actions** harness the combined efforts of individuals, companies, and nations to effect change on a broader scale. This strategy leverages collective consumer choices, corporate responsibility initiatives, and technological advancements such as social media to mobilize public support and influence market dynamics. Tax incentives and multistakeholder engagements further incentivize cooperative actions among diverse stakeholders. One important example here is that of Lifestyle for the Environment (LiFE)^{viii}, an initiative

introduced by PM Modi at COP26 in Glasgow in November 2021. LiFE puts individual and collective duty on everyone to live a life that is in tune with Earth and does not harm it. Those who practice such a lifestyle are recognised as Pro Planet People under LiFE.

- 4. Cross-border coordination** involves international agreements and treaties aimed at managing global risks that transcend national boundaries. These agreements range from mutual restraint pacts among nations possessing dangerous capabilities to comprehensive global treaties addressing issues like climate change, security, and trade. Minilateral treaties, involving fewer parties and regional backing, offer pragmatic solutions in a fragmented global landscape, while broader global agreements require sustained dialogue, negotiation, and compromise to effectively mitigate and prepare for diverse global risks. A clear example of minilateralism occurred in February 2023 when the UAE, India, and France announced^{ix} their shared commitment to work together through a trilateral framework in various fields such as defence, energy, and technology.

India's Preparedness And Global Risk Mitigation Strategies

India has established robust policy initiatives and adaptation measures to address global risks like climate change. India is a founding member of 'Mission Innovation', a term coined by PM Modi. Mission Innovation (MI)^x is a global initiative of 23 countries and the European Commission (on behalf of the European Union) to accelerate the Clean Energy revolution and progress towards the Paris Agreement goals and pathways to net zero. In 2022^{xi}, India also updated its Nationally Determined Contribution (NDC) and enhanced its target of electric power generation installed through non-fossil fuel to 50% by 2030 and to reduce the emission intensity of the GDP by 45% as compared to 2005 levels and has set a target for creation of carbon sink of 2.5 – 3 billion tons by 2030. The Government of India is also implementing National Action Plan on Climate Change (NAPCC) which comprises missions in specific areas of solar energy, energy efficiency, water, agriculture, Himalayan eco-system, sustainable habitat, green India, human health, and strategic knowledge on climate change.

To enhance economic stability and growth, India has implemented structural reforms such as the Goods and Services Tax (GST) and the Insolvency and Bankruptcy Code (IBC). Financial inclusion initiatives like Jan Dhan Yojana for banking access and the Digital India programme promoting digital payments and e-governance are key components.

India's focus on innovation and research and development (R&D) is evident through initiatives like the Digital India programme, which aims to transform the country into a digitally empowered society and knowledge economy, and the Startup India programme, which supports entrepreneurship with funding, mentorship, and regulatory assistance. Cybersecurity is bolstered by the National Cyber Security Policy, which aims to protect critical infrastructure and data from cyber threats through capacity building, international cooperation, and a robust legal framework.

In healthcare, India's flagship health insurance scheme, Ayushman Bharat, aims to provide affordable healthcare to over 500 million people. The country has also conducted robust immunization drives, including the successful rollout of COVID-19 vaccines. To enhance pandemic preparedness, India has strengthened disease surveillance systems and rapid response teams for early detection and control of outbreaks and invested in medical research and biotechnology to develop vaccines, treatments, and diagnostic tools.

The country is also strengthening ties with key global players such as the United States, European Union, Japan, and Russia. Defence modernization is a priority, with initiatives to modernize the armed forces using advanced technology and indigenous defence production through programmes like 'Make in India.' Additionally, counterterrorism efforts are enhanced through improved intelligence capabilities and international cooperation to combat terrorism and insurgency threats. These strategies collectively illustrate India's proactive measures to mitigate global risks, enhance resilience, and ensure stability across multiple domains.

Conclusion

Numerous more studies underscore the intricate interconnections and complexity of global risks, painting a predominantly pessimistic picture for both the near and distant future. There is a compelling call for comprehensive and coordinated endeavours to mitigate these challenges. Through localized strategies, breakthrough initiatives, collective actions, and cross-border coordination, global leaders can adeptly navigate forthcoming uncertainties and cultivate greater resilience.

While conventional risks like air disasters and environmental contaminants receive considerable scrutiny, emerging threats stemming from rapid technological advancements and ecological tipping points often evade adequate attention. Despite their seeming improbability, the global ramifications of these risks could prove catastrophic. Addressing these imperatives demands expert scrutiny to discern between speculative fiction and viable threats, enhance resilience, and pre-empt unchecked technological trajectories. Elevating the international prioritization of these issues underscores the significance of timely and widespread discourse on these critical matters. With concentrated and strategic efforts at national, international, and regional levels, global communities will be able to effectively overcome several challenges together.

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COLD CHAIN TECHNOLOGY: BRINGING A SYSTEMS APPROACH FOR GREEN TRANSITION



DR. ANANT SHUKLA,

LEAD EXPERT – CENTRE OF EXCELLENCE ON SUSTAINABLE CROP POST-HARVEST MANAGEMENT AND COLD CHAIN, COE-SPMCC

Team NSDC Connect in conversation with Dr. Anant Shukla. Dr. Shukla is working as a Lead Expert in the CoC-SPMCC being setup by the Directorate of Horticulture, Government of Haryana and is supported by University of Birmingham led consortium of universities. He brings along more than two decades of experience in energy, climate and sustainable development while working in international organisations, government organisations, and private sector in India and abroad.

Ragini: Good morning, Dr. Anant! Thank you for taking the time to speak with team connect. Let us start the conversation by telling us a little bit about yourself, and your career journey.

Dr. Anant Shukla: Thank you Ragini and colleagues for this opportunity. I am incredibly happy to be a part of this initiative as I believe in passing on my experiences and skills that keeps continuously evolving, to colleagues, students, and entrepreneurs.

I am a physicist by training, and immediately after pursuing my master's in physics, I chose to pursue a PhD in Energy and Environment (Engineering Sciences). During my PhD, I developed and a few prototypes on solar thermal energy storage, analysed systems and correlated with models and simulations. While pursuing my PhD, I took an assignment as a Scientific Officer in the Regional Test Centre cum Technical Backup Unit for Solar Thermal Devices (RTC).

During my research I was awarded a Junior Research Fellowship by the Department of Atomic Energy's Board on Research in Nuclear Sciences, Project Assistant in a Ministry of New and Renewable Energy project and Senior Research Fellow from Council of Scientific and Industrial Research. Thereafter I started my professional carrier in a private company. It was the time when the telecom sector was struggling with power failure and system malfunction due to extreme heat. When indoor temperatures went beyond 35°C, the PCBs (Printed Circuit Boards) would malfunction and the challenge was further exacerbated in remote areas where the power supply was not very consistent and reliable, and there were additional challenges to curtail diesel pilferage. The companies were trying to optimize operational costs and ensure reliable energy access for the telecom sector. So, I developed thermal energy storage Phase Change Materials (PCMs), which provided thermal backup for 8 to 12 hours during power outages. This solution promised a great relief to the telecom shelter, in particular. Furthermore, this technology has further applications in ice cream storage and food transportation among others; now a days similar materials are more common among in refrigerators.

Ragini: Could you walk us through your current role and how you transitioned from a physicist role to an international organization role?

Dr. Anant Shukla: I had always been interested in systemic and scalable solutions to tackle issues of energy and climate and incidentally, my journey into an international organization role has been spontaneous priority. I started this phase of my career in German Development Cooperation (GIZ, the then GTZ) where I implemented a few national projects.

The first project I did was implemented in Jai Prakash Narayan Apex Trauma Center, AIIMS on waste heat recovery i.e. Trigereneration. Applications such as hospital and hotels require reliable power quality, supply along at an economical tariff. Power failure makes it even harder that mandates an additional power backup unit. This was back in 2009 & 10 when National Solar Mission was not announced, and the gas prices were comparatively low making it extremely viable proposition given 80 % efficiency or higher. Even back in the day, technology was very viable, reliable, energy efficient, and climate friendly. By the end of the project, we reduced the overall energy consumption in the trauma center while reducing GHG emissions.

Thereafter, I implemented several projects on industrial solar thermal/water heating, solar thermal heating in Himalayan region, among others. The extreme cold region of Himalayas demanded a hybrid technology. In Leh, I implemented a project that married solar PV and solar thermal technology to raise indoor temperatures to +14 °C from -28 °C outdoor temperature. This technology, I believe, has many applications, and I recommend that these must be scaled up in Himalayan regions which experience a high solar insolation.

Eventually, I expanded my role towards policy development and advocacy as policy dialogues, capacity building, and awareness play a significant role in ensuring the on-ground success of innovative interventions. Since then, I have continued my journey in sustainable development with a focus on policy, guidelines, and technical aspects on energy, environment, and climate change in a complex and fast changing international setup. Stakeholder engagement, partnerships, collaboration, and capacity building among others were a key aspect of this success.

As a natural extension to my early career work, I now work around the issues of systemic innovation in the climate change, adaptation, and mitigation among others with focus on specific challenge around cooling or extreme heat. Let me give you a concrete example, extreme heat conditions in the country have been in the news recently. It is easy to talk about it from the comforts our air-conditioned rooms, but for the large part, events such as extreme heat weather has devastating consequences for people as well as businesses. And we often tend to forget about vulnerable sections of our society who will probably be the first to suffer from extreme weather-related disasters. Keeping this in mind, energy transition towards green energy as well as affordable housing for people becomes particularly important. Another often ignored victims of climate crises are the biodiversity, i.e. animals and vegetation that is adversely affected by extreme weather. Consider this, if the average temperature goes up by 10 °C, the productivity of maize will drop to near zero. And this one crop plays a massive role in the food production and supply chain across the globe. Hence, it is important to keep a clear perspective on what is at stake when we speak about fighting energy and climate issues.



Ragini: What is your area of focus in your current role and why is it so important?

Dr. Anant Shukla: In my present role with CoE-SPMCC as a lead expert, and playing a key role in setting up of the CoE-SPMCC in Haryana, with a focus on post-harvest management and sustainable cold chains. To understand cold-chains, we need to first understand that it is different from cold-storage which generally refers to refrigerating/chilling fruits, vegetables, or meat produce for transportation or retail selling. Cold-chain refers to a larger and complex system under which cold-storage can be seen as one-component and the other components include farmer, logistics, telemetrics, business model and market connectivity, among others.

Cold chain starts right at the farm when the farmer harvests fruits or vegetables. Just imagine that if you pick an apple, let us say 30 °C, and if you do not chill it to 13 °C or pre-cool, it will lose its nutrition value along with its texture, its moisture content, quality and release harmful gases such as ethylene and CO₂. Hence making it unusable

for consumption and export. And if the quality is not maintained the produce cannot be exported, the farmer will get less revenue, impacting profit margins, leading to an overall negative impact on the economy and environment leading to broken cold chain.

The cold chain is still evolving, and it involves coordination and collaboration between different sectors such as horticulture, Cold Storage, Logistics, Retail, Consumer, etc.

One important thing to note about cold chains is that it involves climate friendly and energy efficient measures throughout the process. The cold chain starts at the farm, followed precool, storage, and then you transportation preferably EV-powered Logistics. While the produce is on the road, it must be monitored closely for temperature, humidity, and other parameters to ensure quality and minimize wastage as the product reaches the end consumers. Due to this intersectionality, a 'System of System Approach' is being followed to set up the CoE-SPMCC.

To make Cold-Chains more mainstream and widely practiced, we also need to focus on developing sustainable business model. This requires active participation of financing institutions, and entrepreneurship support to encourage more adoption and awareness for this practice. Another crucial element is Standard and Protocol Development, Research and Development, Policy, Training, and Capacity Building. These capacity building activities must be integrated between food systems and health and life science.



Ragini: Dr. Shukla can you tell us a little bit about the overall state of Green Transition in India? We can start by addressing why it is important and how it can impact our economy and society.

Dr. Anant Shukla: Simply put, Green Transition involves adopting practices that are good for the environment and the planet, such as transitioning towards more energy efficient technology or switching to renewable energy, green hydrogen, to name a few.

When it comes to green transition most of the economies in the developing world rely on fossil fuels or the usage practices are unsustainable. They often lack state-of-the-art equipment, standard practices, standard operating procedures, or institutions for implementation. So, developing these procedures/practices, institutions, and processes is an integral part of any country's green transition plans. Technology is a great enabler of this process, and it can only be achieved through active participation of industry and society, along with the governments. This transition will require additional focus on the agricultural sector, logistics, transportation, manufacturing, finance, waste management and circular economy for the sustainable energy transition upscaling.

Ragini: We often hear about a supposed trade-off between 'green economy' and growth. Currently, India is on the fast track for its economic growth with a mission to become developed by 2047. At this time, is it pragmatic to put so much focus on green transition?

Dr. Anant Shukla: There is definitely this discourse that eco-friendly and business-friendly are on opposite sides when it comes to economic development. We often hear that the developed countries had their time with heavy use of fossil fuels which led to their prosperity and therefore it is considered unfair that the developing countries are expected to cut their emissions while they need to grow fast. But this may be a myth more than anything else. With today's technology, it is possible to decouple emissions and growth such that we are still able to achieve our developmental goals while transitioning to more green practices. Moreover, when you are in a ship and this ship is sinking, would you spend time pointing at each other or would you scramble your brains to find a safe escape. Given the advanced research on climate and energy related vulnerabilities, particularly for the disadvantaged sections of society, we do not have the luxury to exclude adoption of strategies for green transition.

The positive news is that we have the advantage of both our young minds and technology which can help us navigate the complex landscape of green transition. Today, India has the capability to acquire any expensive technology or develop inhouse with the help of our innovative ambitious young entrepreneurial workforce and vibrant industries.

Ragini: You mentioned that our young workforce is one of the advantages we have in our journey of green transition. What kind of jobs and by extension, skills do you see emerging in the space of Green Jobs?

“With today's technology, it is possible to decouple emissions and growth such that we are still able to achieve our developmental goals while transitioning to more green practices. Moreover, when you are in a ship and this ship is sinking, would you spend time pointing at each other or would you scramble your brains to find a safe escape. Given the advanced research on climate and energy related vulnerabilities, particularly for the disadvantaged sections of society, we do not have the luxury to exclude adoption of strategies for green transition.”

Dr. Anant Shukla: Broadly speaking green jobs are in the sector of renewable energy, energy efficiency, environmental science, management, artificial intelligence, among others. And when I say renewable energy or energy efficiency, there are also some cross cutting areas in thermal energy storage, passive building design, energy conservation, and building code. In order to service these emerging job roles, we need to put a greater emphasis on technical, digital, and analytical skills. Additionally, we need to put the right incentives in place to encourage more private sector participation in research areas that align with our green transition goals.

Second is we have to talk about smart grid technology as we see a growing transition from fossil fuel to electricity. We are not far from a time when our LPG stoves will be replaced by an induction cook stove. So, a flexible and smart grid will be required because both renewable energy and variable loads will increase and needs to be integrated in the existing grid network. To execute all this, we will need more people who understand these technologies and are trained to operate the machines on the ground as well as manage the overall systems. We will also need professionals who are trained in grid management and cybersecurity as the systems become more digitized and network connected.

The third part is digital transformation, automation, and artificial intelligence. We have some high-capacity industry players in the system such as Wipro, Infosys, IBM, HCL, and Tech Mahindra, which can become enablers and innovation hubs for Green Transition. Finally, there is a significant role for apex institutions like NSDC, which can facilitate skill development initiatives and candidate or trainee matchmaking with the industry.

Furthermore, project management and policy development are essential elements of a successful green transition strategy. Often, we have skills that can delivery technology-oriented projects. We might have skills that can implement engineering projects. We might have skills who can only do project management. But we need people who are multi-talented to do sustainable project management, who can talk about technology as well as policy, and who can understand what technology to be used, whether it is renewable energy or digital technology or artificial intelligence, and whether it will be sustainable green technology not just in the present but for several years into the future.

hen the fourth one is financial and economic skill which involves training professionals to work in green finance, climate finance, green bonds etc. And then the fifth one is communication and community engagement. You can have robust policies, you can have innovative technology, but if the on-ground communities do not adopt it, then the whole intervention can fail. Therefore, we agreed to bring in all the stakeholders together. And when it comes to community engagement, NGOs, businesses, local communities, farmers, end users and so on also need to participate in execution efforts.



Ragini: One area of concern is that as more green jobs appear; we will also have a crisis of job loss in some sections of society. This may necessitate a parallel strategy on reskilling and job transition. What are your thoughts on this aspect, particularly for the agriculture sector?

Dr. Anant Shukla: There are two questions here. The first is about revamping the agriculture sector and the second is about reskilling or adapting to the requirements. In terms of reskilling, I think the role of NSDC will and such institutions will be critical so that we can maintain and utilize our workforce to its fullest potential. It will be crucial to identify the specific upskilling needs and match it with state-of-the-art skilling interventions to retain our comparative advantage and ensure well-being of affected persons and communities. This is an achievable goal, provided close collaboration between government, industry, and experts.

When it comes to farmers and agriculture, we need to create business models that put farmers at the centre. This means spending sufficient time and energy on capacity building for farmers and equipping them with new-age technology and skills so they can improve their efficiency and avail fair prices for their produce.

Ragini: Thanks for sharing your time and wisdom with the readers of Connect. There is a lot of optimism and depth in your thinking and on behalf of our team, we wish

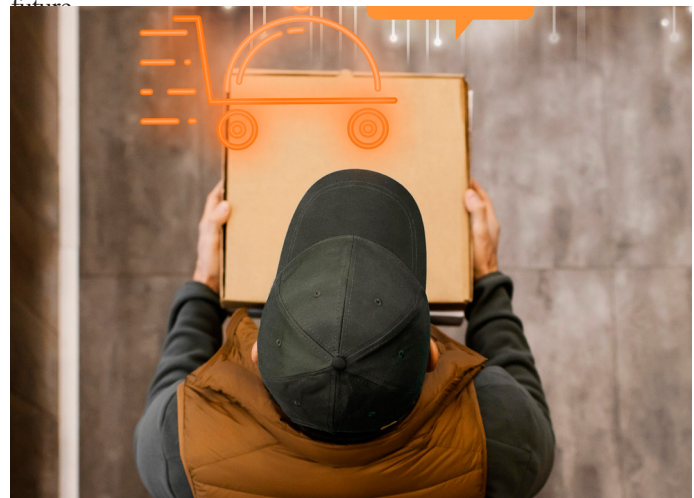
you a lot of success with your foundation programme. Any concluding thoughts and advice you can give to our readers and any closing thoughts you would like to share?

Dr. Anant Shukla: I am optimistic by nature. When I was doing my PhD or I started doing my research, a very few knew about renewable energy, and it seemed herculean task to find a job. Today, on the other hand, I see a plethora of possibilities and opportunities available for our youth and entrepreneurs. We just need to encourage the young professionals and students need to keep on pursuing their goals and ambitions and not get disheartened by challenges and failures. So that is the first piece of advice, whatever you start doing, do not leave in between. If you leave in between, then you will keep on switching and there is no end to it. Consistency and perseverance are highly underrated, but eventually, these qualities are central to success and growth. Lifelong learning is the real mantra here. You should keep enhancing your skills, especially digital skills.

Additionally, data analysis, critical thinking, and problem solving are crucial skills to learn in order to be ready for the 4th Industrial Revolution led future. I believe young people should leverage platforms like the Skill India Digital Hub (SIDH) to upskill themselves in not just Sustainable Development Practices, but also broader technical and life skills.

Interestingly, when I was working in Southeast Asia, my technical skills were secondary to my interpersonal and social skills. As we start working in a globally interconnected economy, learning social and cultural skills will have a significant impact on career trajectories, hence necessitating the increasing focus on Life Skills.

Finally, I would like to encourage your readers to develop entrepreneurship skills focusing on the emerging and sunrise sectors. In order to achieve its economic growth and fulfil its SDG commitments, we need more entrepreneurs and innovators within society. Going beyond theoretical knowledge and formal degrees, one must focus on creativity, entrepreneurship, and innovation. I believe that if we consistently and persistently continue to make more strides in Skill Development, nothing can stop us from achieving our economic growth as well green transition goals in the future.



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TAKING INDIAN TALENT TO GLOBAL STAGE: UNION MINISTER JAYANT CHAUDHARY FELICITATING HEALTHCARE PROFESSIONALS



To empower Indian nurses with global career opportunities, Shri Jayant Chaudhary, Union Minister of State (Independent Charge), Ministry of Skill Development and Entrepreneurship, felicitated 32 healthcare professionals in New Delhi for successfully completing the B1 level of German language training on June 22, 2024. The training aims to equip the nurses with the necessary language skills for a successful career and livelihood in Germany.

The comprehensive two- to three-month residential training program, conducted as part of Skill India International, aimed at equipping nurses with essential German language proficiency required for thriving careers in Germany. This initiative not only addresses the skill gap in the global healthcare sector but also aligns with India's vision to become a leading provider of skilled professionals worldwide.

Shri Jayant Chaudhary expressed optimism about India's demographic dividend and its potential to transform into a developed economy by 2047. He said, "India has a great demographic dividend, that is a clear path towards transforming our country and our rural hinterland into a developed economy by 2047. With this, there is also a growing skill gap in the world today, even in the contracting global economy, approximately 8.5 crore opportunities will be there in the world by 2030. And how many of these opportunities are grabbed by our aspiring young professionals will decide the future path of our economy."

"In fact, in Germany alone, with their ageing population, there would be approximately 18 Lakh job opportunities available for suitable candidates. Therefore, it is imperative that we have the right approach to fill these positions in a focused manner, and Skill India International's strong connect with the industry can fulfil this gap and I must congratulate every candidate as each of you is a changemaker and an ambassador of India." he added.



"Every skilled Indian professional is a changemaker and an ambassador of India," - Jayant Chaudhary, MoS (IC), Ministry of Skill Development and Entrepreneurship

Highlighting the success of over 58,000 skilled Indians placed globally, the Minister commended the collaborative efforts of Ministry of Skill Development & Entrepreneurship (MSDE) and NSDC International in facilitating high-quality training and overseas employment opportunities. He personally handed placement offers to the felicitated candidates, inspiring confidence in their future endeavours.



Each of the 32 candidates, having cleared the B1 German Language Training through TELC, is poised to join leading hospitals in Germany with salaries ranging from 2300 to 2700 euros per month (over 2 lakh INR), with further prospects upon completing the B2 level. This achievement not only promises lucrative career advancements but also contributes to filling critical skill gaps in global healthcare.

Dr. Philipp Ackermann, German Ambassador, praised India's robust skilling ecosystem and expressed optimism about future collaborations to meet Germany's growing demand for skilled healthcare professionals. He said, *"The growing skill gap in Germany, particularly in the healthcare sector, poses a significant challenge. Therefore, we felt the need to find a solution to offer which is structured migration, which not only caters to the skill gap but also offers us the quality expected to meet the demands of the healthcare Industry. This is where India's education system, robust skilling infrastructure, and extensive training programs are helping bridge this gap. We are immensely grateful to NSDC International for their robust efforts as in just two months, they managed to prepare this young workforce for Germany."*

The ceremony culminated with the Hon'ble Minister, the German Ambassador along with Shri Atul Kumar Tiwari, Secretary MSDE and Shri Ved Mani Tiwari, CEO, NSDC and MD, NSDC International, flagging off the bus taking the candidates to the airport and boosted their morale and symbolizing a new chapter in their professional journeys.

NSDC International, through its partnership with Auxila Academy, has played a pivotal role in shaping these career paths, emphasizing India's potential as a dependable source of skilled workforce.

The initiative not only opens doors to promising careers for Indian nurses but also strengthens India's position as a global skilling powerhouse, setting a precedent for future successes under the Skill India International Initiative.



NEWS BYTES



Shri Jayant Chaudhary assumes charge of Ministry of Skill Development and Entrepreneurship as Minister of State (Independent Charge)



The newly appointed Minister of State (Independent charge), Shri Jayant Chaudhary officially assumed charge of the Ministry of Skill Development and Entrepreneurship (MSDE) on June 11, 2024. Speaking on the occasion, Shri Chaudhary said that India with its vast and youthful population needs to be empowered with skilling, reskilling, and upskilling opportunities to fulfil their aspirations. This compliments perfectly with Hon'ble Prime Minister Shri Narendra Modi' vision of a Viksit Bharat, where every citizen could thrive and contribute to our nation's prosperity.

The MSDE Ministry is committed to implementing strategic initiatives that bridge the skills gap including flagship schemes like Pradhan Mantri Kaushal Vikas Yojana (PMKVY) and the National Apprenticeship Promotion Scheme (NAPS). By embracing digital technologies through platforms like SIDH (Skill India Digital Hub), enhancing infrastructure, and promoting inclusive skill training, MSDE aims to empower individuals and swiftly enforce high- impact initiatives.

MSDE Partners with Australian Government to energise Agriculture Sector of India with Emerging Skills



The Ministry of Skill Development and Entrepreneurship (MSDE) and the Australian Government held a roundtable to discuss the Australia-India Critical Agriculture Skills Pilot Project. The discussion led by Hon'ble Secretary, MSDE, Shri Atul Kumar Tiwari and Australian High Commissioner Minister Mathew Johnston highlighted opportunities to scale the initiative and replicate the model in other sectors. The next step involved aligning qualification standards, a collaboration between the Agricultural Skill Council of India (ASCI) and Skills Impact, to be approved by the National Council for Vocational Education and Training (NCVET).

Under this initiative, six pilot projects have been completed in four states, Andhra Pradesh, Maharashtra, Tamil Nadu, and Telangana, creating new job roles in the sector such as Digital Agriculture Extension Promoter, Carbon Farming Practitioner, Livestock Green Management Promoter, Organic Farm & Business Promoter, and Integrated Farming Practitioner, all aligned with Sustainable Development Goals.

Skill India Digital Hub (SIDH) to go global as ILO inks pact



The National Skill Development Cooperation (NSDC) under the aegis of Ministry of Skill Development and Entrepreneurship and the International Labour Organization (ILO) announced a strategic partnership to advance skill development and lifelong learning in India and globally. This collaboration aims to empower individuals across the globe, by equipping them with essential competencies and qualifications, thereby enhancing employability and sustainable economic growth. The MoU was signed by Shri Ved Mani Tiwari, CEO, NSDC and Mr. Sangheon Lee, Director of ILO's Employment Policy. This alliance aims to facilitate public-private partnerships and knowledge exchange to enhance Sector Skill Councils (SSCs), develop micro-credentials, and promote Recognition of Prior Learning (RPL) through a global knowledge-sharing platform. It will also strengthen the comparability of skills and qualifications by developing and deployed digital tools to assess Indian workers' skills against those required in potential destination countries, thereby enhancing mobility and global employability prospects.

Oracle partners with Tamil Nadu to empower Youth with IT Skills

Oracle has partnered with Tamil Nadu government to train over 200,000 students in cloud computing, AI, data science, ML, and blockchain through the Naan Mudhalvan programme. This initiative focuses on creating a skilled IT workforce by providing training and certification in cutting-edge technologies, offering employment-linked opportunities to the participants. Leveraging Oracle's expertise and global learning resources, the programme aims to prepare students for careers in technology and innovation, significantly contributing to the state's development agenda.

T-Hub's Skill India Digital Accelerator Programme selects ten startups to shape India's future workforce.

T-Hub, India's leading startup incubator, in collaboration with NSDC and Parivartan Startup Grants by HDFC has successfully concluded the Skill India Digital Accelerator Programme. The programme is designed to catalyse innovation and growth within the skill development sector and has meticulously handpicked ten promising startups to receive grants from Parivartan Startup Grants by HDFC. By collaborating with NSDC's Skill India Digital Platform, these startups are poised to extend their impact and reach, ensuring inclusivity and accessibility across diverse communities and sectors. The programme strategically focuses on areas such as opportunity discovery, multilingual interfaces, upskilling, and comprehensive coverage of government schemes.

NABARD-Sponsored Assistant Electrician Skill Development Programme Launched at Dalmia Institute in Hojai District Assam

A skill development programme on assistant electrician activity under sponsorship of NABARD, Assam Regional Office, Guwahati was conducted at Dalmia Institute of Knowledge and Skill Harnessing, which was run by Dalmia Bharat Foundation at Lanka in Hojai district. This initiative for promotes skills building as well as entrepreneurship in the rural areas through various programmes allowing participants to learn and practice extensively to hone their skills under the guidance of expert resource personnel. The participants have been provided extensive training for over 400 hours so far.

Delhi Metro Rail Academy Receives Dual Recognition from National Council for Vocational Education and Training

The Delhi Metro Rail Academy (DMRA) has been recognized by the National Council for Vocational Education and Training (NCVET) as both an awarding body and an assessment agency. This milestone validates DMRA's exemplary training programmes, and its capacity to certify professionals in metro rail operations, enhancing industry standards. DMRC's Principal Executive Director (Corporate Communications) Anuj Dayal emphasized that the recognition underlines DMRA's commitment to delivering approved training programmes under the National Skills Qualifications Framework (NSQF) and conducting assessments per the National Credit Framework (NCrF).

IndiaSkills 2024: Over nine hundred Candidates competed in 61 Skills at New Delhi's Biggest Skill Competition

IndiaSkills Competition was organized by National Skill Development Corporation (NSDC), an apex skill development organization working under the Ministry of Skill Development and Entrepreneurship (MSDE), Government of India. The inauguration ceremony was held at Yasho Bhoomi, Dwarka, New Delhi. This four-day event featured over 900 students from 30+ states and Union Territories, along with 400+ industry experts. Participants competed in 61 skills, with 47 competitions held onsite and 14 offsite in Karnataka, Haryana, Uttar Pradesh, and Gujarat. India Skills, the country's biggest skill competition, is designed to demonstrate the highest standards of skilling and offers a platform to youth to showcase their talent at national and international level.

INDIA SKILLS 2024: NSDC HOSTING THE SKILLS OLYMPICS OF INDIA

India skills 2024

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#SkillSeJeetengeDuniya

YASHOBHOOMI, NEW DELHI

Introduction

IndiaSkills 2024, a national-level Skill competition was recently organised by NSDC from May 15, 2024, to May 19, 2024, at the Yashobhoomi Convention Centre, Delhi. It is a great platform to inspire youth to come forward and showcase their talent in various skills at the highest level in the country. IndiaSkills Competition at the national level is held every two years with the support of state governments, industry, Sector Skill Councils (SSCs), State Skill Development Missions (SSDMs), corporates and partner institutes. It ignites a passion for learning in young students, helping them to understand the importance of developing essential skills for their future.

IndiaSkills 2024 Highlights

- 74 participants won Gold, 67 won Silver, and 73 won Bronze
- Odisha has the highest number of winners, followed by Karnataka and Tamil Nadu
- Total of 58 candidates across 52 skills will now train to represent India in WorldSkills 2024 scheduled to take place in Lyon, France in September 2024

India Skills 2024 saw the participation of 900+ students from 30 different states/UTs in 61 different skills along with over 400

industry experts. Out of these 61 skills, 9 skills are called Exhibition Skills which are not part of the World Skills 2024 in Lyon, France, a global Skill Competition. IndiaSkills, 2024 displayed a diverse range of skills, from traditional ones like textile weaving or handloom weaving and yoga to contemporary skills such as water technology, renewable energy, and cloud computing, reflecting India's blend of cultural heritage and modern innovation. The best part was seeing more female candidates participating and highlighting their talent. Around 170 female candidates from different parts of the country participated in this year's IndiaSkills.

Inauguration Ceremony

The event was inaugurated by Hon'ble Shri Atul Kumar Tiwari, Secretary, Ministry of Skill Development and Entrepreneurship on 15th May. He said, '*IndiaSkills 2024 is not just a competition; it is a celebration of skill, innovation, and determination.*' Shri Nilambuj Sharan, Senior Economic Advisor, MSDE; Smt. Trishaljeet Sethi, DG Training, MSDE; Smt. Sonal Mishra, Joint Secretary, MSDE; Smt. Hena Usman Joint Secretary, MSDE; and Shri Ved Mani Tiwari, CEO of the National Skill Development Corporation were also present at the inauguration ceremony.

Speaking at the inauguration ceremony, CEO NSDC Shri Ved Mani Tiwari said 'IndiaSkills is a platform that nurtures aspirations and fosters creativity. The event will not only position the country ahead of the curve but also pave the way for a more inclusive society.'

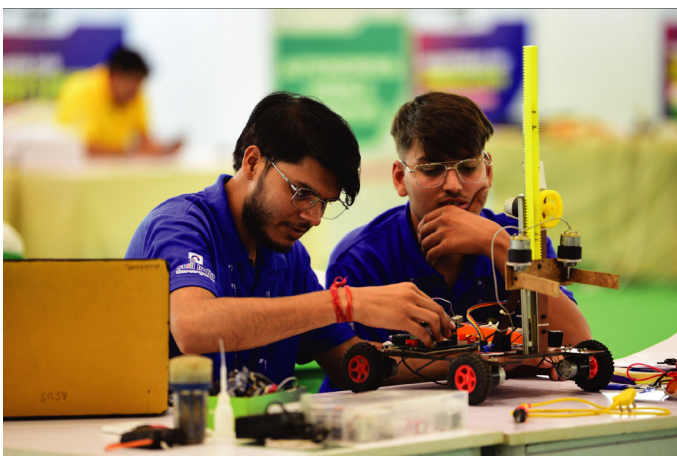
Image 1: Candidates giving the message of 'Unity in Diversity' through their performance



The Competition

The next three days saw intense competition between the students where their dedication, skill, and determination were visible. Each day the students were given different modules related to their skills which they needed to complete within the given duration. Students were evaluated by experts in the field many of which were former participants of IndiaSkills and WorldSkills. IndiaSkills is designed in such a way that it promotes learning. The experts not just evaluate but also shared their feedback, insights and most importantly their experiences with the candidates.

Image 2: Candidate showcasing Robotics skills at IndiaSkills



Closing Ceremony

IndiaSkills 2024 closing ceremony was held on 19th May. The ceremony was attended by Shri Atul Kumar Tiwari, Secretary, Ministry of Skill Development and Entrepreneurship; Shri Ved Mani Tiwari, CEO, NSDC and MD, NSDCI; Shri Aparshakti Khurana, renowned Indian actor, writer, singer, RJ, and Padmashri Shri Ramesh Sippy, Indian Filmmaker and Chairperson -Media and Entertainment Sector Skill Council.

A total of 74 Gold, 67 silver, 73 bronze and 206 Medallions were awarded for their brilliant display of sheer talent, dedication, creativity, and problem-solving attitude. Odisha topped the medal tally with 17 Gold, 13 Silver, 9 Bronze and 12 Medallions for Excellence, followed by Karnataka with 13 Gold, 12 Silver, 3 Bronze, and 19 Medallions for Excellence and Tamil Nadu with 6 Gold, 8 Silver, 9 Bronze, and 17 Medallions for Excellence. This demonstrates the commitment of these states to the skill development sector.

Image 3: Closing Ceremony, IndiaSkills 2024



Impact

IndiaSkills is more than just a competition. It brings together a diverse pool of candidates from across states, religions, social backgrounds, and economic realities. Every candidate has a motivating story that makes you incredibly proud of them. IndiaSkills not only provides a platform for these success stories but also plays a crucial role in bringing them to life.

- **Breaking Misconceptions:** The story of Amitav Mistry from Andaman and Nicobar competing in carpentry is an inspiration for all those young talented youth who either underestimate themselves or think there are no opportunities for them to grow. Amitav says he learned the skill of carpentry from his father. He says he never thought of flying to Delhi but today due to IndiaSkills he not only got the chance to come to Delhi but also to showcase his talent.
- **Breaking Barriers:** Another success story comes from welding, where three girls from Odisha were seen breaking barriers which is considered a Male-dominated skill. Kamini Ram (Gold), Rina Bagha (silver), and Pooja Swain (Bronze) not only participated in welding but also won big at the event.
- **Beyond Boundaries:** The story of Mehboob Ali from Kargil (Ladakh) who participated in Graphics design showcases how IndiaSkills is impacting and inspiring the life of youth even in the remotest area of India. He says he hardly stepped out of Ladakh, but his teacher motivated him to participate, and he learned a lot of things here at the competition. The biggest thing he says he learned here is that 'No skill is small.'

Image 4: Winners of the Welding competition: Kamini Ram, Gold, Pooja Swain, Silver and Reena Bagha, Bronze



From working tirelessly to showcase their talent, and overcoming their fears to breaking the stereotypes, you will find everything here. Stories like these turn out to be an important precedent for the upcoming generations. The impact is long-term. The experiences and learnings these candidates are having today will give fruits in the future. The idea is to ignite the fire in the youth to dream big and chase their dreams.

IndiaSkills Round Table Discussions

The round table discussions were more aptly the ‘Panel Discussions’ where experts and dignitaries from Government and Industry shared their opinions and suggestions on a variety of topics related to the Skill Development Industry of India. A total of 4 discussions were held on different topics.

The panellists advocated for integrating skilling directly into the school curriculum, leveraging the National Education Policy to bring industries into the education ecosystem. Industry experts proposed engaging in continuous dialogue to add value to the curriculum and ensure its practical applications, particularly in sectors like QSR (Quick Service Restaurants). Apart from that they also held discussions on various case studies.

IndiaSkills 2024 famously known as the Olympic of Skills in India is an event that has an impact beyond the competition. The event not only inspires the candidates participating but everyone associated with the event. The success stories motivate all those young candidates who want to achieve big in their lives. It awakes those who were passive in their approach and pushes them into action. The one message of IndiaSkills

#SkillSeJeetengeDuniya reflects the importance of skills and competency in the ever-evolving world. IndiaSkills works on the philosophy of ‘Catch them Young’ to inculcate the message that if someone is determined then skills can be acquired, and world can be conquered. It is surely a place where dreams turn into reality.

Way Forward

In this Competition total of 900+ candidates from 30+ states and Union Territories participated in 61 skills including Wall and Floor Tiling, Bricklaying, Carpentry, Fashion Technology, 3D Digital Game Art, Cloud Computing, Mobile Applications Development, Autonomous Mobile Robotics, Health and Social Care, and Prosthetic & Makeup. More than 400 industry experts also took part in the event. Candidates also received mentoring and guidance from the previous winners of WorldSkills competition to understand the nuances of the trade and the competition rigour.



#SkillSeJeetengeDuniya



Ankit Narang

Former Intern, Research & Impact, NSDC

Ankit is a PGDM student at IMT-Hyderabad. He recently completed his internship with the Research & Impact team at NSDC where he worked on Data Analysis as well as Marketing and Communications. An Economics Graduate from Shaheed Bhagat Singh College (Delhi University). Ankit has also worked with Ed-Tech companies like Byjus and StudyIQ.

Celebrating Digital Leadership: NSDC's Shrestha Gupta receives CTO of the Year Award

Shrestha Gupta, CTO of NSDC & NSDCI, has been honoured with the esteemed 'CTO of the Year' Award at ASSOCHAM's 6th India Smart Datacenters & Cloud Infrastructure Summit & Excellence Awards 2024. A young and dynamic leader with a future-focus, Shrestha spearheads the formulation of a robust technology strategy and the development of a strategic technology investment roadmap. Her visionary leadership has been pivotal in successfully implementing crucial cloud and digital initiatives at NSDC, significantly enhancing the organization's key business metrics and overarching IT strategy. Shrestha's contributions have played a critical role in propelling India's digital transformation, ensuring NSDC remains at the forefront of technological empowerment and educational advancement.



PM Vishwakarma Scheme Empowers Artisans in Port Blair

The PM Vishwakarma Scheme launched a transformative initiative for Darzis (Tailors) at ITI Dollygunj, Port Blair on June 27. A cohort of 32 beneficiaries participated in a comprehensive 5-day basic training program covering essential skills like entrepreneurship, new technologies, and marketing. This scheme aims to provide holistic support to traditional artisans and craftspeople known as 'Vishwakarmas'. Following the completion of initial training, interested participants will be enrolled in a fifteen-day advanced training session to further enhance their skills. The initiative marks a significant step towards empowering local artisans and promoting sustainable livelihoods in the region.

NSDC and AVPL International Sign MoU to Establish 70 Skills and Incubation Hubs for global employment in Drone, IoT, Agriculture and allied sectors.

The National Skill Development Corporation (NSDC) and AVPL International have signed a Memorandum of Understanding (MoU) to establish 70 Skills and Incubation Hubs for global employment in Drone, IoT, Agriculture, and allied sectors across India. This initiative marks a significant step towards enhancing vocational training and skill development in the state, under this partnership, AVPL International will also upgrade the existing training facilities at 50 locations to Global Skills and Incubation Hubs (GISH) across 12 Indian States. These hubs will offer certificate courses from prestigious institutions such as the Indian Institutes of Technology (IITs) and Indian Institutes of Management (IIMs), in collaboration with the NSDC Academy.

NSDC sign MoU with DSPM's Aathyle-Saptre-Pitre College Devrukh (ASP) for Postgraduate (MSc) program in Data Science.

NSDC and ASP College has signed a Memorandum of Understanding (MoU) to launch Postgraduate (MSc) program in Data Science. The program is an initiative under NSDC Academy. NSDC Academy's expertise in skill development shall further enrich the program, empowering participants with technical proficiency and soft skills essential for success in the sector.

NSDC has launched future skills programs in collaboration with Premium Institutes.

NSDC has collaborated with IIT Guwahati and IIT Mandi to introduce jointly certified programs in Data Science & AIML respectively, offering a comprehensive range of online educational courses, including short-term, long-term, advanced, and executive certification programs. These offerings under NSDC Academy, are designed to empower ambitious young professionals committed to enhancing their skill sets, reskilling, and upskilling. These programs are NSQF-aligned, and candidates shall obtain up to 24 credits post assessment by respective IIT. The primary focus of these online programs is to equip learners with the knowledge and expertise required to unlock better employment prospects in the tech industry while also nurturing entrepreneurial acumen.

NSDC sign a MoU for a Launch of Skill Embedded Degree Programs with Sri Sri University, Cuttack

NSDC has Launched Skill Embedded Degree Programs in the field of Web Development, Artificial Intelligence, Data science and other emerging technologies with Sri Sri University. The program is an initiative under NSDC Academy.

Under the program, skill component will be embedded in the curriculum of BCA, B. Sc. in computer science and MCA through virtual AI Labs. The program also includes paid internship opportunities for one semester and placement opportunities to the students.



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