



PRODUCTIVITY REPORT 2017-18



National Productivity Council



Productivity Report (2017 - 18)

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PRODUCTIVITY REPORT 2017-18

National Productivity Council
Under Department of Industrial Policy and Promotion,
Ministry of Commerce & Industry
Government of India

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सुरेश प्रभु
SURESH PRABHU



सत्यमेव जयते

एक कदम स्वच्छता की ओर

MESSAGE

मंत्री
वाणिज्य एवं उद्योग;
एवं
नागर विमानन मंत्रालय
भारत सरकार, नई दिल्ली
MINISTER
COMMERCE & INDUSTRY;
AND
CIVIL AVIATION
GOVERNMENT OF INDIA, NEW DELHI

It gives me immense pleasure to know that the National Productivity Council (NPC) is bringing out its first volume of **Productivity Report**. As per the report, the Council has undertaken productivity drive to make optimum utilization of men, machines, materials and power as well as reduce wastage across a large cross section of industries.

I congratulate Director General, NPC and her team for their sincere effort in bringing out this report containing consultancy, training and promotional activities undertaken by all the offices of NPC. The activities reflect incremental steps proposed and implemented by NPC to enhance productivity, competitiveness and uplift the overall living standards of the people of the country by ensuring progress and prosperity.

It is encouraging to see that NPC is not only enhancing productivity of workforce across sectors and bringing vitality in their day-to-day operations, but also promoting the concept of sustained productivity growth that can make our industries competitive and resilient.

I believe that this compiled volume will be a useful reference document for policymakers, academia, research scholars as well as the industry professionals to learn and internalize productivity concepts and propagate them further.

I convey my best wishes to NPC and their stakeholders.


(Suresh Prabhu)

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रमेश अभिषेक
RAMESH ABHISHEK
सचिव
Secretary



Message

I congratulate National Productivity Council (NPC) for bringing out its accomplishments as ***Productivity Report***. The comprehensive and holistic efforts made by the organisation in the area of productivity promotion are commendable.

It is now widely accepted that productivity is the foundation on which a country can build its progress and prosperity. Through consultancy, research, training and knowledge sharing, NPC is continuously progressing in its pursuit of improved productivity. It is helping industries augment their competitiveness and increase their appetite for technological innovation.

This report comprehensively presents the application and impact of modern tools, techniques and training.

I convey my best wishes to the NPC team.


(Ramesh Abhishek)

Dr. Amita Prasad,
IAS
Director General



राष्ट्रीय उत्पादकता परिषद्
(वाणिज्य एवं उद्योग मंत्रालय, भारत सरकार के अन्तर्गत)
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Message

It gives me immense pleasure to share with you the last year's performance of National Productivity Council (NPC).

The organisation made a mark by providing its services to different sectors and segments of the society across the country. Many organisations benefited directly or indirectly by productivity consciousness generated by the NPC. Whereas, by direct consultancy and training services, organisations were benefited in terms of suggestions and recommendations on cost reduction, waste reduction, manpower optimisation, and technological improvements through productivity tools and concepts.

The impact was evident, as you can see that India's Labour Productivity increased at the rate of 5.66 per cent in December 2017 as compared to 5.59 per cent growth in the previous year. India's Labour Productivity Growth data for a long-term period between Dec 1992 and Dec 2017 averaged at 5.30 per cent.

I would like to thank all our clients, including our promoter, Department of Industrial Policy & Promotion, for the support they have extended, which has only reinforced our commitment and our deep belief in our Values and Purpose.

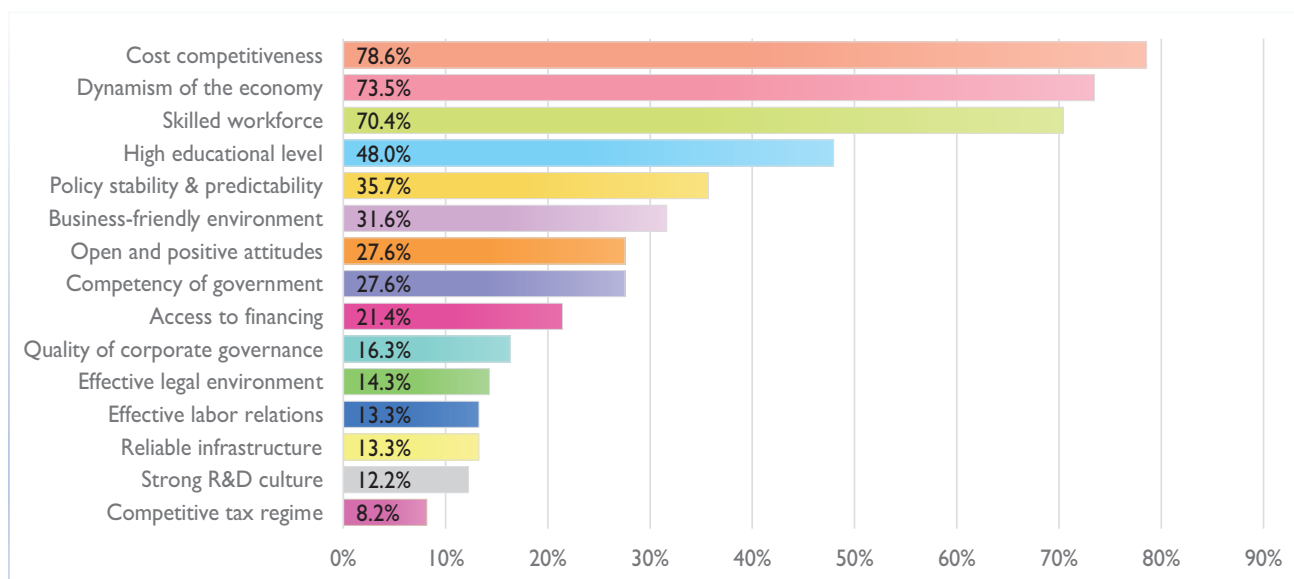
Dr. Amita Prasad

2. India: The Most Competitive Economy in South Asia

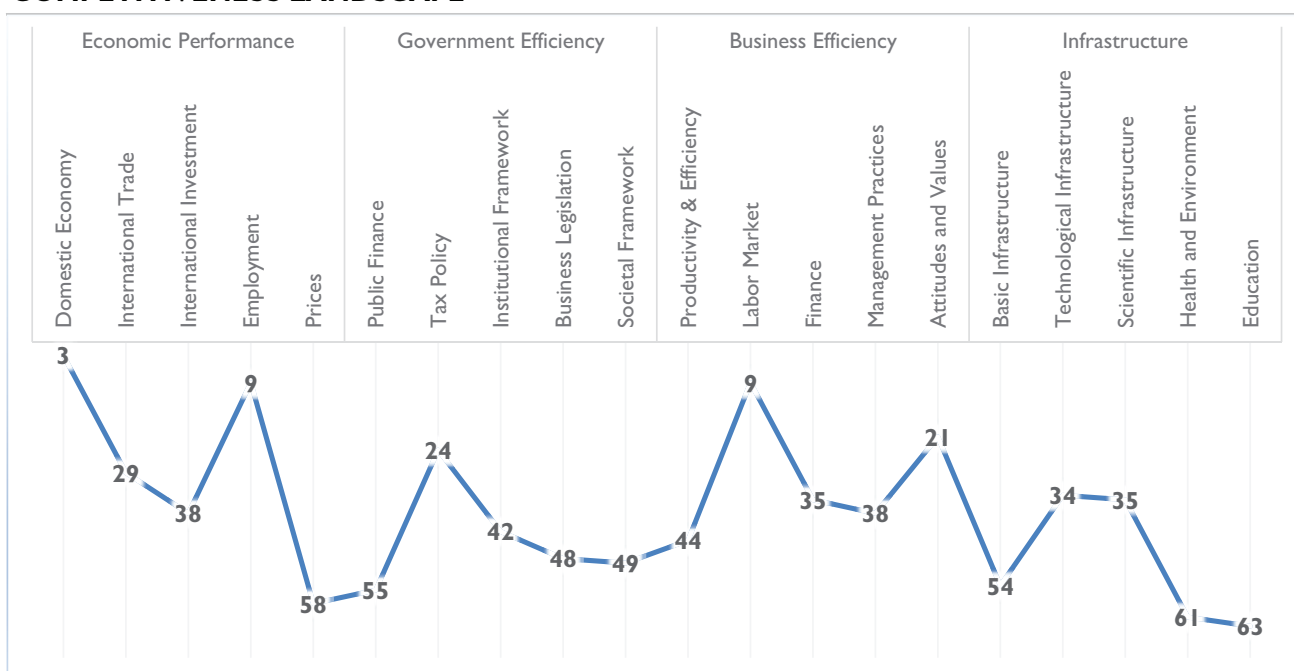
Source: World Competitive Yearbook 2018

India is not just one of the top 50 most competitive economies in the world and the 18th most competitive among countries with population greater than 20 million, but also the most competitive economy in the entire

South Asia. It has been ranked 44th in the World Competitiveness Rankings presented in the recently published IMD World Competitiveness Yearbook (WCY) 2018. India improved its overall ranking as compared to 45th rank in 2017.



COMPETITIVENESS LANDSCAPE



IMD-WCY 2018 identified the following five major challenges for India during 2018:

- Skilling of manpower & employment generation.
- Streamlining the Implementation of Goods & Services tax.
- Balancing high growth with sustainable development goals.
- Digital Literacy and adequate bandwidth at rural areas.
- Mobilization of resources for Infrastructure development.

To assess India's competitiveness, a large number of variables (Indicators) both hard (Published) and soft (Surveyed) data were broadly grouped into four factors: economic performance, infrastructure, government efficiency and business efficiency. These factors were further broken down into 258 indicators, including cost competitiveness, dynamism of the economy, skilled workforce etc.

Encouraging findings

- When it comes to resilience of economy and its diversification, India bagged the 10th and 12th spot, respectively.
- India's infrastructure ranking saw a huge improvement of four spots to 56 as compared to the last year ranking.

- Globally, the country secured 1st rank for its investment in telecommunications sector.
- In business efficiency, India has been ranked 29th, surpassing countries such as France (31st), Japan (36th) and South Korea (43rd). This is a marked improvement from the 34th position in 2014.
- Out of the 63 nations evaluated, India secured 14th, 15th and 19th spots for business flexibility and adaptability, digital transformation in companies and availability of skilled human resource, respectively.
- According to the results of the survey conducted by IMD, cost competitiveness, dynamism of economy and skilled workforce are key attractive factors of India's economy.

The latest report on the competitiveness of India's institutions and underscores the extent to which the country has been able to foster an environment wherein enterprises thrive and generate value. As one of the fastest-growing economies in the world, India is well placed to build on its strengths, improve production efficiency and meet the twin goals of sustainable growth and higher standard of living for everyone.



INDIA

ECONOMIC PERFORMANCE



Sub-Factor Rankings :	2017	2018
Domestic Economy	5	3
International Trade	36	29
International Investment	22	38
Employment	10	9
Prices	58	58

GOVERNMENT EFFICIENCY



Sub-Factor Rankings :	2017	2018
Public Finance	54	55
Tax Policy	25	24
Institutional Framework	38	42
Business Legislation	55	48
Societal Framework	47	49

BUSINESS EFFICIENCY



Sub-Factor Rankings :	2017	2018
Productivity & Efficiency	42	44
Labor Market	10	9
Finance	30	35
Management Practices	32	38
Attitudes and Values	17	21

INFRASTRUCTURE



Sub-Factor Rankings :	2017	2018
Basic Infrastructure	58	54
Technological Infrastructure	49	34
Scientific Infrastructure	33	35
Health and Environment	63	61
Education	63	63

3. Lean Manufacturing Competitiveness Scheme (LMCS)

The National Manufacturing Competitiveness Programme (NMCP) of the Government of India focuses on increasing the competitiveness of Micro, Small and Medium Enterprises (MSMEs) by making productivity improvement, quality improvement, infrastructure development, and skill upgrading through its various schemes and policies. Lean Manufacturing Competitiveness Scheme Upscaled: Revised 2013 (LMCS Upscaled: Revised 2013) is one of the schemes of NMCP launched to address challenges of competitiveness and survival faced by all the constituents of the economy.

The scheme was implemented across the country, initially for 100 clusters on a pilot basis, since July 2009. Owing to the success of pilot phase, the scheme was scaled up to 500 more clusters across the country. NPC was assigned the role of a National Monitoring & Implementing Unit (NMIU) for 280 clusters in the upscaled phase.

Coverage and Eligibility

- Under this scheme, which is open to all the MSMEs in manufacturing sector, the units should be registered with district industries centre (DIC) or with any other professional body, association, government agency and department;
- The units are required to form a mini cluster consisting of 6-10 units by signing among themselves a memorandum of understanding (MoU) and registering the mini cluster in the form of a special purpose vehicle (SPV) / distinct project group (DPG);
- The details of the cluster units, which are the beneficiaries of LMCs, are compiled. Udyog Aadhaar Memorandum number is generated for the units. In addition, details like Aadhaar number of unit owners, their date of birth and contact details are also collected and compiled to make the scheme direct bank transfer-compliant.

Modus operandi of the scheme

The scheme is implemented in mini clusters consisting of 6-10 units.

A lean manufacturing consultant (LMC) is engaged in each mini cluster to work for 1.5 years towards implementing concepts of lean manufacturing. An LMC prepares diagnostic study report (DSR) and an action plan for implementation. The National Monitoring and Implementation Unit-NPC (NMIU-NPC), along with MSME-Development Institute (MSME-DI), monitor the overall progress of the scheme through periodic audits of the mini clusters.

Ministry of Micro, Small and Medium Enterprises is bearing 80 per cent of the total cost of LMC and the remaining 20 per cent is borne by the units in mini clusters. NMIU-NPC empanels and maintains a list of LMCs that are eligible for selection in mini clusters.

NPC is a registered body under the Public Finance Management System (PFMS) and as per the requirement of the office of the Development Commissioner, Micro, Small & Medium Enterprises, all the payments released to clusters are routed through PFMS from April 2017 onwards. As per the procedure, the cluster is first registered under PFMS and then payment is released to the cluster through PFMS for onward release to LMC.

Awareness programmes on lean manufacturing

NPC conducted awareness programmes for various clusters for broader publicity of the scheme, highlighting the importance of lean manufacturing tools and techniques for MSME sector. These programmes gave participants an insight into the Lean Manufacturing Competitiveness Scheme, its guidelines, SPV/DPG formation, and other aspects.

Cluster formation

A group of preferably 6-10 MSMEs of a cluster is required to form SPV or DPGs. The SPV may be “Trust” as per the Indian Trust Act 1882 or any similar Trust Act or a private limited company incorporated as per Indian Companies Act 1956 or a “Society” under The Societies Registration Act, 1860. DPG may be a sub-group or DPG of an Association or Existing SPV. To apply for cluster formation, documents such as MoU and Power of Attorney are required.

Lean Manufacturing Consultant (LMC)

Empanelment of LMC

An individual or a consultancy firm (national or international) empanelled with NMIU-NPC is eligible for participating in the scheme. LMCs submit applications to NMIU-NPC for empanelment. The procedure and application for empanelment is published on NPC’s website. Since 2013, total LMCs empanelled with NMIU-NPC—both individual LMCs and organisations—is 412.

LMC selection for mini clusters

A mini cluster, in consultation with NMIU-NPC, shortlists the names of lean manufacturing consultants from the empanelled list and forwards it to NPC. Bids are invited through RFP and consultants are recommended through Combined Quality Cum Cost Based System (CQCCBS) by the selection committee consisting of NPC, MSME-DI and SPV/DPG.

Diagnostic Study Report (DSR) & Action Plan (MBR 1 to MBR 5)

- Selected consultants prepare DSR & Action Plan, describing the current status of the cluster and defining action plan for the cluster and milestone to be achieved using lean manufacturing tools and techniques;
- NMIU-NPC and MSME-DI undertake a joint audit and subsequently, finalise DSR & Action Plan;

- Based on the DSR & Action Plan, the consultant carries out activities in four phases—MBR 2 to MBR 5—and submits report to NMIU-NPC through a Nodal Officer, following which a phase-wise audit is done. While NPC did the 1st, 3rd and 5th audit in collaboration with the National Monitoring and Implementation Unit, the 2nd and 4th audit was done by NPC alone.

Physical progress of LMCS

Under Lean Manufacturing Competitiveness Scheme, 239 clusters have been formed till date. Clusters were formed by including entities from a wide range of industries: automobile, engineering, white goods, handicrafts, diamond processing, food processing, readymade garments and textile.

Out of the 239 clusters, selection of consultants was done for 175 clusters. At present, 47 clusters have completed all the five milestones and submitted the closure report.

Below are the brief details of the progress of the scheme.

- The beneficiary MSMEs witnessed an average increase in productivity level in the range of 5 per cent to 25 per cent;
- Average increase in inventory turnover was reported at 25 per cent and manufacturing lead time reduced between 5 per cent and 30 per cent;
- In monetary terms, mini clusters witnessed average financial benefits/savings in the range of Rs 30 lakh to Rs 125 lakh, whereas, at unit level, average financial benefits varied from Rs 15 lakh to Rs 25 lakh;
- Other intangible benefits accrued were safer workplace management, improved quality, environment-friendly production capacities, business opportunities and high morale of workforce.

Success of LMCS implementation: A case study

Company A, located in Tamil Nadu, was established in 1989. It is a machine shop with CNC turning and machining centres and manufactures

precision machine parts. Valve components are the main product category and these are also exported to the US, Germany, Italy and Saudi Arabia.

Company A was looking to make the most effective utilisation of existing machines and meet the growing demand. With this need, in early 2016, the company joined the government's Lean Manufacturing Competitiveness Scheme.

Project identified and the reasons for their selection

A detailed discussion was held between the unit owners and the lean manufacturing consultant, followed by a diagnostic study to understand the processes, operations and the value stream of the components. In the end, five improvement projects were identified:

- OTIF (On-Time in Full)
- OEE (Overall Equipment Effectiveness)
- Improve space utilisation and factory look
- 5s
- Kaizen

Improve OTIF (On-Time in Full) delivery to customers:

Company A is a job work based business with significant amount of exports. The OTIF was only 30 per cent, which was a huge threat to its exports. It feared losing its international customers as well as bearing an escalated cost, especially due to emergency shipments that need to be done sometimes to make up for delays.

This improvement project was, therefore, prioritised to ensure company's future growth and boost customers' confidence.

The company's plant has CNC machines, 8" turning centre, 10" turning centre, 12" turning centre and VMC (with and without indexing). Each component is machined on one or more of the above machines depending on the operations required.

Observations & Measurement Plan

- The component is processed in large lots that are moved from operation to operation in bins;
- Each operation is planned independently; a job card is used to record the details on completion;
- Deburring and inspection is done in separate areas bin-wise. The bins are moved to a WIP area from where they are again moved to the inspection area.

Root Cause Analysis

On doing a root cause analysis, NPC identified two causes for increased throughput time for processing an order:

- Batch production concept: independent planning for each operation;
- Current layout is increasing material movement and creating difficulties in tracking.

Action plans for improving operational efficiency

Based on the current status and identified root causes, following actions were planned:

Action 1: Introduced on-line deburring for which a table has been placed near each machine and deburring is done by the operator in a strain-free manner while the machine cycle is running. This eliminated non-value-added movement of the components to deburring area. A defect in the component is now immediately spotted by the operator and corrective and preventive action taken so that not more than two components are affected.

Action 2: The layout was modified to ensure smooth flow of the components and implement corrective action 1 mentioned above.

Action 3: Based on product size, cells were formed so that the operations required for a given part can be done in flow mode without having to move the bins. The machines were laid out in a manner to facilitate handling of two machines by a single operator.

Action 4: Vertical bin storage system was implemented to effectively store raw materials

and finished goods and facilitate tracking of material movement through job card in the bin.



Results

This improvement project helped OTIF increase

significantly from 30 per cent to 92 per cent, leading to enhanced customer satisfaction and confidence in Company A. Similar to OTIF project, other improvement projects were also taken up and following benefits were accrued by virtue of lean implementation:






S.No.	Improvement Project	Activities	Initial Status (%)	Af er Lean Implementation (%)
1	Improve OTIF to customers for dispatch	<ul style="list-style-type: none"> Implement pull-based system to trigger manufacturing. Implement order tracking on the shop floor. 	30	92
2	Increase machine OEE	<ul style="list-style-type: none"> Minimise Non Value-Added (NVA) activity in loading and unloading time between and within a component Reduce changeover time using SMED concepts. 	58	70
3	Improve space utilisation	<ul style="list-style-type: none"> Rearrange the layout of machines to minimise movement of components between machines. Develop workstations and implement flow in post machining activities: cleaning, inspection and packing. Implement 1S, 2S and 3S for new layout. Improve storage methods to utilise the vertical space effectively. 	16	38
4	5S score and Kaizen	<ul style="list-style-type: none"> 5S audit and development of a self-sustenance model Visual management systems Training on Kaizen and reporting system for Kaizen 	16	80

Based on lean implementation activities, financial benefit in terms of profitability was estimated at Rs. 12 lakh per annum.

Result of Lean Implementation activities: Before and Af er photographs			
5S improvements			
S.No	Particulars	Before	Af er
1	Storage locations of raw material, work-in-progress goods and finished goods	Raw material, work-in-progress goods and finished goods were kept in wooden pallet all over the shop floor 	Raw material, work-in-progress goods and finished goods are kept separately count free, FIFO. 

2	Scrapped material scattered all over the shop floor		
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Kaizen

S.No	Particulars	Before	After
1	Finished goods storage	Wooden pallet storage 	Bin system implemented 
2	Oil leakage in the machine	Oil mixed with the coolant in a machine. 	Oil drain tube fitted to collect the oil separately 
3	Production schedule display	No such display was available	Display provided for the daily schedule 

4. Centre of Excellence on IT for Industry 4.0 at NPC, NEW DELHI



Industry 4.0 or the fourth industrial revolution, as it is called, is being touted as the next industrial revolution. It is characterised by increasing digitisation and interconnection of products, value chains and business models. Industry 4.0 is driven by an amalgamation of emerging technologies like data volumes, computational power, Internet of Things (IoT), business analytics, augmented reality, artificial intelligence, elemental design, simulation, advanced robotics and cyber-physical systems—an integration of computation, networking, and physical processes.

In this context, the Centre of Excellence (CoE) can be very effective in collecting and disseminating knowledge, and facilitating capacity building of industries in coordination with various stakeholders.

Taking cue from the technological developments worldwide, the National Productivity Council had submitted a proposal to the Asian Productivity Organisation (APO) for establishment of 'Centre of Excellence on IT for Industry 4.0 (CoE on IT for I 4.0)' to develop a comprehensive plan for establishing a Smart Manufacturing ecosystem in India. NPC's proposal was approved at the 59th Session of APO Governing Body Meeting in Tehran held in April 2017.

Objective and scope of CoE

The CoE will be a convergence platform for strategic engagement with industry and academia to come out with innovative solutions applicable to industries. This would include manufacturers,

suppliers, technology firms, government agencies, universities and laboratories.

The CoE at NPC will

- Function as a knowledge centre for entrepreneurs and start-ups regarding concepts of information technology and its application in Industry 4.0;
- Disseminate this knowledge through workshops, lecture series and training programmes;
- Coordinate with APO for inviting guest faculty to disseminate knowledge regarding practical applicability of I 4.0 in other countries;
- Facilitate display of latest technology / demonstration projects for helping start-ups;
- Facilitate establishment of CoEs in other non-APO countries, especially Africa.

NPC has signed a Memorandum of Understanding (MoU) with National Small Industries Corporation Ltd. (NSIC) to have a demonstration facility at NSIC along with other areas of collaboration. This facility will be developed as an experience zone to demonstrate I 4.0 technologies.

Workshop on I 4.0 and Development of Roadmap for CoE on IT for I 4.0

NPC organised a workshop on 'Industry 4.0 and Development of Roadmap for CoE: IT for Industry 4.0' from June 6-8, 2017 at NPC Headquarter in New Delhi. The CoE: IT for I 4.0 was inaugurated

by Mr. S. N. Tripathi, Additional Secretary & DC-MSME, Ministry of MSME in the presence of other dignitaries Mr. Sanjeev Gupta, Additional Secretary, DIPP & Ministry of Commerce & Industry, Mr. Ravindra Nath, CMD, NSIC, Mr. Joselito Bernardo, Director, Asian Productivity Organisation, Tokyo, and Ms. Kalpana Awasthi, Director General, National Productivity Council.

All dignitaries stressed on the importance of I 4.0 and expected it to scale up manufacturing industry and contribute towards Indian economy.

Experts from industry and academia delivered presentations on I 4.0 concepts and initiatives

in Germany, key IoT trends, challenges and way forward in I 4.0 with reference to Indian context, government's initiative for I 4.0, strategic priority areas for future of production in India, and interdisciplinary cyber-physical system.

Various organisations, including IT and government bodies, actively participated in the workshop and presented their views on how I 4.0 concepts can be effectively implemented across organisations. Field visit was organised for the participants at NSIC, Okhla.

Subsequent to successful completion of the workshop, a road map for CoE on IT for Industry 4.0 was prepared.

Activities proposed in the road map for CoE on IT for Industry 4.0

Sl.No	Activity
1	<ul style="list-style-type: none"> Develop promotional materials on Industry 4.0, including few case studies; Prepare Industry 4.0 training and dissemination kit.
2	<ul style="list-style-type: none"> Study reviews of existing approaches and carry out survey work to assess digitisation status; Study requirements for standardisation of technology, security of IT systems, technology requirement and indigenisation for successful adoption of Industry 4.0.
3	<ul style="list-style-type: none"> Host conference on ICT Innovation for promoting productivity growth in the SME sector; Host global conference on best practices in Industry 4.0 and role of stakeholders.
4	<ul style="list-style-type: none"> Help start-ups and upcoming ventures create demonstrable projects and gain exposure to experts and knowhow; Develop an experience zone about Industry 4.0 concept and applications; Develop organisations to a level from where they can demonstrate their success stories.
5	Develop a Smart Manufacturing Index (SMI) and a toolkit on IT for Industry 4.0 for SMEs.
6	<ul style="list-style-type: none"> Customise framework on Industry 4.0, including implementation approach and methodologies as per the requirement of Indian industry and APO member countries; Conduct survey to measure Smart Manufacturing Ranking using earlier developed SMI, including selected APO member countries; Conduct survey to assess skills requirement for implementation of I 4.0 and role of various stakeholders, including APO member countries.
7	<ul style="list-style-type: none"> Launch multi-country observational study mission; Visit of APO member countries' organisations to Indian companies.

Project Implementation Plan

The APO's Project Implementation Plan (PIP) 'Research on Industry 4.0 Digitisation Strategies for SMEs' continued for seven months, from December 2017 to June 2018. The objectives of the PIP were to assess:

- Current level of digitisation;
- Level of readiness for Industry 4.0 among SMEs;
- Critical needs of SME digitisation to embrace Industry 4.0

5. Industry 4.0: Leapfrog opportunity for India

Industry 4.0 is a combination of many futuristic and advanced concepts and technologies that have the potential of transforming the production scenario in the 21st century by virtue of a 'connected shop floor' where data is collected through various sensors and other input devices to be used for predictive maintenance, better control and long-term analysis. Industry 4.0 would mean convergence of real and virtual worlds—the next phase in bringing together conventional and modern technologies in manufacturing. This will create a 'Smart Factory', which is characterised by versatility, resource efficiency, ergonomic design, direct integration with business partners and autonomous decision-making.

Digital empowerment and improved economic outcome

Digital connectivity forms the backbone for adoption of advanced technologies. With increasing penetration of Internet in India and emergence of e-Commerce, presence of enterprises on the Internet has become inevitable. To ensure comprehensive broadband connectivity in industrial clusters, Government of India launched Digital India Programme to transform the country into a digitally empowered society and knowledge economy. Digital technologies pave way for new business models and opportunities for value addition.

India is uniquely placed to reap benefits of scalable digital technologies. In financial services, it is building a first-of-its-kind digital stack (known as the "India Stack") with Aadhaar, Jan Dhan accounts and various payment technologies such as UPI and the Aadhaar Payment Bridge System. India Stack offers an opportunity to develop innovative services not just for Indian but also for global customers. Developing and deploying these technology stacks across well-penetrated service sectors like construction; under-penetrated sectors like health, or nascent sectors like urban management services can not only deliver economic growth but also millions

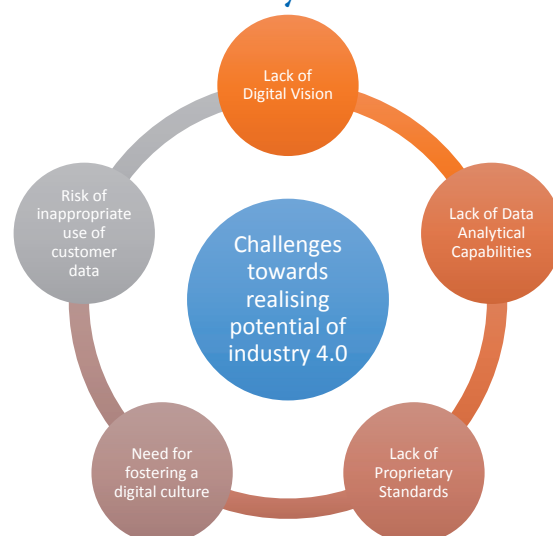
of new jobs.


Two schools of thought on fourth revolution

One group of experts believes that the fourth industrial revolution will modernise the manufacturing base, allowing capital to be used more gainfully. In making better use of its base, profitability and return on capital employed will rise and create new investment opportunities—a key aspect in funding new projects and creating new jobs.

Second school of experts says that the use of industry 4.0 technologies will increase labour productivity and the quality of products manufactured. As a result, the demand for manufactured products will increase, leaving companies with no option but to increase capacity to meet the demand. There is no doubt that certain low-skilled jobs will be eliminated. However, an increase in manufacturing capacity is expected have a positive effect on creation of jobs, requiring high-level skills. Employees, who were rendered jobless due to the elimination of low-skilled jobs, need to be re-skilled or up-skilled to make them ready for the new requirements. Thus, creation of new high-skilled jobs will compensate, to a large extent, for the elimination of low-skilled jobs.

Challenges to be addressed for realising potential of Industry 4.0



- 
- Lack of a clear digital vision
 - Lack of data analytical capabilities
 - Need for fostering a strong digital culture
 - Level of digitisation
 - Data security
 - Risk of inappropriate use of large volumes of recorded, stored customer data
 - Lack of standardisation
 - Though concepts like sharing of data and integration of technology are not new, lack of standards or rather proprietary standards is going to be a key roadblock
 - Conduct internal workshop on the selected theme to capture various initiatives undertaken by different levels of the organisation;
 - Conduct seminar/conference on Industry 4.0 with the support of experts from academia, MSME and consultants as knowledge partners;
 - Invite NPC to co-sponsor/co-chair events like youth festivals, debates or other competitions on the selected theme;
 - Invite NPC to co-chair Productivity Improvement Committees of an organisation;
 - Conduct talk shows on the outcomes of Industry 4.0 and way forward through community radio and local TV channels.

Road map for adoption of Industry 4.0 technologies

It is essential to prepare the road map for adopting industry 4.0 technologies appropriate for different scales of operations, especially MSMEs.

NPC proposed that an institute/organisation may undertake following activities during the Productivity Week Celebration and reap the benefit of Industry 4.0:

- On NPC's Foundation Day, invite a dignitary to chair a panel discussion on how to adopt Industry 4.0 and the future ahead with reference to the selected theme;

NPC: an agent of change

NPC provides professional consultancy services covering major sectors of Indian economy with an emphasis on improving productivity, quality, profitability and growth at an organisational level. NPC is promoting and disseminating productivity skills through consultancy to the private, public and corporate sectors, Central and state governments, industry associations, their members, and other client groups.

6. NPC Activities at a Glance

6.1 Agribusiness Services

6.1.1 Crop-specific Assessment of gaps in backward and forward linkages in identified districts

NPC conducted the above study for the Ministry of Agriculture & Farmers' Welfare to identify reasons for low productivity of various crops attributable to various resources and inputs.

INTERVENTION

- Thirteen crops, having high acreage but low productivity, were selected from 13 districts in 10 states covering 1,300 farmers (100 from each of the 13 districts) for an in-depth study;
- Discussions were held with key stakeholders, including officers of the State Agriculture Department, State Agricultural University and Krishi Vigyan Kendra to gather requisite information.

OUTCOME

- Implementable suggestions for improving productivity of selected crops would emerge from the findings of the study;
- The Crop Division of the Ministry of Agriculture & Farmers' Welfare will include NPC's suggestions in its policy on forward and backward linkages in identified crops.

6.1.2 Study on Impacts of R&D Technologies with reference to Menthol Mint (*Mentha arvensis*) and Anti-Malarial Drug Plant (*Artemisia annua*)

INTERVENTION

NPC was entrusted with the task of assessing socio-economic impact of R&D Technology for menthol mint and *Artemisia*, especially in reference to income enhancement of farmers.

OUTCOME

- The assessment revealed that the Central Institute of Medicinal and Aromatic Plants (CSIR-CIMAP) has developed better variety of both *Mentha Arvensis* and *Artemisia Annua*. They were evaluated in Uttar Pradesh;
- Significant increase in income gave farmers the leeway to spend additional money towards education of their children, procure agriculture implements and create other assets;
- NPC's evaluation report on impact of R&D technologies for both the crops was accepted and suggestions on better propagation of the technology have been included in their framework.

6.1.3 Evaluation of Plan Schemes of Department of Consumer Affairs



OBJECTIVE

The Department of Consumer Affairs (DOCA) entrusted NPC with a study to assess the impact of 11 plan schemes implemented during 12th Five-Year Plan period. The following Schemes have been evaluated:

1. Strengthening of Consumer Fora at State and District level
2. State Consumer Helplines
3. CONFONET Scheme (Computerisation and Computer Networking of Consumer Fora in the Country)
4. Strengthening of National Test Houses (NTH)
5. Bureau of Indian Standards (BIS) schemes:
 - a) National System for Standardisation-

Strengthening Standardisation at National and International Level

- b) Setting up of Gold Hallmarking / Assaying Centres in India
6. Strengthening of Legal Metrology Infrastructure of States/UTs
7. Strengthening of Regional Reference Standards Laboratories(RRSLs)
8. Indian Institute of Legal Metrology (IILM), Ranchi
9. Scheme of strengthening of Price Monitoring Cell (PMC)

INTERVENTION

- The study was conducted with a focus on proper utilisation of funds, physical achievement vis-à-vis financial achievement, adherence to timelines and efficacy of the norms;
- NPC had discussions with the concerned stakeholders to obtain information related to various components of the schemes in structured formats developed in consultation with the DOCA;
- For sampling purpose, zone-wise classification of states—Uttar Pradesh, Tamil Nadu, West Bengal, Rajasthan, Tripura, Karnataka, Gujarat, Bihar and Punjab—was done to get due representation;
- Overall, five state consumer fora, 20 district consumer fora, 25 CONFONETs, five state consumer helplines, 18 gold hallmarking and assaying centres, five secondary labs, 10 working labs, two RRSLs, IILM Ranchi, three NTHs and five PMCs were covered under the study.

OUTCOME

- NPC's most of the recommendations were accepted and included in the modified guidelines of the schemes;
- The evaluated schemes were extended, as per NPC recommendations.

6.1.4 Impact Evaluation Study of reimbursement of funds to Indian Spinal Injuries Centre, New Delhi towards the cost of 25 free-bed poor patients

Department of Empowerment of Persons with Disability, Ministry of Social Justice, entrusted NPC with the task of doing an Impact Evaluation study;

INTERVENTION

- NPC had collected information related to the Indian Spinal Injuries Centre (ISIC) through discussions with the help of tools designed for the purpose;
- Further, 17 per cent of the poor patients with spinal injuries, who were provided free hospital care during 2014-15 and 2015-16, were selected on a random basis for taking feedback on support provided by ISIC.

OUTCOME

- The findings of the study highlighted key issues in execution of the scheme by ISIC;
- NPC provided a comprehensive framework for better execution and transparency in the implementation of the scheme by ISIC.

6.1.5 Third-party evaluation of Central Scheme—National Mission on Monuments & Antiquities

The Ministry of Culture entrusted NPC with the study to assess effectiveness of the scheme in preparing two National Registers: National Register on Built Heritage & Sites and National Register on Antiquities;

INTERVENTION

- Besides physical visits and discussions with key stakeholders, parallel review of all the available secondary documents/reports was done;
- A series of discussions with the senior-level officials of National Mission on Monuments & Antiquities (NMMA) happened as a part of the study.

OUTCOME

- NPC's study was able to highlight the constraints in implementation of the Mission's activities;
- To optimise the resources available with the Mission and achieve its objective, NPC had recommended merger of NMMA with the Archaeological Survey of India. The recommendation was accepted by the Ministry of Culture.

6.2 Economic Services

6.2.1 Evaluation of Centrally Sponsored Scheme (CSS) for development of infrastructure facilities for the Subordinate Judiciary during the 12th Five-Year Plan

Evaluation of Centrally Sponsored Scheme (CSS) for development of infrastructure facilities for the Subordinate Judiciary during the 12th Five-Year Plan

Development of infrastructure facilities for the Subordinate judiciary is the primary responsibility of state governments. However, since 1993-94, the Department of Justice under the Ministry of Law and Justice has been providing financial support to the centrally sponsored scheme for development of infrastructure facilities for the subordinate judiciary. NPC undertook evaluation of CCS during 2017-18.

OBSERVATIONS

- Subordinate judiciary works amid severe infrastructure deficits. It is short of 5,018 court rooms. As on September 30, 2016, there were 16,513 court halls available for subordinate judiciary against the working strength of 16,528 judicial officers. Further, 2,447 court halls were under construction. Additionally, 14,420 residential units were available for judges or judicial officers of district and subordinate courts. As on December 31, 2015, 1,868 residential units were under construction;

- Due to the lack of a model court framework, including drawings, there is no coordinated effort at the national level to address the deficiency of Infrastructure at the subordinate courts;
- Several implementation issues have been reported during the field surveys by NPC in Delhi, Kerala and Uttar Pradesh. Several states could not utilise the Central funds during the 12th Five-Year Plan due to lack of clarity on the submission of utilisation Certificates (UCs), annual action plans, lack of monitoring by the apex committees and confusion with respect to fund-sharing mechanism between the Centre and states.
- A detailed review of the operation of the scheme is needed with respect to specific milestones at the state level for inclusion in the scheme guidelines so that the justice delivery system in the subordinate courts is not adversely affected.
- Based on the feedback received during the field surveys of a cross-section of stakeholder categories such as implementing organisations, judges, judicial officers, lawyers, litigants, and witnesses, it was evident that the Centrally-Sponsored Scheme immensely contributed towards improving judicial infrastructure for all stakeholders, in general, and residential facilities for judges and judicial officers, in particular.
- The scheme has direct bearing on the quality of overall justice delivery system at the subordinate courts in the country. The scheme was also instrumental in reducing pending cases and partly establishing the elements of model courts and e-Courts at the district level.

6.2.2 Evaluation of Central Scheme Swadesh Darshan—Integrated Development of Theme-based Tourist Circuits



Swadesh Darshan envisages developing theme-based tourist circuits to enrich tourists' experience and enhance employment opportunities. Currently, 56 projects have been sanctioned under the scheme at a total cost of Rs. 4,823.91 crore, out of which, Rs.1,253.23 crore (25.98 per cent of sanctioned amount) was released and utilised for development of theme-based tourist circuits across the country.



Another 60 projects were proposed under the scheme, with 20 projects each during the next three years at a total expenditure of Rs. 6000 crore. All these proposed projects were expected to be completed by 2022.

OBSERVATIONS

- Delays were observed in most of the projects with respect to implementation. For example, the first project, sanctioned on March 31, 2015 with the due date for completion in September 2016, warranted mid-way modifications leading to delays;
- Field survey of implementing agencies, state tourism departments, construction agencies, hotels, tour operators, tourists and NGOs provided sufficient evidence to show that SwadeshDarshan Scheme could immensely contribute towards improving tourist infrastructure at all identified circuits and generate employment;
- The scheme, which is guided by the objective of providing world class facilities at the project locations, has a direct bearing on the quality of overall tourist amenities. It can play a catalytic role in creating tourism infrastructure, besides generating local employment.

6.2.3 Evaluation of Central Scheme PRASAD (Pilgrimage Rejuvenation and Spiritual Augmentation Drive) during the 12th Five-Year Plan



To tap into the potential of pilgrimage tourism and ensure holistic development of selected pilgrimage destinations, the Government of India, in Union Budget 2014-15, launched PRASAD scheme with an initial budgetary provision of Rs.100 crore.

During the 12th Five-Year Plan period, 18 projects were sanctioned under the scheme with a total allocation of Rs. 488.45 crore. Timelines of the projects varied between 18 and 36 months.



OBSERVATIONS

- NPC's evaluation shows that the infrastructure created at most of the projects are sustainable except basic municipal infrastructure;
- A Special Purpose Vehicle (a separate legal entity) needs to be formed to ensure long-term sustainability of the projects;
- Operation and maintenance of basic infrastructure needs to be an in-built component in the detailed project report, at least for the initial five years;
- Feedback from stakeholders like implementing agencies, state tourism departments, state tourism development corporations, hotels, tour operators and pilgrims suggested that the PRASAD scheme could contribute

towards improving infrastructure at the identified project locations and also generate employment opportunities.

- The scheme can play a catalytic role in creating the much needed pilgrimage infrastructure, besides generating local employment at the project locations.

6.2.4 Evaluation of Scheme of Assistance to IHMs/FCIs/IITTM/ICI/NCHMCT during the 12th Five-Year Plan

Under this scheme, Ministry of Tourism extends financial assistance for setting up and upgrading Institutes of Hotel Management & Catering Technology & Applied Nutrition (IHMs) and Food Craft Institutes (FCIs) in the country. Assistance under the scheme is also provided to the Indian Institute of Tourism & Travel Management (IITTM), Indian Culinary Institute (ICI) and National Council of Hotel Management & Catering Technology (NCHMCT).

OBSERVATIONS

- Assistance to IHMs/FCIs/IITTM/ICI/NCHMCT was effective in developing world class facilities. However, implementation of the scheme at the state level was mired by delays leading to very slow progress. One of the reasons cited for the tardy progress was the delay in transferring the land by state government to the society formed for the project implementation;
- Non-submission of utilisation certificates and delays in demand for the release of instalments by the state governments, deviations in construction and delays in submitting the justifications for such deviations, legal cases related to lands, and delays in submitting consolidated project proposal were some other reasons for the delay.
- Feedback received from a cross-section of stakeholders and field-level inspections of the infrastructure created/under construction at different parts of the country reveal that the scheme contributed towards developing institutional infrastructure that could foster

and facilitate professional education and training specific to tourism, travel and hospitality industry;

- The scheme helped improving hospitality educational infrastructure across the country by virtue of creating academic blocks, hostels, guest houses, libraries, staff quarters and convention facilities attached to the institutions;
- NPC recommended that the scheme should continued in the next three financial years with the ministry allocating additional funds and providing professional project management systems using web-based monitoring tools.

6.2.5 Evaluation of Overseas Promotion and Market Development (OPMD) Scheme of Ministry of Tourism

- Ministry of Tourism, along with 14 overseas offices, has been implementing the scheme through integrated marketing and promotional strategies and synergised campaign in association with travel trade (people and companies that resell travel products), state governments and Indian missions abroad. The objective was to position India as a preferred tourist destination in the world.
- To promote Indian tourism products and to increase India's share of global tourist footprint, specific promotional activities were undertaken overseas, including advertisements on print and electronic media, participating in fairs and exhibitions, organising seminars, workshops, road shows, creating brochures and collaterals, joint advertising with travel agents / tour operators, and inviting media and travel trade to visit India.

OBSERVATIONS

- NPC evaluated tourism promotion activities undertaken during the 12th Five-Year Plan by the tourism ministry's 14 overseas offices in various countries based on the information received through a specially designed questionnaire.
- It was evident from the field information that

the overseas offices had undertaken a number of activities under the OPMD Scheme, including Market Development Assistance, in respective countries for attracting tourists to India and promoting the brand name 'Incredible India'.

6.2.6 Evaluation of Access to Justice in North-eastern states and Jammu & Kashmir

The scheme Access to Justice—NE and J&K was approved in 2012 to address the needs of poor and vulnerable persons in these regions. The focus is on supporting justice delivery systems by improving their capacities to serve the people and empowering ordinary people to access their rights and entitlements. The interventions happened at the community level rather than an individual level.

OBSERVATIONS

- NPC conducted the study in two phases. In the first phase, detailed desk research was undertaken where in information pertaining to implementation of the scheme, including physical and financial targets and achievements during the 12th Five-Year Plan period, was analysed.
- Second phase of evaluation focused on field surveys and interactions carried out with officials of state legal services authorities, common service centres, state resource centres, legal aid clinics, national resource persons, village-level entrepreneurs, and lawyers from Assam and Nagaland.
- NPC also evaluated the quality of the Information Education and Communication (IEC) materials printed in regional languages for imparting legal literacy training to the scheduled tribes and local people. The activities, which were completed till March 31, 2017, were taken up for an evaluation.
- Feedback received during field surveys in Assam, Meghalaya and Nagaland showed that the scheme contributed positively towards the access to justice of the people from far-off regions. As the project started only in 2016-

17 and most of the IEC materials developed under the project are yet to be distributed to the beneficiaries, it would take some more time before the real impact of the scheme could be measured.

6.2.7 Evaluation of Assistance to Central Agencies for Tourism Infrastructure Development

The objective of the initiative is to ensure active participation of central agencies such as Archaeological Survey of India, Port Trust, and India Tourism Development Corporation in developing tourism infrastructure and promoting places of tourist interest under their control. The developmental work taken up by the central agencies under this scheme needs to follow prescribed norms and the monuments/structures should be restored to its original form/condition.

OBSERVATIONS

- Analysis of secondary data, feedback received from stakeholders, field-level verifications and feedback on infrastructure created/under construction showed that the ongoing scheme contributed toward the development of tourism infrastructure at different parts of the country.

6.3 Human Resource Management

6.3.1 Three one-day training and development programmes for a national institute



INTERVENTION

NPC conducted three training programmes:

- Organisational Excellence through Effective People Management was conducted on April 25, 2017 in New Delhi;
- Role of Creativity, Innovation & Leadership for Excellence was conducted on April 27, 2017 in Noida;
- Power of Positive Attitude & Stress Management was conducted on April 28, 2017 in New Delhi

OUTCOME

- Based on the feedback, NPC inferred that almost all the participants (137) found the programme useful and more than 90 per cent of them benefited considerably from the interaction.
- More than 93 per cent of the participants rated the quality of the course material very good and above. More than 98 per cent of the participants rated the overall impression very good and above.

6.3.2 Productivity Analysis of News Print Handlers and Buyers at a leading media group in India

INTERVENTION

The manpower categories that were studied, included supervisors, fork lift operators, ramp helpers, issue helpers, store helpers, waste helpers, fork lift helpers, office boy and vendors.

The study covered following aspects:

- Unloading and loading of reels at the warehouse and production sections, respectively
- Collection of wastage from production section
- Dispatch of printing material like ink cartridge
- Performance of the administration and purchase section

OBSERVATIONS

- Observations were made as per the technical

parameters and processes involved. Capacity utilisation was assessed based on maximum capacity per day in three groups with ideal condition and no constraint factors. In the study, all related activities were observed.

RECOMMENDATIONS

- Observing excess capacity in the existing system, NPC suggested improving management planning and knowledge and skills of workers, and focusing on need-based manpower requirements. NPC also provided technical and statistical tools to achieve higher productivity.

6.3.3 Training Programme on Project Management for a State Government institute

NPC conducted a five-day training workshop on project management for the officials of the institute.

INTERVENTION

The programme broadly covered:

- Project Management Context, Process
- Project Scope Management
- Project Procurement Management
- Project Staffing & Training
- Creative Leadership
- Team Building & Team Management
- Conflict Management & Negotiation Skills
- Project Quality Management
- Project Cost and Project Time Management with case studies
- Project Risk Management
- Project Integration Management
- Professional responsibilities towards self, profession, stakeholders and society
- IT Tools & Techniques Applied in Project Management
- Project Controls & Tolerances and Project

Management Plan

- Role of Motivation and Interpersonal Relationships in project management

OUTCOME

- Out of the 20 candidates who participated in the workshop, 18 provided the feedback. Sixteen participants (93 per cent) either found the programme useful or very useful for their personal growth;
- 92 per cent of the participants found the quality of the course material to be either Excellent and Very Good. Rest rated it as Good;
- 84 per cents of the participants rated the overall impression of the course as either Excellent or Very Good, whereas remaining participants rated it Good.

The summary analysis of the feedback received from 18 participants of the programme is graphically presented below.

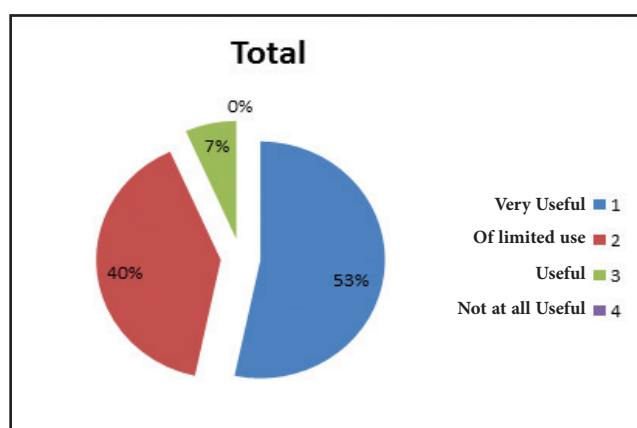


Figure 1: PERSONAL GROWTH

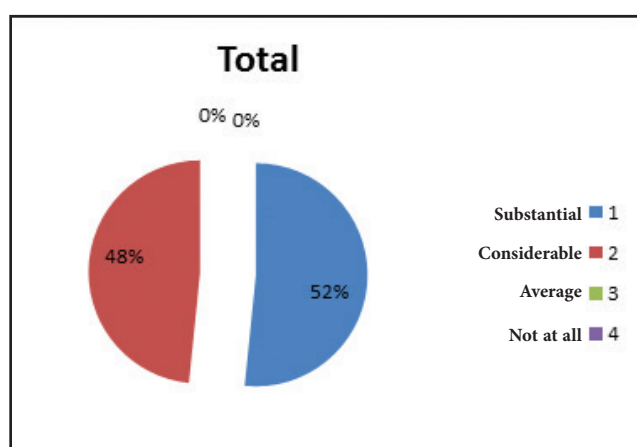


Figure 2: BENEFITS OF INTERACTION

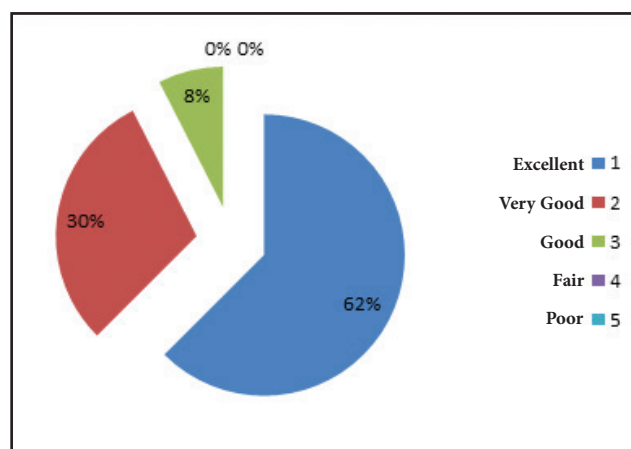


Figure 3: QUALITY OF COURSE MATERIAL

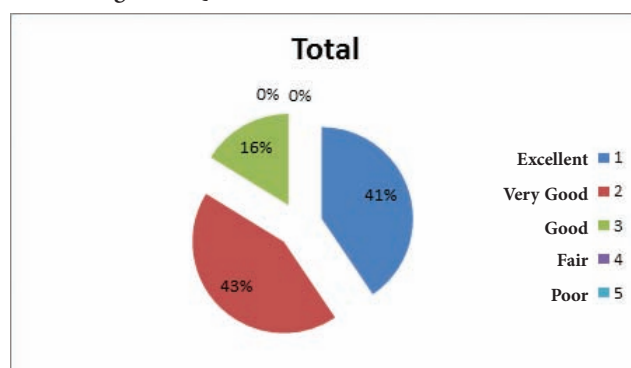


Figure 4: IMPRESSION OF COURSE

6.3.4 Residential training programmes for capacity building of professionals

INTERVENTION

NPC conducted trainings for capacity building of professionals in different organisations, including Ministry of Health & Family Welfare, New Delhi; Vidyut Bhawan, Jaipur, Department of Consumer Affairs, New Delhi; Odisha Forest Development Corporation Limited, Eastern Coalfields Limited, West Bengal; Cabinet Secretariat, New Delhi; Indian Oil Corporation Limited, Haryana; Airport Authority of India, New Delhi; Ministry of Food Processing Industries, New Delhi; Gujarat Industrial Development Corporation, and National Institute of Financial Management:

- Stress Management & Conflict Resolution Strategies, Kathmandu
- Developing Leadership Skills for Effective Teamwork, Munnar
- Managerial Leadership & Team Building, Udaipur
- Stress Management Resilience Training,

Kanyakumari

- Stress Coping and Time Management, Puri
- Effective Communication and Presentation, Goa

OUTCOME

- Total 65 participants benefited from the training programmes.

BENEFECIARIES SPEAK

"This training will be very helpful for me in my day-to-day work in office as well as my social life. Such trainings must continue to happen."

"Attending this programme was really a good experience, especially, interacting with speakers and other attendees. I was not aware of such techniques before this."

"The programmes on time management and techniques of de-stressing oneself are very useful for all of us who strive to maintain work-life-balance. A session on anger management should also be included in the programme."

6.3.5 One day workshop on Safeguards to be taken in Tendering, Procurement and Contracting

INTERVENTION

NPC Conducted an one day national workshop on **"Safeguards to be taken in Tendering, Procurement and Contracting"** on 17th Nov 2017 at NPC New Delhi for a national institute with an objective for capacity building of State Level Public Enterprises (SPEs) and Central Public Sector Enterprises (CPSEs).

The delegates and faculty put emphasis on different elements of Procurement and Tendering process. They also shared the importance and relevance of such Workshop Programs in Indian scenario as, at present today, the Govt.'s requirement by more than 50 % are met through Tendering, Procurement and Contracting for different products and services.

OUTCOME

- The programme covered GeM, procedures of procurement, Tendering, Elements of Contracting, Implication of GFR, Vigilance etc.
- Total 50 officials attended the programme
- Almost all participants improved their knowledge and appreciated the programme and found it very useful.

6.4 Regional Directorate, Bengaluru

6.4.1 Case Study of Productivity Improvement at Leading Newspaper Printing Press in Bengaluru

The organisation is one of the largest media groups in India housed in a 33,000-sq-ft. facility in Bengaluru and uses materials like imported newsprint, inks, plates, fountain solution and chemicals in its operations.

In order to improve productivity levels of their material handling operations, NPC was asked to review the current practices.

RECOMMENDATIONS

Based on the review, NPC suggested following improvements:

- Convert the ramp in the container unloading area as the second bay;
- Shift the ramp to some other areas like waste materials loading bay / consumables truck unloading bay for movement of forklift in and out of stores;
- Increase the width of the door and bay approach area so that forklift operators can directly move inside the containers with forklift and come out, instead of the present practice of moving back and forth;
- Simplify the process of waste weighment by:
 - a) Allocating large-size steel mesh bins where specific waste will be collected. For example, use separate mesh bins for reels ends, tear offs, wrappers, printing waste, and RMD waste.

These steel mesh bins can be weighed using battery-operated forklifts for movement;

b) Having two sets of bins. One set of bins can be sent to scrap vendor along with waste, which the vendor will return on emptying next day.

OUTCOME

- Converting the ramp in the container unloading area as the second bay will ensure that the operator is not waiting for the containers for placement in the bay;
- Shifting the ramp to some other areas will reduce cycle time for unloading one container. The unloading capacity will increase by 22 per cent;
- Increasing the width of the door and bay approach area will improve safety during operation and reduce cycle time for unloading one container;
- By simplifying the process of waste weighing, the organisation can reduce waste weighing time to 20 per cent of the present level.

6.4.2 Manpower Assessment Study at a power distribution company, Karnataka

The company is responsible for power distribution in eight districts of Karnataka, covering an area of 41,092 sq km and serving over 20.7 million consumers. To improve productivity levels, NPC was asked to audit and review current work practices in the following departments:

- Corporate Office departments like Operations, Projects, Customer Relations, Corporate Affairs, Finance and Resources, Human Resources and Administration, Revenue, Demand Side Management and Pension.
- Bangalore Rural Area Zone (BRAZ) Office
- Meter Testing Division
- Vigilance Department

RECOMMENDATIONS

- Invest in fully automated meter testing machines that will do the testing of electricity

meters and printing the test result;

- Vigilance Department officials, instead of following the current practice of going alone, should randomly choose a meter reader and inspect with him / her all the installations that he / she reads and bills for that particular day;
- The officials should have some software that can detect consumption trends and indicate large variations;
- Introduce online project management system right from the initiation till the completion of all kinds of project work monitored by different departments of the corporate office;
- Maintain material management database in the Material Management section instead of collecting data in MS Excel sheets for CAPEX work for the coming year.

OUTCOME

- Fully automated meter testing machines will reduce the scope of error in performing the test and increase consumer satisfaction;
- The cycle time for inspection per facility will be reduced if Vigilance Department officials are accompanied by a meter reader;
- Having a software will ensure a focussed and systematic approach to vigilance activities;
- Maintaining material management database will help in real-time monitoring of various CAPEX work and real-time inventory management of items.

6.4.3 Production Norms and Manpower Assessment Study at a tube and rubber products manufacturing company, Mysore

NPC was asked to audit, assess and review the production and maintenance work practices and suggest productivity improvement measures.

RECOMMENDATIONS

NPC suggested following measures for productivity improvement:

- Relocate Final Compound Mixing mill, strainer(s) and the two 42" Mills as a cell;
- Directly load the strainer compound instead of temporary storing and using thereafter as a batch
- Modify existing maintenance docket to ensure collection of:
 - ✓ Time of attending the problem (starting and ending time)
 - ✓ Crew deployed to attend
- Employees need to go to the workplace along with the required tools;
- Preventive maintenance activities to be reviewed in the maintenance checklist and more role clarity to be provided. The activities to be performed by each crew member and time taken must be documented.

OUTCOME

- Directly loading the strainer compound will reduce work in progress and lead to reduction in inventory;
- Modifying maintenance docket will help in data analysis and making use of the analysed data to improve maintenance of equipment;
- If employees carry the tools with them, it will reduce the time wasted in going to the workshop for bringing the tools;
- Reviewing preventive maintenance activities will further reduce the time taken.

6.4.4 Production Norms study at a leading designer, manufacturer and integrator of precision motion control products and solutions

A leading company, whose product portfolio includes design, manufacture and integration of motion control equipment for military and commercial aircraft, satellites, space vehicles, launch vehicles, missiles, industrial machinery and medical equipment, awarded an assignment to NPC to assess and compute the standard time required for each of the process steps involved in manufacturing and assembly of the products.

RECOMMENDATIONS

- NPC suggested implementing lean production method of Single Minute Exchange of Die (SMED) in the insulation preparation machine;
- Use two stands instead of the current practice of using only one stand for Coil Winding operation

OUTCOME

Implementing lean production method of SMED will reduce cycle time. In fact, cycle time can reduce by 5-10 per cent if two stands are used for Coil Winding operation instead of one.

6.4.5 Manpower Assessment study at a North Karnataka-based manufacturer of high quality pig iron and grey iron castings

This company has been manufacturing high quality pig iron and grey iron castings to cater to tractor, automotive and diesel engine industries since 1991. It awarded an assignment to NPC to audit and assess manpower productivity and suggest improvements.

RECOMMENDATIONS

Based on the assessment, NPC made following suggestions:

- Install hoist system at the shot blasting;
- Develop and implement a system to ensure that the workmen are operating at their workstation and the material such as cores, woolen washers, adhesives, mixed wash, and loaded/ empty trollies are supplied to them;
- Archive all the drawings systematically and made them available to maintenance engineers as and when required.

OUTCOME

- Hoist system at the shot blasting will ensure that the casting could be lifted and placed on the loading conveyor without strenuous and multiple handling;

- Manpower efficiencies will improve and stoppage of workstation for lack of material or trolley will be reduced;
- Making all the drawings available to maintenance engineers will reduce downtime of equipment and eliminate searching time.

6.4.6 Energy Audit of Facilities Management Division at a leading central PSU in Bengaluru

Facilities Management Division is a unit responsible for upkeep of equipment and utilities. NPC was asked to audit and assess the energy usage and suggest improvements.

RECOMMENDATIONS

After doing an audit of the facility, NPC made following suggestions:

- Scrap old diesel gensets;
- Install centralised air-conditioning plant at the hospital;
- Install lighting transformers and solar PV (photovoltaic) at the hospital;
- Use solar light pipes at offices;
- Operate laundry at non-peak hours

OUTCOME

- If implemented, the measures will improve specific fuel consumption, ensure effective use of air-conditioning systems, and reduces energy consumption of the facility.
- After detailed energy audit of the facility management division, suggestions to reduce the energy consumption were recommended.

6.5 Regional Directorate, Bhubaneswar

6.5.1 Sustainability Reporting for a Mining Organisation

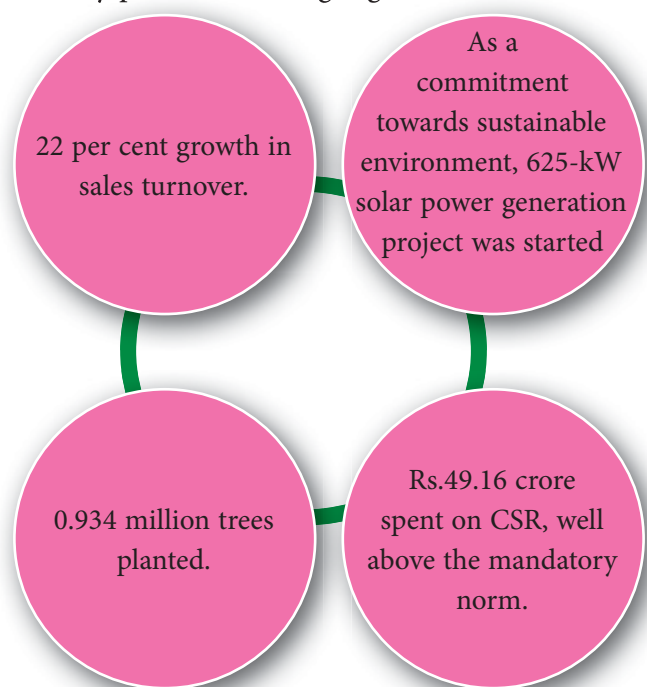
The objective of the sustainability report was to unveil the organisation's performance on economic, environmental and social dimensions.

INTERVENTION

- NPC identified the issues and scope of reporting as per Global Reporting Initiative (GRI) guidelines;
- Sensitisation of employees at corporate office and mines was done;
- A questionnaire specific to operational areas was developed for collecting information;
- Information for reporting key financial and non-financial performance was compiled and analysed;
- Sustainability report was prepared.

OUTCOME

- The mining organisation published the first **Voluntary Sustainability Report** as per GRI G4 "in accordance" with core criteria guidelines;
- The report enabled the organisation to communicate its sustainability efforts undertaken to ensure safety and security of employees, well-being of community and prosperity of the organisation and stakeholders.
- Key performance highlights:



6.5.2 Detailed Energy Audit of iron ore mines

INTERVENTION

- NPC carried out energy audit at three open-cast iron ore mines in 2017-18 to assess the performance of various equipment consuming energy in any form and bring out areas of improvement. The scope of the study included:
- Power supply system and transformers
- Crusher and Conveyor system
- Water pumping, lighting system and air-conditioning
- NPC identified the issues and scope of reporting as per Global Reporting Initiative (GRI) guidelines;
- Key performance highlights:

OUTCOME

- The study estimated energy saving potential of 32.34 tonnes of oil equivalent per annum for three mines. The major areas for conservation opportunities are:
 - ♦ Load Side Power Factor improvement for distribution loss reduction
 - ♦ Load sharing and resizing of transformers
 - ♦ Performance improvement of water pumping system
 - ♦ Energy-efficient lighting system
 - ♦ Efficient air-conditioning system
- Implementation of identified energy conservation options will lead to reduction of 308.35 Co2 emission.
- The study also helped the organisation bag higher credit points in Star Rating Scheme of Indian Bureau of Mines (IBM).

6.6 Regional Directorate, Chandigarh

6.6.1 Manpower Assessment study at a dairy company in Gajraula



Manpower Assessment study at a dairy company in Gajraula

INTERVENTION

The Manpower Assessment study was carried out using various Industrial Engineering (IE) tools:

- Time and Motion study
- Production study
- Work sampling
- Synthetic Analysis for both liquid milk plant and dry plant

Manpower assessment was carried out for various levels of production.

OUTCOME

- NPC proposed manpower for various departments based on observations and data collected. Its study identified scope of improving manpower productivity by 15 per cent.

6.6.2 Manpower Assessment Study at a leading Corn Wet Milling Unit in Haryana

INTERVENTION

- The study was conducted at a Corn Wet Milling Unit having a grinding capacity of 200 MT per day, manufacturing native and modified

products mainly for food, pharmaceutical, paper, drilling starch and textile industries.

- NPC analysed the deployment of manpower in Wet Milling Unit, Gulten Unit and all modified Starch Product Units and came up with optimum manpower requirement to meet existing production target.
- NPC also proposed manpower deployment under different production scenarios to tackle product-mix fluctuation.
- Material movement practices were analysed and low-cost automation in material handling was recommended to improve productivity in the plant. Three-pronged approach was followed to optimise manpower utilisation.

OUTCOME

- NPC envisages about 20 per cent increase in manpower productivity.

6.6.3 Consultancy services to a State Administrative Training Institute in Chandigarh on developing processes for getting ISO certificate

INTERVENTION

- NPC guided the institute to develop its processes to meet stringent quality standards of ISO-9001:2015—a globally recognised quality management system.

OUTCOME

- After the audit by the certification agency, the institute was awarded ISO-9001:2015 certification for providing training and information services and executing consultancy and research projects in the field of public administration, management and other related areas.
- Implementation of ISO-9001:2015 Quality Management System improved effectiveness of training through regular feedback of participants, content review and redesign by expert panel, faculty up skilling and regular review of faculty performance.

6.6.4 Detailed Energy Audit at a Ludhiana-based dairy Unit



Detailed Energy Audit at a Ludhiana-based dairy Unit

INTERVENTION

- NPC carried out a detailed Energy Audit at the dairy to identify energy conservation options in electrical and thermal areas.

OUTCOME

- After conducting the study, NPC identified total savings potential of more than Rs. 80 lakh with payback period of less than two years.

6.6.5 Detailed Energy Audit of a power plant's office in Jhakri, Himachal Pradesh



Detailed Energy Audit of a power plant's office in Jhakri, Himachal Pradesh

INTERVENTION

- NPC was approached to carry out a detailed energy audit for the power plant's new office building and identify energy savings potential and measures to be implemented to make it a zero-energy building.

OUTCOME

- NPC identified and recommended measures such as installation of solar photo voltaic cell and occupancy sensor to help the new office become a zero-energy building.

6.6.6 Preparation of investment-grade Energy Audit report for public waterworks and sewage system of Gangapur (Rajasthan) and Barnala (Punjab)



Preparation of investment-grade Energy Audit report for public waterworks and sewage system of Gangapur (Rajasthan) and Barnala (Punjab)

INTERVENTION

- NPC conducted an investment-grade energy audit of around 40 different pumps at pumping stations of Gangapur and Barnala.

OUTCOME

- Findings of the audit will enable replacement of inefficient pump sets in Public Water Works & Sewerage Water Systems with energy-efficient pump sets at no upfront cost to the municipal bodies.

6.6.7 Mandatory Energy Audit report for a thermal power plant, Rajpura, Punjab



Mandatory Energy Audit report for a thermal power plant, Rajpura, Punjab

INTERVENTION

- NPC conducted a Mandatory Energy Audit at 2x700 MW thermal power plant in Rajpura. The plant is operating with a supercritical boiler, which is one of the most advanced installations in India.

OUTCOME

- After the study was conducted, NPC identified energy conservation options. Measures for improving the power plant's heat rate and reducing the auxiliary power consumption were recommended to improve the energy-use performance.

6.7 Dr. Ambedkar Institute of Productivity, Chennai

6.7.1 Training programmes on energy efficiency for officials of a leading PSU under the Ministry of Petroleum & Natural Gas



INTERVENTION

- Operation and Maintenance of lube oil equipment
- Developing Energy Managers/Auditors
- Development of Productivity Practitioners – Basic Course

OUTCOME

- The programme served as a holistic training solution catering to important departments responsible for functioning and upliftment of this leading PSU;
- Around 106 PSU officials benefited from the programmes.

6.7.2 Soft skills training for non-executive Group B, C and D staff for a Central government organisation under the Ministry of Aviation

INTERVENTION

- The officials were trained on various soft skills that need to be adopted in their daily operations;
- The training was carried out in a series of small batches with group activities and classroom sessions to ensure the programme's effectiveness;
- The programme was carried out for a duration of six months in 18 batches, with each batch consisting of around 25 participants.

OUTCOME

- This training will help in improving interpersonal skills within the organisation and create a more convenient and congenial environment for the customers availing their services.

6.7.3 Training on cleaner technologies and waste minimisation techniques for a statutory organisation under the Ministry of Environment Forest and Climate Change



INTERVENTION

- Discussions were held on the techniques of waste minimisation and case studies on clean technologies implemented in various industrial sectors.

OUTCOME

- 20 participants from various state statutory bodies attended the programme. NPC received good feedback on the presentations.

6.7.4 Training on Best Operating Practices for Energy Management for various sectors under MSME by United Nations Industrial Development Organisation (UNIDO) through an agency under Ministry of Power



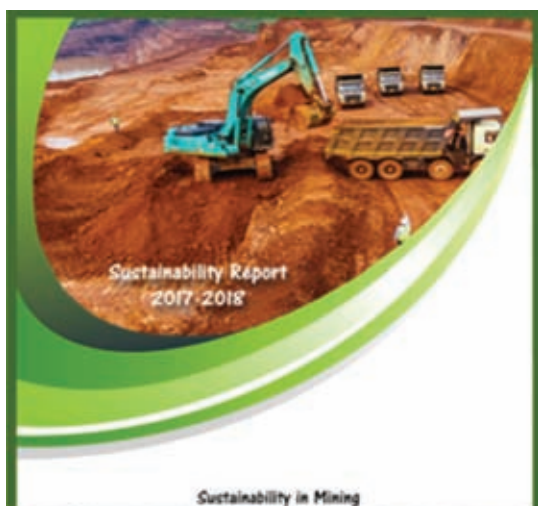
INTERVENTION

- Participants pertaining to each sector attended the trainings in clusters to understand the best energy-saving operating practices that could be implemented in their respective sectors;
- These clusters were chosen based on total energy consumption as well as the energy intensity levels;
- Total 193 participants attended the programme in nine different batches.

OUTCOME

- The project is focusing on developing and promoting a market environment for introducing energy efficiency and enhanced use of renewable energy technologies for process applications in 12 selected MSME clusters under five energy-intensive MSME sub-sectors: brass, ceramic, dairy, foundry and hand tools.
- The project is focusing on development and promotion of a market environment for introducing energy efficiency (EE) and enhanced use of renewable energy (RE) technologies for process applications in 12 selected MSME clusters under five energy intensive MSME sub-sectors i.e., Brass, Ceramic, Dairy, Foundry and Hand tools. A total number of 193 participants participated in the programme in 9 different batches.

6.7.5 GRI (Global Reporting Initiative) sustainability reporting for a gold category PSU mining organisation



INTERVENTION

- GRI sustainability report was prepared on economic, environment and social impact of the activities of the mines under consideration;
- The report was prepared based on G4 guidelines, using the data provided by the organisation, visual surveys, interviews and history log books provided by the organisation.

OUTCOME

- GRI sustainability report helped the organisation in bagging credits allotted for sustainability reporting;
- The success of this GRI reporting created a win-win situation for the organisation as well as the society. While the organisation's brand image was enhanced, the society got to understand the positive and negative impact that this organisation would have.
- The success of this GRI reporting created a win-win situation wherein the organisation gained the benefit of enhancing its brand image as well as the society to understand the positive and negative impacts that this organisation would be creating

6.7.6 Developing tool kits on solid waste management and construction and demolition waste management for a national statutory authority under the Ministry of Environment, Forest and Climate Change

INTERVENTION

- Based on the Solid Waste Management Rules 2016, NPC prepared the guidelines and a manual compiling the applications of the rules;
- The manual was submitted to the Central Pollution Control Board (CPCB), the national implementing agency of the assignment.

OUTCOME

- The tool kits—which include the guidelines and the manual—received word of appreciation from the CPCB;
- The manual has been circulated across the country for all the stakeholders handling all the six types of waste generated in day-to-day domestic and commercial activities. The distribution happened through capacity building programmes across India. This has ensured better reach of the toolkits to the users at the grassroots level.

6.7.7 Data verification of star rating of a corporate organisation and two Central Government buildings under the Indian Railways

INTERVENTION

- NPC carried out physical verification of electricity consumption of the buildings to assess suitable star ratings;
- Following the verification, the buildings were classified according to the star rating norms prescribed by the Bureau of Energy Efficiency.

OUTCOME

- Verification of the star ratings allocated to the three buildings will motivate the building owners to adopt good operating and maintenance practices along with energy-efficient technologies to improve their star ratings.

6.7.8 Independent evaluation of biogas-based power generation programme assigned by Ministry of New & Renewable Energy

INTERVENTION

- Six biogas plants in Tamil Nadu were under the scope of the study awarded to NPC;
- Assessment was done based on the historical data and the log book results provided by these plants.

OUTCOME

- Following the evaluation, NPC found reduction in electricity and LPG consumption. The evaluation was submitted to the client;
- The evaluation substantiates the success of the decentralised power generation programme using biogas-based power units.

6.7.9 Environmental Audit (EA) & Environmental Impact Assessment (EIA) for a state-level statutory body in Tamil Nadu under the Ministry of Environment,

Forest and Climate Change

INTERVENTION

- The programme was carried out in two batches with each having 20 participants, including both experienced and fresher category officers;
- Case studies on EIA were discussed, focussing on few major sectors prevailing in and around Tamil Nadu;
- Auditing techniques and the pre- and post-audit procedures were also discussed;
- The agenda of the programme was a healthy mix of discussions on basic elements of EA & EIA and brainstorming on the issues arising in the process.

OUTCOME

- This programme served as an opportunity to bring into light the strategic issues that an auditor faces and suitable solutions he can arrive at, thereby enhancing the effectiveness of auditing and impact assessment skills.;
- In the long run, this will be a powerful tool for controlling illegitimate industrial practices and its harmful effects on environment and society.

6.7.10 National Certification Examination for Energy Auditors and Energy Managers

INTERVENTION

- NPC conducted examinations across India for energy auditors and energy managers.

OUTCOME

- The examination assessed whether the qualifying energy auditors and energy managers to be certified by the Bureau of Energy Efficiency.
- This examination acts as a reliable platform to validate proficient energy auditors and energy managers. It would be a strategic tool for

achieving India's goal of becoming an energy-efficient nation.

6.8 Regional Directorate, Delhi

6.8.1 Performance Audit of Petroleum and Explosives Safety Organisation (PESO), Ministry of Commerce and Industry, Department of Industrial Policy & Promotion, Government of India

INTERVENTION

- NPC undertook a detailed process mapping and functional analysis of the organisation. SWOT analysis of the organisation was also carried out;
- Developments and innovations occurring in the Petroleum & Explosives sector were mapped and their impact on safety regulations was identified.
- NPC also assessed readiness and capability of the organisation to meet identified challenges;
- Role of other agencies involved in safety management or regulation in the Petroleum & Explosives sector was analysed in order to identify gaps;
- A detailed work study was carried out to identify resource requirements in the organisation;
- The team inspected the research and testing infrastructure to identify requirements;
- A detailed Human Resource Plan was prepared for overall organisational development;
- On-the-job training and mid-career training of officers was proposed for better regulation of Petroleum & Explosives rules and capability development.

OUTCOME

- The study recommended modernising the organisation and making it future-ready to meet upcoming challenges of Petroleum & Explosives industry;

- If recommendations of the study are implemented, the inspection level (as %age of total number of premises) in Petroleum & Explosives sector shall increase from 8.4 per cent in 2015-16 to 32.9 per cent, which, in turn, may lead to lesser accidents.

6.8.2 Evaluation of Market Research Professional Services (MRPS) Scheme of Ministry of Tourism

INTERVENTION

- NPC evaluated MRPS scheme, which promotes adoption of market research techniques by the state governments and research institutions in order to collect reliable tourism-related statistics for policy formulation, tourism planning and product development in the country;
- NPC conducted a survey among state tourism departments and corporations, research institutions and tourism associations to understand the effectiveness and outcomes of the activities undertaken under the scheme;
- Participation of state governments was found to be low. NPC proposed conducting awareness programmes on benefits of market research techniques for top executives of state tourism departments and corporations to persuade them to understand the importance of the subject;
- NPC proposed strengthening of the linkages between industry associations and academia for effective utilisation of the scheme outcomes.
- For development of tourism in the country, NPC proposed broadening the scope of the scheme by including newer research and thrust areas and activities such as:
 1. Surveys on outbound tourism
 2. Research on responsible and sustainable tourism practices followed in other countries
 3. Identification of unexplored destinations in the country
 4. Field studies for identification and development of newer tourist destinations

and inter-state tourism circuits to have repeat visits and increased duration of stay in north-eastern states

5. Destination experience enhancement surveys for development of tourism destinations
6. Field studies for development of tourism packages within a tourism circuit.

Financial provisions under the scheme were proposed to be revised upwards considering the market rates.

OUTCOME

- The study focused more on increasing participation of state tourism departments and corporations in adopting market research activities which is quite crucial as they are working at grassroots level for tourism development in the country;
- The study came out with newer research areas considering increasing preferences of travellers. It would help in increasing tourism competitiveness of the country.

6.8.3 Evaluation study of Indian Institute of Corporate Affairs (IICA) under the Ministry of Corporate Affairs

The IICA was set up as an autonomous institute to develop institutional support for meeting capacity building requirements and promoting transparent and responsible corporate governance;

MCA requested NPC to undertake assessment and evaluation study of IICA and suggest measures to become a self-sustaining institute;

INTERVENTION

- NPC examined the functioning of various schools and centres of IICA and alignment of activities being conducted with overall mandate of the institute;
- NPC analysed the financial indicators of the Institute such as net revenue to salary ratio, fixed costs (such operational, administrative and establishment expenses) and activity expenditure.

RECOMMENDATIONS

1. Reduce fixed costs by 19 per cent through manpower rationalisation and restructuring. Optimisation of other costs such as security, housekeeping, postage and travelling was proposed;
2. Reduce activity expenditure by 28 per cent through utilisation of in-house infrastructure and resources. A partnership and collaboration-based business model of working was proposed for further reducing activity expenditure;
3. Increase net revenue by 304 per cent by launching more programmes with a greater focus on long-term ones. NPC identified newer thrust areas for IICA such as training of independent directors, valuation and insolvency professionals, and investors under Investors Education Protection Fund;
4. NPC identified other thrust areas: CSR implementation, research & advocacy in the areas of antitrust, competition, bankruptcy law, data governance and information security, blockchain technology, and capacity building of SAARC nations in the area of corporate governance;
5. NPC recommended starting long-term Post Graduate Executive Programmes in the area of corporate governance and CSR in line with the international universities. The suggestions were substantiated with net revenue projection figures arrived at, considering various parameters like market size of the particular sector, percentage growth in market size and past performance of IICA;
6. NPC identified alternate source of revenues like renting out unutilised space;
7. Sustainability review was proposed for periodic monitoring of the institute;
8. For better functioning and accountability, expansion of the existing Board of Governors and constitution of Academic Product Development Committee was proposed;

NPC mapped the key recommendations into

action plans with timelines towards achieving self-sustainability by 2019-20—a three-year target.

OUTCOME

- The study provided a clear road map to IICA as well as the Ministry of Corporate Affairs to be followed structurally in order to achieve the envisaged objectives and develop it as a self-sufficient institute by 2019-20;
- The recommendations, if implemented properly, will help IICA increase net revenue by nearly three times by 2019-20 and will provide a platform to become an institute of national importance in future.

6.8.4 Evaluation of Corporate Data Management (CDM) Scheme under Ministry of Corporate Affairs

INTERVENTION

- Ministry of Corporate Affairs (MCA) formulated CDM scheme to establish and institutionalise MCA's in-house capabilities for corporate data mining and information management that can serve as the most authentic and updated 'Knowledge Hub' for India's Corporate sector and a tool that can be used by the government departments for policy making and regulatory purposes;
- The major objective of the scheme is to bring in systematic data analytics and business intelligence in corporate governance;
- NPC assessed the progress of the scheme in detail and observed that it has been able to achieve considerable progress despite challenges.

RECOMMENDATIONS

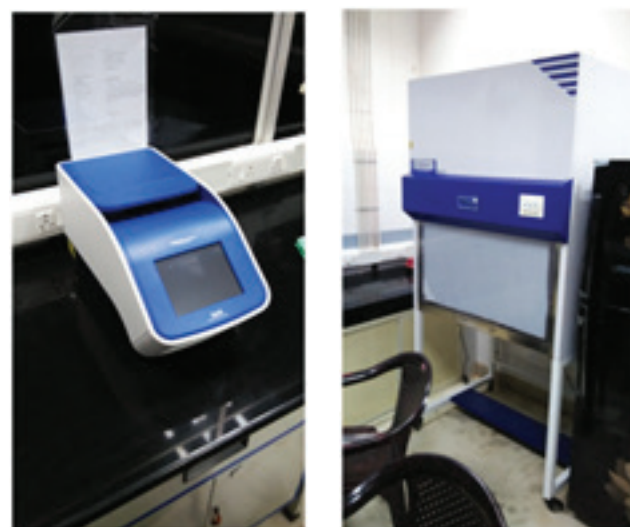
1. Build awareness about CDM scheme and its potentialities;
2. Establish a mechanism to gather feedback from public at large regarding their expectations;
3. Do extensive research and development activities to harness the full potential of data

analytics;

4. Sponsor research studies/workshops/seminars in reputed institutes.

OUTCOME

- NPC suggested that CDM scheme has the potential to generate revenue and may become financially self-sustainable. For that to happen, company- and sector-level data or customised reports requested by stakeholders may be suitably priced and data protection policy should be put in place.



6.8.5 Mid-Term Evaluation of Schemes of Department of Health Research, Ministry of Health and Family Welfare (MoHFW)

INTERVENTION

A survey was conducted among different

infrastructural facilities created under the schemes of Department of Health Research (DHR) to understand the effectiveness and outcomes of the activities being undertaken in the schemes, the status of implementation, bottlenecks, reason for low acceptability of the scheme, etc.

RECOMMENDATIONS

- For the development of the health schemes, NPC proposed changing the implementation structure of the infrastructure schemes by introducing the concept of procurement of equipment through Government e-Marketplace (GeM)—an end-to-end online marketplace for Central and state government ministries—as procurement was found to be a bottleneck in the operation.
- NPC suggested introduction of performance-based salary structure for the staff of the labs to retain the best people.
- To improve the utilisation rate of the infrastructure facilities, an extensive awareness campaign about the facilities in their respective regions was proposed.
- Periodically updating the list of equipment under the schemes was also suggested.

OUTCOME

- If the recommendations are followed, the implementation rate of the facilities planned under the schemes will improve.
- The turnaround time for the creation of facilities will be reduced and the scheme will be implemented within well-defined time frame.

6.8.6 Evaluation and Impact Assessment of 'Free Coaching & Allied Scheme' for Ministry of Minority Affairs, Government of India for the period 2013-14 to 2015-16



INTERVENTION

The free coaching and allied scheme is being implemented for the benefits of six notified minority communities under the Minorities Act-1992: Muslims, Christians, Sikhs, Buddhists, Parsis and Jains. Accordingly, the students/candidates were covered for interview/focused group discussion for different minority communities during the field visit to the implementing agencies (IAs).

- NPC consultants visited 34 IAs spread across 24 states;
- NPC assessed their infrastructure capabilities, documentation practice, implementation status, and discussed the concerns/views of IAs;
- IAs were requested to invite representative number of students, faculty members on the date of visit by NPC consultants;
- Feedback was gathered from 501 students selected randomly against the proposed 192 students;
- Feedback was also taken from 187 faculty members;

- Based on the data collected and its analysis, report was prepared and submitted to the Ministry of Minority Affairs.

OUTCOME

- It is evident from the Evaluation and Impact Assessment that the scheme has been well accepted by the targeted beneficiaries and it helped them get an appropriate job in public or private sector, thereby improving their economic condition;
- It also emerged that the scheme contributed towards empowering the minority communities to face competitive examinations and avail employment opportunities. The real challenge now lies in increasing the scale of the scheme and its adoption in delivery through the private and public sectors.

6.8.7 Evaluation and Impact Assessment of 'Nai Udaan Scheme' for Ministry of Minority Affairs, Government of India

INTERVENTION

- To assess the impact of the scheme in terms of increased representation of minorities in Civil Services Examination, NPC requested information from UPSC, SSC and State PSCs on number of successful minority candidates in these examinations each year as against total number of successful candidates;
- The approved structured questionnaire was hosted on an online platform, specifically designed for the study to receive feedback from the beneficiaries of the scheme;
- The web link for the online questionnaire was shared among 1,481 beneficiaries through e-mail. The the hard copy of the questionnaire was sent to the entire list of beneficiaries (483) for the year 2013-14;
- With the objective of acknowledging the impact and success of the scheme, an attempt was made to document the success story of the beneficiaries of *Nai Udaan* scheme who have qualified the main examination of UPSC/SSC/State PSC;

- The success story was intended to cover the challenges encountered by the candidates and the utility of the scheme in addressing the issues/needs that emerge during the course of their journey;

- Face-to-face interaction was also held with some of the successful candidates to ascertain their feedback on the scheme.

OUTCOME

It is evident from the assessment that the scheme has been widely appreciated by the beneficiaries. They have reportedly acknowledged that the financial assistance received by them has helped them in preparing for Civil Services Main Examination conducted by UPSC, SSC and State PSCs.

- Around 96 per cent of the respondents acknowledged that the scheme is useful in preparing them for Civil Services Main examination;
- Success of female beneficiaries is reported to be higher than their male counterparts;
- Awareness of the scheme, in terms of receiving financial assistance, is reported to be 100 per cent among beneficiary respondents of Sikh and Jain communities. The overall awareness rate is reported to be 94 per cent. Consistent efforts of the ministry reportedly increased the level of awareness during 2014-17.
- Introduction of online submission of application was appreciated by the beneficiaries. It has reduced complexities they used to face earlier.
- Aadhaar-linked payment mechanism of the ministry was appreciated by the beneficiaries.



6.8.8 Waste and Wastewater Management for Common Effluent Treatment Plants (CETP) in Delhi

INTERVENTION

- The CETPs are considered a viable treatment solution for collective treatment of effluents, particularly from small- and medium-scale industries;
- The objective of the study was to collect and compile information related to waste and wastewater management for 13 CETPs located in Delhi. This information, in turn, could help in providing inputs for scoping of solutions for Sustainable and Environment-friendly Industrial Production (SIEP).
- Total quantity of wastewater being generated from industries in 13 industrial areas was estimated;
- Conveyance system for wastewater and storm water was mapped;
- Assessment of defaulting industries was done. They do not have membership of CETP; their conveyance systems are not connected to CETP, and they allow discharge of effluent without pre-treatment;
- Other details of 13 CETPs were acquired, including treatment units and systems at CETPs, sludge management, business model, manpower and skills requirement;
- Online monitoring system for CETPs was proposed for remote monitoring of their performance;
- Futuristic scenario analysis with regard to wastewater management in CETPs was also recommended.

OUTCOME

Several areas of concern, which emerged after NPC conducted the study, needed immediate attention in order to improve the function of CETPs.

6.8.9 Database Development and Evaluation of Implementation of Indian Leather Development Programme (ILDP)



INTERVENTION

Objective of ILDP was to augment raw material base, modernise and technologically upgrade leather units, address environmental concerns and human resource development, provide support to traditional leather artisans, address infrastructure constraints and establish institutional facilities.

NPC evaluated all the sub-schemes under ILDP by adopting the following methodology:

- NPC and CLE arranged 10 workshops with leather and leather product enterprises at various locations all over the country to explain the project and collect data;
- NPC carried out field studies with the help of field enumerators at Kanpur, Delhi-NCR, Bahadurgarh, Manesar, Dewas, Chennai, Agra, Kolkata, Jalandhar, Kozhikode and Hyderabad to reach out to the formal as well as informal sector and collect data and receive feedback with regard to ILDP;
- Field survey covered large players like VKC, Relaxo, Liberty and some MSMEs;
- Door-to-door survey covered over 2,200 units, of which 23 per cent were tanneries, 56 per cent were footwear and footwear components, 17 per cent were leather goods, 3 per cent leather garments and 1 per cent saddlery units;
- From NPC's survey, it emerged that the total employment figure in leather sector was around 3.1 million (2.2 million involved in manufacturing);
- On an average, the involvement of woman workforce in this sector is 15 per cent.

RECOMMENDATIONS

Based on the evaluation of various sub-schemes, NPC made following observations and recommendations:

- Integrated Development of Leather Sector (IDLS)

Given the inflationary pressure and a growing need to improve competitiveness of Indian leather units in the global market, NPC suggested that

the investment grant ceiling of Rs. 2 crore per product line may be increased to Rs. 4.5 crore;

NPC also suggested increasing financial assistance to 30 per cent of cost of machinery purchased for all units irrespective of the unit falling under the SME or large category.

- Establishment of Institutional Facilities for sub-schemes

To enhance utility of each of the 12 Footwear Design & Development Institute (FDDI) campuses, NPC proposed upgrading them to Centres of Excellence in different thematic areas serving the leather sector.

- Mega Leather Cluster (MLC)

NPC recommended setting up of an academic society or government department under DIPP to support MLC and enable single-window clearance. The society may be an autonomous body or technical body like NPC;

Each MLC must focus on development of a cluster brand;

Strong links between higher education institutions and businesses need to be created for developing appropriate communication network and knowledge integration;

Linkage to international market and environment will boost export potential of the Indian leather sector;

Brownfield projects need to be encouraged rather than greenfield projects, as a successful cluster is built on the basis of identifying and developing existing sources of the region rather than trying to build the cluster from the scratch;

Land identification and availability is crucial for establishing an MLC. Technical approval agency may provide assistance in this regard.

- Human Resources Development

Productivity practitioners have to be developed by training them on basic and advanced tools and techniques of productivity;

Curriculum of productivity for productivity specialists/ experts needs to be prepared;

As per NPC's evaluation, 0.59 million new candidates will require skilling during 2017 to 2020.

- Supporting artisans

For supporting artisans, at present, the office of the Development Commissioner (Handicraft) is implementing various schemes. These schemes make 360° interventions to support artisans and craftsmen. An e-platform needs to be developed towards proactive development to connect all the artisans through web app-based networking via which they can access nearby markets, raw material suppliers, skill up gradation centres, etc.

- Leather Technology, Innovation and Environment Issues

Keeping in mind the growth of leather sector and its polluting nature, especially tanneries, NPC recommended that this scheme should be continued in order to improve environmental

conditions;

Database of Formal and Informal sector of Leather Industry needs to be strengthened through mobile-based app;

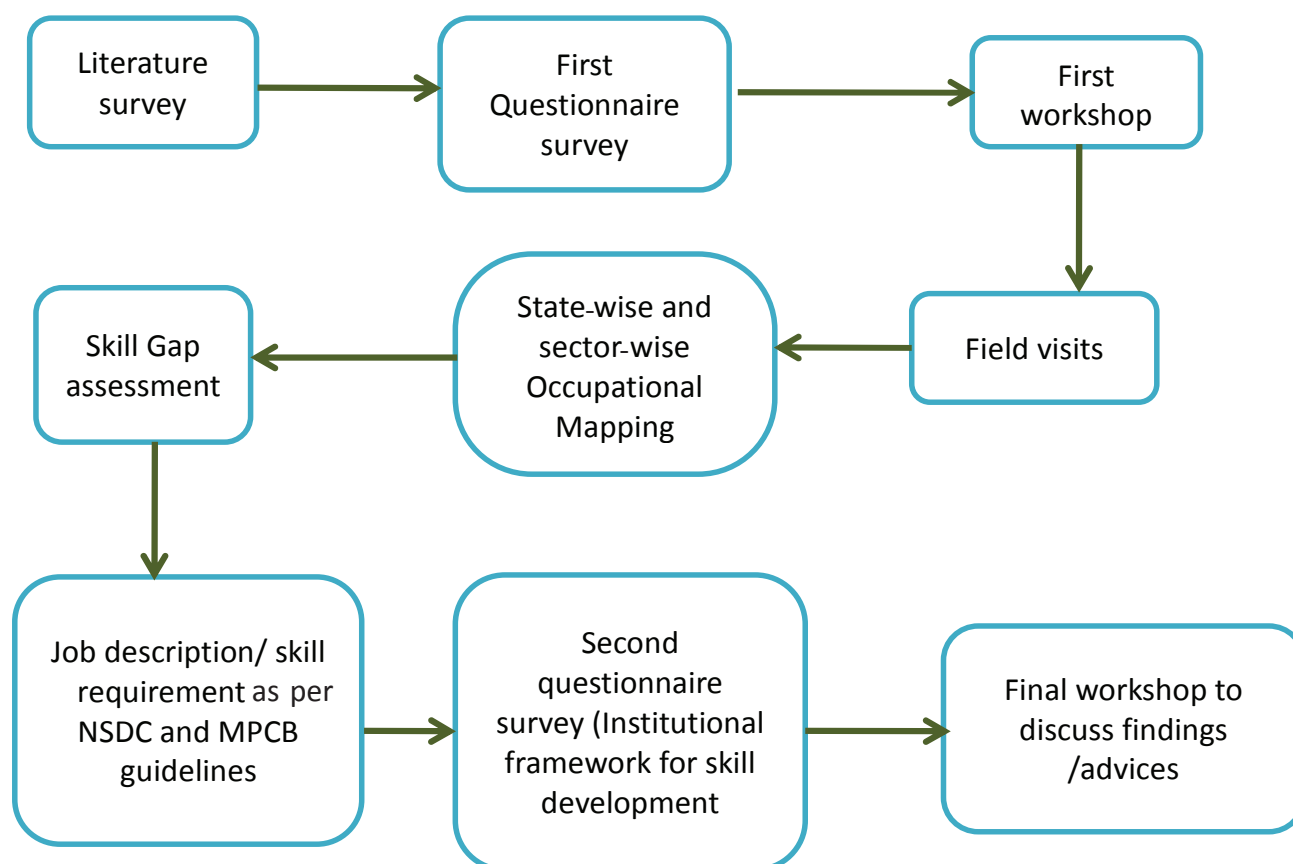
A framework for quality benchmarking assessment needs to be developed to undertake benchmarking activities for processes involved in leather sector. It is also suggested that units adopting the benchmark standards may be certified in order to encourage more leather and leather product enterprises to participate. This assessment study may be funded through 100 per cent central government assistance;

More environmental awareness workshops need to be undertaken through academic institutions, research laboratories and NGOs;

Further, a vision document, depicting future course of action for taking Indian leather sector ahead, needs to be developed.

6.8.10 Occupational Mapping of Industrial Wastewater Treatment





INTERVENTION

NPC conducted a study to undertake occupational mapping of industrial wastewater treatment in India and detail out the types of jobs required for operation and maintenance, their functions and required qualifications, competencies and skills;

First Compact Workshop was organised with all the stakeholders to finalise and fine-tune its methodology and approach;

Later, NPC designed a questionnaire and conducted a survey in effluent treatment plants (ETPs), common effluent treatment plants (CETPs) and related training institutes based on the questionnaire;

Education or qualification pattern for helpers, operators, technicians, lab chemists, supervisors and plant managers in ETPs and CETPs were analysed;

Second workshop was organised after receiving responses from training institutes and related organisations.

OUTCOME

- Based on the observations, the need of specialised training was assessed;
- Competency mapping of occupations at the ETPs and CETPs was done based on existing personnel, job proficiency and skills involved in wastewater treatment.;
- A skill gap assessment was done for the job levels and types;
- Desirable qualification criteria was recommended for various job levels in wastewater treatment sector;
- Future manpower requirement at various levels in the area of wastewater management was assessed.

6.8.11 Evaluation and Impact Assessment of Seekho Aur Kamao Scheme of Ministry of Minority Affairs

INTERVENTION

The *Seekho Aur Kamao* (Learn and Earn) scheme

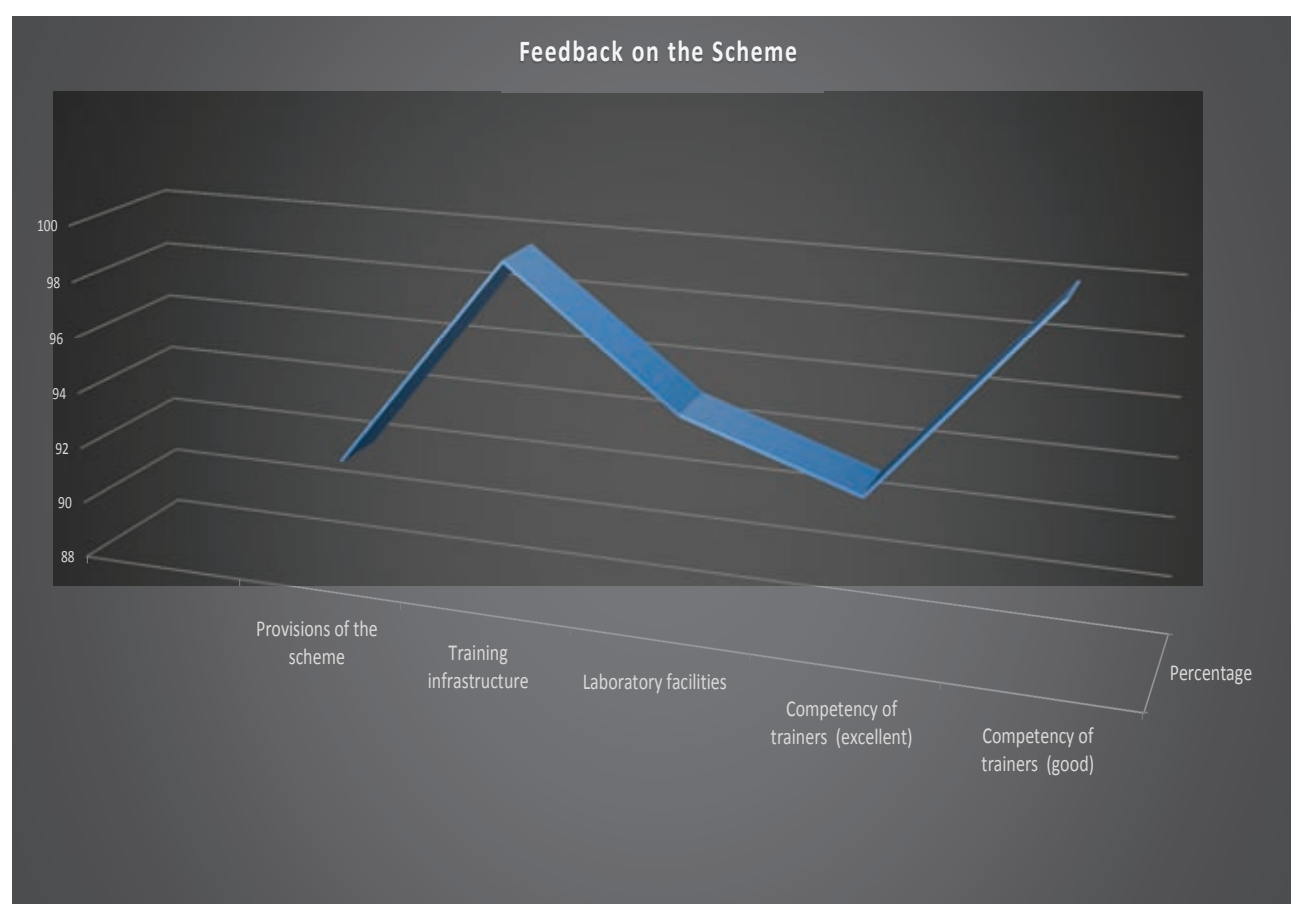
is aimed at upgrading skills of minority youth in various modern/traditional skills depending upon their qualification, present economic trends and market potential, which can earn them suitable employment or make them suitably skilled to opt for self-employment. This scheme has been in operation since 2013-14.

- NPC consultants visited either project implementing agencies (PIAs) or at least one training centre of each of 37 PIAs;
- They interacted with 300 trainees against the proposed 240 trainees;
- The data/details provided through questionnaires were compiled and analysed;

- Based on the data/information and feedback gathered from various respondent groups, evaluation and impact assessment of the *Seekho aur Kamao* scheme was made.

OUTCOME

It is evident from the evaluation and impact assessment that the scheme has been well accepted by the targeted beneficiaries and it has been able to generate gainful employment, besides improving the economic condition of minority communities. It also meets the skill upgradation requirement of minority youths in modern and traditional trades, besides empowering them to face market challenges and avail employment opportunities.



6.8.12 Developing Strategic Clean Energy Action Plan for Jharkhand and Manipur under UNDP assignment

INTERVENTION

- UNDP, in partnership with the Ministry of Environment, Forest and Climate Change
- (MoEFCC) and with support from Global Environment Facility (GEF), is implementing a project on 'Market Transformation and Removal of Barriers for Effective Implementation of the State Level Climate Change Action Plans (SAPCC)';
- The objective of the UNDP-GEF project

is to accelerate implementation of climate change mitigation actions, maximise the benefits through inter-state cooperation and demonstrate institutional mechanisms for inter-state networking and cross-learning, including information sharing and technology dissemination;

- Finally, the project wanted to assess progress on the SAPCCs in Jharkhand and Manipur;
- NPC was asked to develop a Strategic Clean Energy Action Plan for Jharkhand and Manipur for implementing a range of programmes on clean energy during FY 2017–2022.

OUTCOME

1. NPC proposed an action plan that covered a range of energy conservation and renewable energy programmes relevant for the states;
2. The action plan detailed the significance of these programmes, implementation procedures, along with targets and impacts expected;
3. The plan also suggested measures for overcoming challenges and laid out timelines for smooth implementation.

6.8.13 Energy Audit and Preparation of IGEA report for Public Water Works and Sewerage Systems in different cities under the Atal Mission for Rejuvenation and Urban Transformation (AMRUT)

INTERVENTION

- AMRUT was launched in June 2015 to provide basic services like water supply, sewerage and public transport and build amenities in cities which will improve the quality of life for all. Energy audit for improving energy use is one of the mandates;
- To facilitate market transformation and replicate Municipal Energy Efficiency

Programme on a large scale in India, the Ministry of Urban Development (MoUD), signed an MoU with Energy Efficiency Services Limited (EESL). EESL is in the process of implementing energy-efficient pumps for 500 cities under AMRUT scheme;

- NPC was appointed by EESL to carry out an energy audit and prepare Investment Grade Energy Audit (IGEA) report for Public Water Works and Sewerage Systems of Akbarpur (Uttar Pradesh), Deesa (Gujarat), Nagda (Madhya Pradesh), Gangapur City (Rajasthan), Barnala (Punjab) and Surendranagar (Gujarat).

OUTCOME

NPC submitted IGEA report for approximately 150 pumps in these cities. It saw a potential of 20-30 per cent energy savings in pumping stations by replacing the inefficient pumps with energy-efficient ones;

Reforms under the AMRUT and this initiative would help the cities significantly. An estimated 4,800 million units of electricity is wasted every year due to inefficient water pumps. That explains why expenditure incurred for supplying water is between 40 and 60 per cent of total energy costs;

Interventions on making the process energy-efficient can reduce this cost by 20 to 40 per cent, depending on the type and age of pump sets being used for bulk water supply;

By becoming energy-efficient, urban local bodies can reap annual benefit of up to Rs. 3,200 crore, besides saving 3,300 MW of power.

6.8.14 Evaluation of Emirates Energy Awards for Dubai Supreme Council of Energy (DSCE)

INTERVENTION

- DSCE initiated an awards distribution scheme to recognise innovative and cost-effective measures adopted by various organisations, departments, academic institutions and research bodies in the Middle East and North Africa Region (MENA) region towards improving demand efficiency, energy conservation and energy management. This would, in turn, help in reducing carbon footprint and ensuring sustainable development;
- NPC analysed the applications received for the award under various categories for their completeness, evaluated them based on a predefined criteria, ranked them and recommended to the Executive Committee for consideration.

6.8.15 Energy and Water Audit for an oil & gas exploration and production company in Gujarat

INTERVENTION

- NPC conducted energy and water audit of three facilities of the oil company to provide complete energy and water profile and action plan for energy conservation with cost benefit analysis and industry benchmarking;
- Mapping and quantification of energy generation, consumption and distribution process through various systems was done at all the facilities.

RECOMMENDATIONS

- Various energy conservations options were suggested to reduce energy consumption to about 12 per cent of the overall energy consumption in all the three facilities.

6.8.16 Mandatory Energy Audit for the entire complex of a fertiliser plant in Uttar Pradesh

INTERVENTION

- NPC conducted a detailed energy audit and presented a plan on energy savings opportunities, besides submitting an action plan to implement the same;
- Major activities carried out under the study was mapping and quantification of energy generation, consumption and distribution process through various systems at all the facilities.

OUTCOME

- Mandatory energy audit report was prepared and various energy conservation options to achieve the target provided under PAT schemes were suggested.

6.8.17 Capacity Building of boiler operators, supervisors, engineers and Boiler Directorate of cials for Central Boilers Board, DIPP, Government of India



INTERVENTION

- NPC conducted four one-day regional workshops and a two-day national workshop on 'Efficient Operation and Maintenance of Boilers'. Specific papers on technological developments towards efficient operation and maintenance of boilers were presented;
- Deliberations took place on challenges faced

by the stakeholders and manufacturers so that those issues draw attention of concerned policy making bodies and regulatory authorities.

OUTCOME

- About 200 operators and engineers were trained. The participants deliberated on new technologies and best practices for efficient operation of boilers. The programmes helped industries identify potential areas of energy loss and improvement opportunities for reducing operating cost;
- The workshops also helped them in getting information regarding challenges in adopting these technologies and solutions.

6.8.18 Cluster-level study for preparation of Sector Specific Cluster Profiling Reports (SSCPR) for seven MSME sectors

INTERVENTION

- NPC conducted this cluster-level study under the project 'Financing Energy Efficiency at MSMEs';
- NPC identified energy-intensive clusters for all the seven sectors from secondary sources as well as by visiting the clusters, meeting association members and obtaining operating data of five representative units in each cluster;
- The information collected includes name of the cluster, type of the cluster, number of MSME units, products of the cluster, industry association, technology/ equipment used, energy sources, and willingness of the units to implement EE activities.

OUTCOME

- A cluster profile report comprising seven clusters—Pharmaceuticals & Chemicals, Textile, Paper & Paper Products, Ceramics & Glass, Food Processing & Ice Making, Agriculture Machinery, and Consumer Appliances—was prepared and submitted according to their priority levels from the

highest to the lowest. The priorities are fixed based on the factors such as GHG emission reduction potential, number of MSME units in the cluster, energy efficiency investment potential, and energy savings potential.

6.8.19 Third-party independent verification of annual energy savings achieved through various schemes of BEE from 2007-2017

INTERVENTION

- NPC conducted a third-party verification based on secondary data. The project was aimed at reviewing different schemes of BEE with respect to their objectives, participation of stakeholders and outcome;
- Its objective was also to verify energy savings in terms of electricity (million units), avoidance of peak generation capacity (MW) and equivalent fuel consumption (MTOE) by energy-saving methodology.
- NPC performed third-party verification of annual documents pertaining to different schemes and reviewed them to calculate energy savings under different programmes;
- Methodologies adopted by BEE for calculating energy savings under different programmes were reviewed and appropriate changes were made wherever necessary.

OUTCOME

- Actual energy savings achieved through various schemes was reviewed and verified to assess their impact.

6.8.20 Study tour of Afghanistan Delegates to India for capacity building

INTERVENTION

- A delegation from Afghanistan comprising officials and decision makers at national and provincial levels, and people from academia and private sector visited India as a part of a human capacity development project;

- NPC was involved in executing technical components of the said project.

OUTCOME

- During the project, India's experiences and approaches towards various sustainable energy aspects and technologies (planning, installation, maintenance, economics, policy, financing, project development, resource assessment) were shared with the participants and training was imparted to them.
- Challenges faced by Afghanistan's energy sector were highlighted and possible solutions were discussed with Indian experts.
- Knowledge on good practices to support implementation of sustainable energy investments and programmes were shared.
- About 35 Afghan delegates attended and were benefitted by this programme.

6.9 Regional Directorate, Gandhinagar

6.9.1 Capacity Building of School Students of Daman & Diu and Dadra & Nagar Haveli (DD & DNH) on Pollution Prevention and latest Environment Management Practices

INTERVENTION

- NPC conducted four Capacity Building programmes for the school students of Daman & Diu (DD) and Dadra and Nagar Haveli (DNH) on the need for Pollution Prevention and latest Environment Management Practices at Daman and Silvassa, respectively;
- NPC developed the course module and programme of activities;
- NPC prepared a guideline document on Pollution Prevention and latest Environment Management Practices for dissemination among school children;
- The training incorporated lectures, presentations, videos, group activities and quizzes.

- Guideline document, along with videos, case studies and stickers were provided to students as part of their training kits.

OUTCOME

- Total 379 students and teachers from about 40 schools in DD and DNH were trained on environment pollution and pollution prevention techniques for waste minimisation to enhance monetary savings and improve environmental performance;
- The programmes received appreciation and positive feedback from the participants.

6.9.2 Development of Demonstration Companies on latest eco-friendly technologies for e-Waste Management and Solar Energy Utilisation in India

INTERVENTION

- NPC assisted, facilitated, coordinated and accompanied the Taiwanese delegation during their official visit to India towards arranging meeting with potential market leaders for establishment of demonstration companies;
- Meetings were arranged for Taiwanese officials with the Gujarat Pollution Control Board (GPCB) and related stakeholders;
- Stripping and recovery of precious metals from e-Wastes was undertaken on pilot scale in a reputed company/lab based in Ahmedabad using portable e-waste demonstration machine;
- Solar panel was installed at NPC's Chennai building and demonstration was given;
- NPC prepared report on the above-mentioned field visits and outcome of the lab demonstration using portable e-Waste demo machine;
- A propagation stall was designed by NPC for demonstrating eco-friendly technologies at WASTECH International Event on 3Rs—Reduce, Recycle, Reuse and Recover—in Gandhinagar organised by the Gujarat government, GPCB and CII from December 2-4, 2016.

OUTCOME

- More than 2,000 participants and related stakeholders visited the NPC WASTECH stall and they were sensitised about the eco-friendly technologies;
- The technologies were demonstrated and disseminated.

6.9.3 Performance Evaluation of Air Pollution Control Devices at a leading tyre manufacturing company

INTERVENTION

NPC undertook a field study for performance evaluation of various air pollution control devices installed in the company;

Emission Monitoring and field observations was undertaken by NPC for the Performance Evaluation of the Electrostatic Precipitator attached to the Boiler and the Pulsejet Bagfilter attached to the Vibrating Screen of Coal Crusher house;

OUTCOME

- The evaluation has helped the company identify its actual emission status/characteristic, which shall help them to maintain and/or improve the Ambient Air Quality in the surrounding habitation to desired level.

6.9.4 Study on Soil Testing Infrastructure for faster delivery of Soil Health Card in India

INTERVENTION

- NPC was entrusted with the project by the Department of Agriculture and Farmers' Welfare, Government of India.
- NPC carried out a questionnaire-based survey in four districts: Ahmedabad, Surat, Mehsana and Morbi.
- The study surveyed 16 soil testing laboratories and 160 farmers in the state and provided suggestions for faster delivery of Soil Health Card and betterment of the Soil Health Card

scheme in Gujarat.

OUTCOME

- Faster delivery/reach of Soil Health Card will help farmers know soil characteristics as well as fertiliser usage depending on the soil type;
- Farmers can improve their agricultural productivity by increasing crop OUTCOME at reduced costs through optimum fertiliser/manure consumption.

6.9.5 Conduct of Capacity Building Program Urban Local Bodies and Stakeholders on New Waste Management Rules 2016 at Ahmedabad & Vadodara Gujarat

INTERVENTION

- Capacity Building Program on New Waste Management Rules 2016 was conducted at Vadodara & Ahmedabad in association with Vadodara Municipal Corporation (VMC) and Ahmedabad Municipal Corporation (AMC) with support from CPCB;
- The main objective of this program was to sensitize and create awareness of new Waste Management Rules 2016 amongst Urban Local Bodies (ULB's), bulk/specific waste generators like Industry, Malls, Hospitals, Hotels, Institutions, Commercial Establishments, Waste Recyclers and related Stakeholders;
- Participants were sensitized by eminent subject experts on Solid Waste Management Rules 2016, Hazardous Waste Management Rules 2016, Biomedical Waste Management Rules 2016, Plastic Waste Management Rules 2016, E-Waste Management Rules 2016 and Construction and Demolition Waste Management Rules 2016.

OUTCOME

- These programs were attended by 236 stakeholders;

6.9.6 Conduct of Energy Auditors Meet in Gujarat for Gujarat Energy Development Agency, Government of

Gujarat.

INTERVENTION

- Four state-level meetings for Energy Managers and Energy Auditors were conducted in the state as a capacity building measure. The meets were organized at Ahmedabad Vadodara, Surat and Rajkot
- The main objective of these programs was to sensitize and create awareness on latest developments in the energy management sector in the industries and academia.

OUTCOME

- Around 300 participants have participated in the 4 meets in the state of Gujarat.
- The program helped participants to identify the areas of improvement for energy conservation in their respective industries by learning from eminent faculties and industry representatives.

6.10 Regional Directorate, Guwahati

6.10.1 Investment Appraisal of self-financed industrial units in the North-East as per a Central Sector Scheme for Industrial Development

The Government of India had introduced various components under a Central Sector Scheme in the NE region to facilitate industrial growth and attract industrial investment. As per the scheme, the self-financed industrial units are required to furnish an appraisal report from an independent organisation.

INTERVENTION

- NPC prepared investment appraisal reports for numerous self-financed units in the North East. Some of them are large conglomerates dealing in FMCG, electronics and other products.

OUTCOME

- The report submitted by NPC is used as a

reference document by district industries departments during field verification and assessment of quantum of benefits;

- Due to the efforts made by NPC, many pending claims of self-financed units were processed.

6.10.2 Monitoring projects under a Central Sector Scheme for infrastructure development in Tripura and Mizoram

INTERVENTION

- NPC monitored execution of various projects under the scheme;
- Field monitoring reports as per schedule of project were prepared after site visits, inspections and discussions with stakeholders;
- These reports were submitted to the team at NPC HQ for compilation and submission to the concerned ministry.

OUTCOME

- Infrastructural development in the states at specified approved locations are underway, which may catalyse economic growth.

6.10.3 Customised residential training programmes for employees of a Central PSU

INTERVENTION

- NPC organised customised training programmes for the employees working at various levels.
- Topics such as leadership, motivation, interpersonal skills, communication skills, time management, negotiation skills, and personal financial management were covered during the programmes;
- The trainings were conducted for a number of batches in different locations throughout the country.



Investment Appraisal of self-financed industrial units in the North-East as per a Central Scheme for Industrial Development (some site photographs taken during field inspections)

OUTCOME

- Total 152 participants from this Central PSU were provided training.

6.10.4 Awareness programme on Lean Six Sigma for Armed Forces Officers/Staff in Assam

INTERVENTION

- NPC organised a one-day awareness programme on Lean Six Sigma for 25 Armed

Forces Officers/Staff. The objective was to create awareness regarding the concept of Lean Management and Six Sigma and introduce various concepts under Lean Six Sigma.

OUTCOME

- The awareness programme helped participants get an understanding of Lean Six Sigma.



6.11 Regional Directorate, Hyderabad



NPC signed MoU with Government of Andhra Pradesh

6.11.1 Energy Audit of six large integrated cement plants and associated power plants of a global cement manufacturer



INTERVENTION

- NPC carried out mandatory energy audit for six very large integrated cement plants spread across the country and the associated power plants during 2017-18.
- The objective was to ascertain performance of various process equipment / utility systems and identify opportunities for energy conservation and to meet the mandatory compliance as per the Energy Conservation Act 2001.
- The audit team focused on various process systems like preheater, kiln, cooler, raw mill,

coal mill, cement mills, ball mill, roller press, vertical roller mills, TPP and utilities.

OUTCOME

- In Cement Plant 1, located in Gujarat, the energy audit study identified 32 measures, including short-term, mid-term and long-term investment proposals, which will yield thermal savings of 32.87kcal/kg clinker (2 Lines)—equivalent to 11,887 tonnes of fuel per year and electrical savings of 16.0 million units per annum. Overall, the energy audit identified annual savings worth Rs. 12 crore;

- In Cement Plant 2, located in Gujarat, the energy audit study identified 33 proposals, including short-term, mid-term and long-term investment proposals, in the cement plant and the thermal power plant, which will ensure fuel savings of 11,425 tonnes per year and electrical savings of 31 million units;
- In Cement Plant 3, located in Rajasthan, NPC made about 33 recommendations that would lead to pet coke savings of 91,840 tonnes per year and electrical savings of 28 million units. Overall, this would lead to savings of Rs 57 crore;
- In Cement Plant 4, located in Chhattisgarh, the energy audit study identified 40 measures, including short-term, mid-term and long-term investment proposals, which will yield thermal savings of 20kcal/kg clinker (2 Lines)—equivalent to 7,191 tonnes of fuel per year and electrical savings of 16.2 million units per annum. Overall, this energy audit identified savings worth Rs. 648 lakh every year. Some immediate actions were taken based on NPC's recommendations.
- In Cement Plant 5, located in Chhattisgarh, NPC identified 25 recommendations, including short-term, mid-term and long-term investment proposals, which will yield thermal savings of 42kcal/kg clinker—equivalent to 13,983 tonnes of fuel per year and electrical savings of 42.5 million units per annum. Overall, the energy audit identified annual savings worth about Rs. 16 crore;
- In Cement Plant 6, located in Chhattisgarh, the energy audit study identified 37 proposals that would lead to pet coke savings of 16,818 tonnes per year and electrical savings of 25 million units. Overall, NPC identified savings worth Rs. 18.6 crore.

6.11.2 Performance Management System (PMS) for non-teaching staff of one of the premier technical and science institutes in India

INTERVENTION

- The Hyderabad campus of the institute is

fully residential, housing over 3,200 students, around 170 faculty members and 160 technical and support staff;

- NPC created a PMS for its non-teaching staff to promote and improve employee effectiveness.

OUTCOME

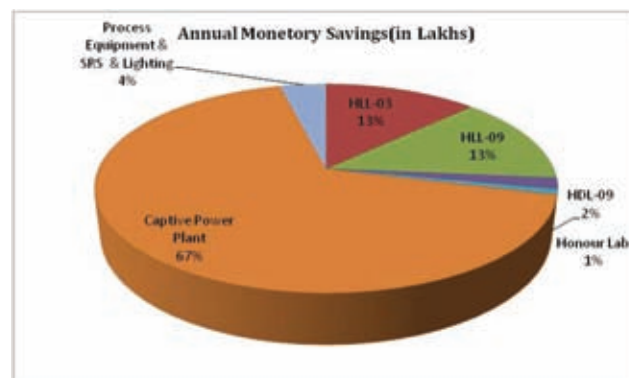
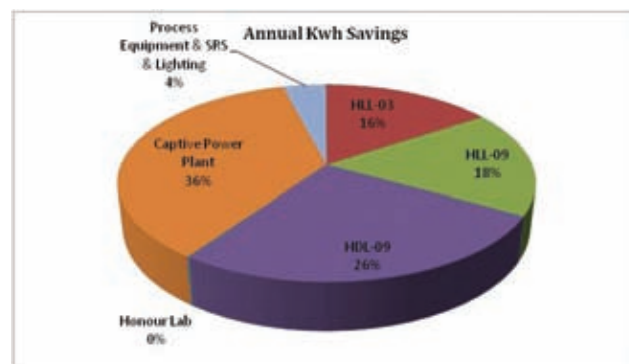
- It is a continuous process wherein the head of the departments work together to plan, monitor and review an employee's work objectives and his or her overall contribution to the organisation. PMS facilitates effective performance monitoring.

6.11.3 Energy Audit of a global manufacturer of anti-retroviral drugs in Nakkapalli, Visakhapatnam

INTERVENTION

- NPC conducted a detailed energy audit of this global pharmaceutical company to evaluate performance of various process equipment/systems and find out opportunities for energy conservation.

OUTCOME



- After carrying out this audit, NPC made 50

recommendations that will yield coal savings of 661,081 tonnes per year and electrical savings of 25.93 million units. Overall, this energy audit identified savings of Rs. 21.37 crore.

6.11.4 Energy Audit of National Mineral Development Corporation's (NMDC) corporate office buildings, Hyderabad

NMDC, which is under the Ministry of Steel, has been involved in exploration of wide range of minerals since its inception in 1958.

INTERVENTION

- NPC conducted a detailed energy audit of NMDC corporate office buildings at Masab Tank and R&D centre at Habsiguda to assess performance of various utility systems and find out opportunities for energy conservation.

OUTCOME

- Based on the audit, NPC proposed 20 ways by which NMDC can ensure monetary savings of Rs 30 lakh with an investment of Rs 10 lakh.

6.11.5 Manpower Productivity Improvement Study at a premier technical institute, Hyderabad

INTERVENTION

- The institute approached NPC to carry out manpower productivity improvement study for its non-teaching staff;
- The details of non-teaching staff activities were collected through direct observation, perusal of records and discussions. Work load of each job position under the scope of the study was assessed by using standard work measurement techniques such as time study, and analytical estimation, as applicable.

RECOMMENDATIONS

- NPC suggested manpower requirement of non-teaching staff for the existing

workload. Additionally, several productivity improvement suggestions were also proposed.

6.11.6 Value Stream Mapping at an Indian multinational non-alcoholic beverages company, Hyderabad

Value stream mapping is a lean management tool that offers a holistic view of how work flows (product and service) through the entire value stream.

The focus area of this project was to ensure continuous production flow to satisfy customer demand by minimising production lead time (waiting time, idle time).

INTERVENTION

- NPC conducted the study in collaboration with consultants from several Regional Directorates.

OUTCOME

- Draft report was submitted, wherein NPC identified non-value adding activities to establish a strategic direction for making improvement. To identify such activities, NPC traced the product /service from customer requirement (order) to delivery.

6.11.7 Productivity Improvement & Production Norms Study at a multinational company manufacturing auto and precision engineering components, Hyderabad

INTERVENTION

- NPC collected the details of manufacturing activities through direct observation, perusal of records and discussions;
- The standard time of identified operations was arrived at by using standard work measurement techniques such as time study, production study and analytical estimation;
- Production norms proposed for each of the operations for the product models under the scope of the study.

RECOMMENDATIONS

- NPC made proposals for improvement in manpower productivity by an average of 15 per cent.

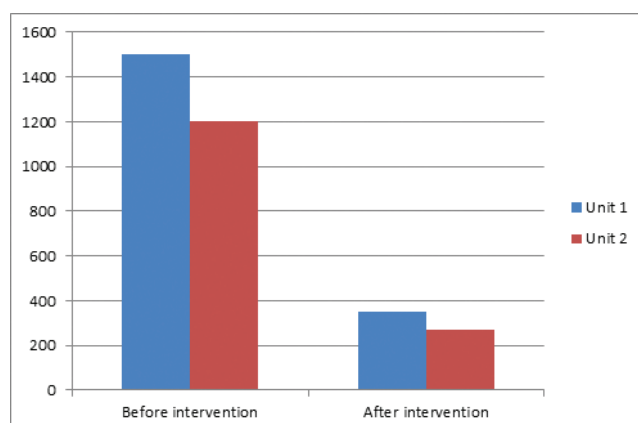
6.11.8 Cleaner Production Study on behalf of Andhra Pradesh Pollution Control Board

INTERVENTION

- NPC conducted a study on Cleaner Production Initiative in two stone crushing industries located in Kovvur and Devarapalli mandals of West Godavari District;
- The objective was to implement dust control measures/standards in stone crushing units notified by the Ministry of Environment, Forest and Climate Change as per the Environment (Protection) Rules, 1986;
- This is the first-of-its kind model study for two sample units;
- Under the cleaner production initiative, NPC studied wet dust suppression and dry dust extraction systems it had designed and implemented in 2017;
- NPC conducted a demonstration programme for 50 units in stone crusher sector for dissemination.

OUTCOME

- After successful implementation of cleaner production schemes in two model units, some schemes will be implemented in the surrounding areas of more than 100 stone crushing units to control dust emissions.



6.11.9 Conversion of water connection from domestic to commercial category for Hyderabad Metropolitan Water Supply & Sewerage Board (HMWS&SB)

INTERVENTION

- In a first-of-its-kind model study undertaken by NPC Hyderabad, 41,857 households were surveyed.

OUTCOME

- The outcome of this study will help HMWS & SB identify domestic connections that can be converted to commercial category, which will boost its revenue.

6.11.10 Training Programme for one of the subsidiaries of Coal India Limited in Bilaspur

INTERVENTION

- The HR division of NPC conducted consecutive training programmes for one of the most prestigious coal producing companies.

OUTCOME

- Around 400 executives were trained in competency mapping, developing critical mass of leaders, managerial skills, role profiling and other HR-related skills etc leading to improved manpower productivity.

6.11.11 Capacity Building Programme at Sof ware Technology Parks, Hyderabad

INTERVENTION

- NPC conducted capacity building training programmes for support staff, junior-, middle- and senior-level executives on topics, including communication and presentation skills, project management, disaster management, noting and drafting, record keeping, event management and financial accounting.

OUTCOME

- Owing to the overwhelming success of the training programmes conducted for three consecutive years, the management extended its MoU with NPC for one more year on specific topics like communication skills, noting and drafting, file management and record keeping for the support staff.

6.11.12 Workshop on Energy Conservation in Hyderabad

INTERVENTION

- NPC conducted a workshop on energy conservation on December 15, 2017 at Jawaharlal Nehru Technological University (JNTU), Hyderabad with the sponsorship of Telangana State Renewable Energy Development Corporation Ltd.;
- It was conducted as part of Energy Conservation Week observed by the Government of India from December 14-20, 2017.

OUTCOME

- The workshop, especially through keynote speeches by eminent personalities to the M. Tech students, spread awareness about energy conservation measures that could be adopted in various sectors;
- More than 50 scholars had attended the workshop along with faculties from JNTU.

6.11.13 Training programme on energy conservation at one of the largest edible oil manufacturers, Krishnapatnam, Hyderabad

INTERVENTION

- NPC conducted a series of hands-on training programmes on electrical systems and energy conservation in compressors.

OUTCOME

- Executives were sensitised about the need for energy conservation;

- Employees were also trained to efficiently operate equipment / utilities.

6.11.14 Preparatory Training Course for aspiring energy managers and energy auditors in Hyderabad

INTERVENTION

- NPC organised three five-day non-residential programmes at Hyderabad for aspiring participants of national-level certification examination for energy auditors and energy managers by Bureau of Energy Efficiency (BEE), Ministry of Power;
- The training programme included theory sessions, case studies and sessions on problem solving;
- Participants from various organisations such as NTPC, BHEL, GAIL attended the programmes.

OUTCOME

- Various concepts of energy management would help in capacity building of participants;
- Participants were taught how to identify energy conservation potentials for various electrical and thermal equipment.

6.11.15 In-house 5S Implementation Programme for executives in Hyderabad

INTERVENTION

- In-house training programme on 5S implementation was conducted from June 1-3, 2017;
- Case studies were included in the training programme, which also hosted theory sessions.

OUTCOME

- The executives were enlightened about 5S implementation. NPC also conducted a practical session to offer them first-hand knowledge.

6.11.16 Capacity Building Programme on Waste Management Rules, 2016 in Raipur

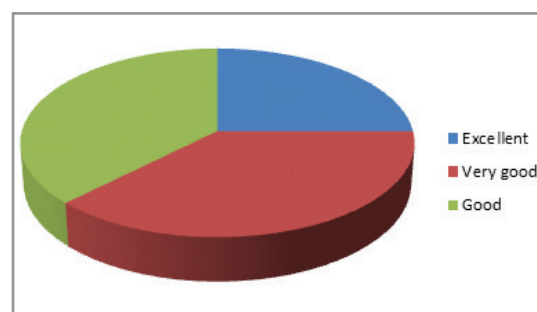


INTERVENTION

- The capacity building programme was conducted on October 28, 2017, in association with Raipur Municipal Corporation;
- Training was conducted on Solid Waste Management Rules, 2016, Hazardous Waste Management, Biomedical Waste Management, Plastic Waste Management, e-Waste Management, and Construction and Demolition Waste Management.

OUTCOME

- About 200 stakeholders, including municipal commissioner, mayor, state government officials, industry representatives and citizens attended the programme;



- The participants were familiarised with the provisions of solid waste management rules, 2016

6.12 Regional Directorate, Jaipur

6.12.1 Training Programme on finance for non-finance executives at the Department of Public Enterprises under the Research Development and Consultancy (RDC) scheme from October 9-13, 2017 in Gangtok, Sikkim

The objective of the training programme was to make participants aware of the concept of cost and finance management so that they understand the behaviour of cost and their applications for decision making and attaining cost competitiveness.

INTERVENTION

- The programme covered a wide gamut of subjects, including overview of financial management, finance functions and financial objectives, cost and management accounting, budget and budgetary control, and accounting for performance evaluation;
- The programme also included modules on general financial rules, audit process, and leading and managing change in a competitive environment;
- Total 49 executives from central and state-level public sector enterprises attended the programme;
- Different case studies were assigned to the participants during training sessions. All the participants made a presentation on their

learnings and prepared proposed action plan for implementing learnings in their organisation;

- The presentations made by the participants included challenges throttling cost competitiveness, an overview of the organisations and best practices they follow.

OUTCOME

- The delegates were given objective type questions before the commencement of the programme and the response was recorded. The same questions were again given to them on the concluding day to find out learnings of the delegates and measure the programme's outcome;
- Almost all the participants improved their score on the concluding day. The participants appreciated the programme and found it very useful.

6.12.2 Training Programme were conducted in association with Quality Council of India (QCI), New Delhi during February 19-23, 2018 at Jaipur, & March 19-23, 2018 at Jaipur.

INTERVENTION

This holistic **5 – Day training program** was designed to train the participants on ZED Maturity Model, Assessment process, Consulting Process and the Training skills using case studies and interactive group exercises.

Two hours of online written examination was conducted at the end of the 5th day. On successful completion of the evaluation and examination, participants were qualified as a ZED Consultant under ZED Certification Scheme.

The written test, a key part of the process to qualify an individual as an Assessor, had three parts:

Part 1 – Discipline relates to the learning aspects of the disciplines of quality/design/environment/IPR/Production management etc. as a subject which the participants already know and have been retrained on in the context of ZED model.

Part 2 – Scheme related to the ZED model and the scheme guidelines notified by Ministry of MSME.

Part 3 – Soft skills and processes related soft skills one will require as an Assessor under the ZED scheme and the understanding of the process of these as per ZED.

The distribution of marks is as follows (Total marks 60)

Part 1 – Discipline	30 questions of 1 mark each
Part 2 – Scheme	10 questions of 1 mark each
Part 3- Soft Skills and process	20 questions of 1 mark each

The time allowed is 2 hours.

OUTCOME

- Total 20 participants from different organisation attended each programme. GPS App based attendance system was followed in this training programme. Photos of the sessions were uploaded on app in real time to monitor the smooth conduct of the programme. Faculty were called from ZED Master Training domain expert, empanelled with NPC-QCI.
- All the participants qualified as Certified ZED Consultants under ZED Scheme for carrying out the handholding in MSMEs under ZED scheme after successful completion of exam.



6.13 Regional Directorate, Kanpur

8.13.1 Impact Assessment of the Aids and Appliances provided to the Persons with Disabilities (PwDs) under the Assistance to Disabled Persons (ADIP), Assistance to Disabled Persons - Surv Shiksha Abhiyan (ADIP-SSA) Scheme of GoI & CSR Initiative of a PSU

INTERVENTION

- Two All-India surveys were co-ordinated from RD, Kanpur and overall 11,001 ADIP and 345 CSR beneficiaries were sample surveyed across the country;
- Response was taken on 34 points (for beneficiaries under ADIP Scheme) and 38 points (for beneficiaries under CSR initiative) respectively, on a structured questionnaire. The organisation undertook this kind of third-party survey for the first time.

OUTCOME

- The overall findings were elaborated district-wise, state-wise and zone-wise;
- The findings of the survey informed its management of the perceptions of the beneficiaries of the aids and appliances provided and the financial, social and

emotional impact;

- More than 80 per cent of the sampled beneficiaries were satisfied with the aids and appliances provided;
- Suggestions for improvements in delivery process, products and requisite trainings in the usage of aids and appliances have been made to the management

6.13.2 Water Audit and study of material balance and effluent treatment plant in a Meat Export House

INTERVENTION

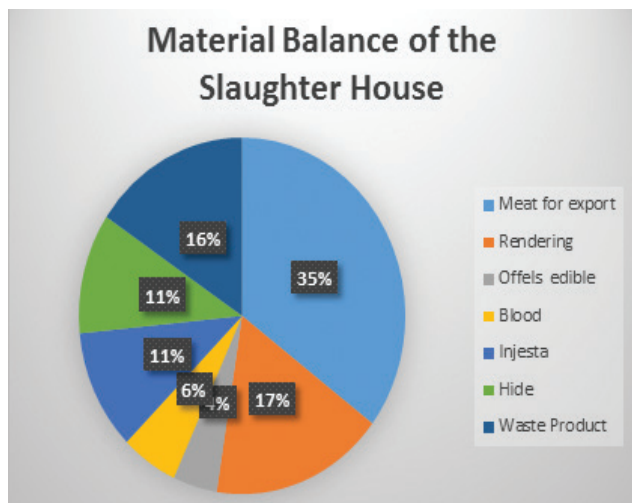
- NPC did water audit and material balance calculations keeping in view the concept of zero-liquid discharge.

OUTCOME

- The unit has been recycling about 191.17 kilolitre of treated water/day—44.45 per cent of the total treated water. This can be increased to 54.45 per cent by implementing NPC's suggestions. It will also reduce groundwater consumption.
- Improved performance of the effluent treatment plant expected in terms of outlet parameters:
 - a) BOD less than 30 mg/l;

- b) COD less than 250;
- c) TSS less than 50mg/l;
- d) pH in the range of 6 to 9.

- Material Balance of Slaughter House Production



6.13.3 Monitoring & Adequacy Assessment of primary effluent treatment plant of 14 tannery units (2 open and 12 closed units)

INTERVENTION

- Physical adequacy assessment of tannery units, which got closure notice, was done. NPC studied each primary effluent treatment plant (PETP) component like collection tank, equalisation tank, reaction tank, settling tank and sludge dry beds physically and gave various suggestions to meet the prescribed discharge standards.

OUTCOME

- Improved performance of PETP expected in terms of outlet parameters:
 - a) Chromium less than 2mg/l;
 - b) TSS less than 600mg/l;
 - c) pH in the range of 6 to 9.

6.13.4 Energy Audit in a Defence Manufacturing Unit

INTERVENTION

- NPC did energy audit of around 100

manufacturing equipment and machines, including lighting load, pumping systems, furnaces, compressors, CNC machines and blowers;

- Suggestions were also made for water conservation.

OUTCOME

- If Energy Audit recommendations are implemented properly, the manufacturing unit can achieve energy savings of approximately 12 per cent over a period of time.

6.13.5 Training Programme on Performance Management and Measurement and 3Ps - PQH Model (Residential) in Goa from December 18-22, 2017

INTERVENTION

- Fifteen participants were trained on key aspects of performance management and measurement, 3Ps, and PQH Model.

OUTCOME

- The programme was highly appreciated by the participants .
- Overall Evaluation of the Programme by the Participants:
 - Very Good = 85.7 %
 - Good = 14.3 %
 - Average = 0 %
 - Poor = 0 %

6.13.6 Capacity Building Workshop for Urban Local Bodies and stakeholders on 6 Waste Management Rules 2016 for Kanpur Nagar Nigam in Kanpur on August 9, 2017

INTERVENTION

- The chief guest of the workshop was **Shri Suresh Khanna** (Minister of Urban Development, Legislative affairs, Sahari Samagra Vikas, Govt of Uttar Pradesh) and

the Guest of Honour was **Shri Satyadev Dev Pachauri** (Minister of Khadi, Rural Industry, Resham, Textile Industry, MSME and Export Encouragement, Govt. of Uttar Pradesh). **Deputy Chief Minister of Uttar Pradesh, Shri Keshav Prasad Maurya** (Minister of Public Works Department, Food Processing, Entertainment Tax, Public Enterprises) also graced the occasion.

- Shri Mahesh Trivedi (MLA), Smt. Neelima Katiyar (MLA), Shri Arun Pathak (MLC), Shri Surendra Singh-IAS, District Magistrate Kanpur Nagar, Shri Avinash Chandra-IPS, ADG, Kanpur, Smt. Sonia Singh-IPS, DIG, Kanpur, Shri B. Vinod Babu, Scientist-E, CPCB and senior officers of the Municipal Corporation were also present.

OUTCOME

- The programme was highly appreciated by the 270 participants;
- Recently, the Uttar Pradesh government banned use of polythene bags and items of common use made of plastics;
- Door-to-door collection of garbage has started in Kanpur.

6.14 Regional Directorate, Kolkata

6.14.1 Consultancy service to a power distribution company in West Bengal for formation of Quality Circle by facilitating and spreading Total Quality Management (TQM) activities at 120 Customer Care Centres (CCCs) as well as formation of Helpdesk at 500 CCCs

INTERVENTION

- The project under TQM covered
 - (i) Root cause analysis of Aggregate Technical & Commercial (AT&C) loss;
 - (ii) A survey for better customer satisfaction;
 - (iii) Thorough study of non-compliance with safety guidelines.

- NPC successfully facilitated and spread TQM activities among aforesaid 120 CCCs to form Quality Circles;
- The project, which covered five zones—Midnapore, Kolkata, Burdwan, Berhampore and Siliguri—was completed in five phases;
- NPC prepared Help Desk Operating Manual for CCCs, which included standard operating procedures of CCCs. Training was provided to the help desk operator for each CCC. The manual was published by NPC for wider circulation among the CCCs.
- SOPs for the zonal offices, division offices, regional offices, sub-stations and training centres were also prepared.

OUTCOME

- Quality Circles formed at 120 CCCs will minimise AT&C loss, improve customer satisfaction, and ensure compliance with safety norms;
- Standard Operating Procedures designed by NPC will improve service quality of all the customer care centres, zonal offices, division offices, regional offices, sub-stations and training centres of the aforesaid organisation;
- Formation of Help Desk as single window system will improve customer service quality and office activities at CCC level will be accomplished with ease.

6.14.2 Manpower Rationalisation Study of a leading manufacturer of sponge iron, ferroalloys, TMT rebars and iron and copper alloys in West Bengal

INTERVENTION

- NPC's Industrial Engineering group adopted a creative and systematic methodology for the manpower rationalisation study. It analysed management vision, undertook field visits on the company's plant, held extensive meetings with sectional heads and analysed technical, support and performance data;

- The study was carried out for various levels of production.

OUTCOME

- NPC proposed manpower for various work centres in all the departments of their two units in West Bengal based on the observations and data collected;
- The study identified scope for improving manpower productivity by 15 per cent.

6.14.3 Five-day Preparatory Training Course (PTC) for Energy Auditors and Energy Managers of a premier Public Sector Undertaking (PSU) organisation

INTERVENTION

- NPC conducted a five-day intensive course to provide sufficient knowledge to the participants and empower them enough to review, prepare and improve their capabilities for the 18th National Certification Examination for Energy Managers and Energy Auditors;
- This PTC course was attended by 25 participants of the aforesaid organisation.

OUTCOME

- The programme gave participants the exposure to the best energy conservation practices and

energy reduction achievements adopted and implemented by their peers/counterparts so that they could learn, adopt and implement them in their respective process operations;

- It could further help them achieve the desired energy efficiency targets;
- It also helped the participants in developing and upgrading skills and knowledge about improving energy efficiency.

6.14.4 Database Development and Evaluation of Six sub-schemes under Indian Leather Development Programme (ILDP) during 12th Five-Year Plan (2012-2017)

INTERVENTION

- NPC undertook an independent study and conducted a field survey for developing a database of leather and non-leather products manufacturing units in West Bengal;
- It also evaluated six sub-schemes of ILDP implemented by the Department of Industrial Policy & Promotion.

OUTCOME

- The study resulted in enhancement of export competitiveness in the state.

6.14.5 Workshop on Greenhouse Gas (GHG) Reduction in Iron & Steel Sector, Kolkata



INTERVENTION

- NPC conducted a one-day dissemination workshop on March 22, 2017 as a part of the project 'Preparation of Good Practices Manual on Reduction in Greenhouse Gas Emission';
- During the workshop, which was attended by around 40 participants, the trends of GHG emission reduction in the iron and steel industry and use of renewable energy for reduced emissions were discussed.

OUTCOME

- The programme helped the participants develop and upgrade skills and knowledge about improving energy efficiency in iron and steel sector.

6.14.6 Comprehensive fire and electrical safety audit at a premier PSU Bank's Global Marketing Unit, Kolkata

INTERVENTION

- NPC carried out an extensive external fire and electrical safety audit across six floors of the building as per the Indian Electricity Rules 1956, National Building Code of India 2005 and other applicable rules and regulations;
- Safety audit was conducted to ascertain the functioning of safety systems and practices. NPC visited the site to get first-hand information on unsafe acts, unsafe conditions and the safety-deficient areas in the whole premises;
- Detailed discussions were held with the head of the departments and other officers of every concerned department;
- Various documents, systems and procedures were studied and scrutinised;
- The electrical safety audit was carried out to know the status of present electrical insulation condition of all equipment and cables by using the latest Thermo vision instrument.

OUTCOME

- The Safety Audit Report, which was prepared

based on site observations as well as data collected from the concerned departments within the bank, will enforce best maintenance practices for equipment/systems, ensuring safety of systems and humans.

6.15 Regional Directorate, Mumbai

6.15.1 Manpower Rationalization and Production Norms Study at a Bus Body Fabrication Unit

INTERVENTION

- To determine the appropriate crew size required at various workstations in the identified production departments for the fabrication of Standard MTS Bus model.
- To determine Production Norm for each of the workstations in the identified production departments.
- To suggest suitable productivity improvement measures in the work practices based on shop floor observations.

OUTCOME

- The manpower utilization in the various workstations varied from 40% to 60%. Manpower rationalization in the Workstations for each of the departments has been proposed to improve their utilization by more than 25%.
- Further, about 25% to 40% increase in Production Norms has also been suggested across the workstations.

6.15.2 Production Norms Study for a large Earth Moving Equipment Manufacturer

INTERVENTION

- To determine the production norms for a runner variant at 4 identified work stations.

OUTCOME

- Considering all the factors affecting production and after identifying & eliminating all non-

value adding activities, over 50% improvement in Production Norms has been suggested among the 4 identified workstations.

6.15.3 Job Evaluation Study at a leading Transformer Manufacturing Unit

INTERVENTION

- To identify all existing jobs and prepare Job Description for all the workmen deployed in various sections / departments at the Transformer Works.
- To evaluate all the existing jobs and grade them into desired number of levels using

Point Rating System.

OUTCOME

- More than 20 distinct jobs have been identified covering all the workmen deployed in various departments of the Transformer Works. Their respective job descriptions have also been prepared.
- All the jobs have been evaluated through point rating system, taking into consideration various factors such as Effort, Experience & Knowledge, Hazard, Responsibility etc, based on which they have been graded into three categories.

6.16 Regional Directorate, Patna



6.16.1 Formulation of Schedule of Rates for one of the subsidiaries of a premier coal mining company in India

The coal mining company has been engaging civilian contractors for coal and OB (Overburden) excavation, loading, transportation and allied jobs. For such contracts, a schedule of rate (SOR) is formulated based on various parameters involved in coal mining operations.

INTERVENTION

- NPC was asked to formulate SOR for hiring

heavy earth moving machines in open-cast or open-pit mining projects;

- Based on the field studies at different worksites and discussions at various levels, NPC determined per tonne cost of extraction and transportation of coal, and overburden in different circumstances.

OUTCOME

- The finalised SOR will be utilised while outsourcing the job of mining and transportation of coal.

6.16.2 Integrated Development Project for selected districts of Bihar

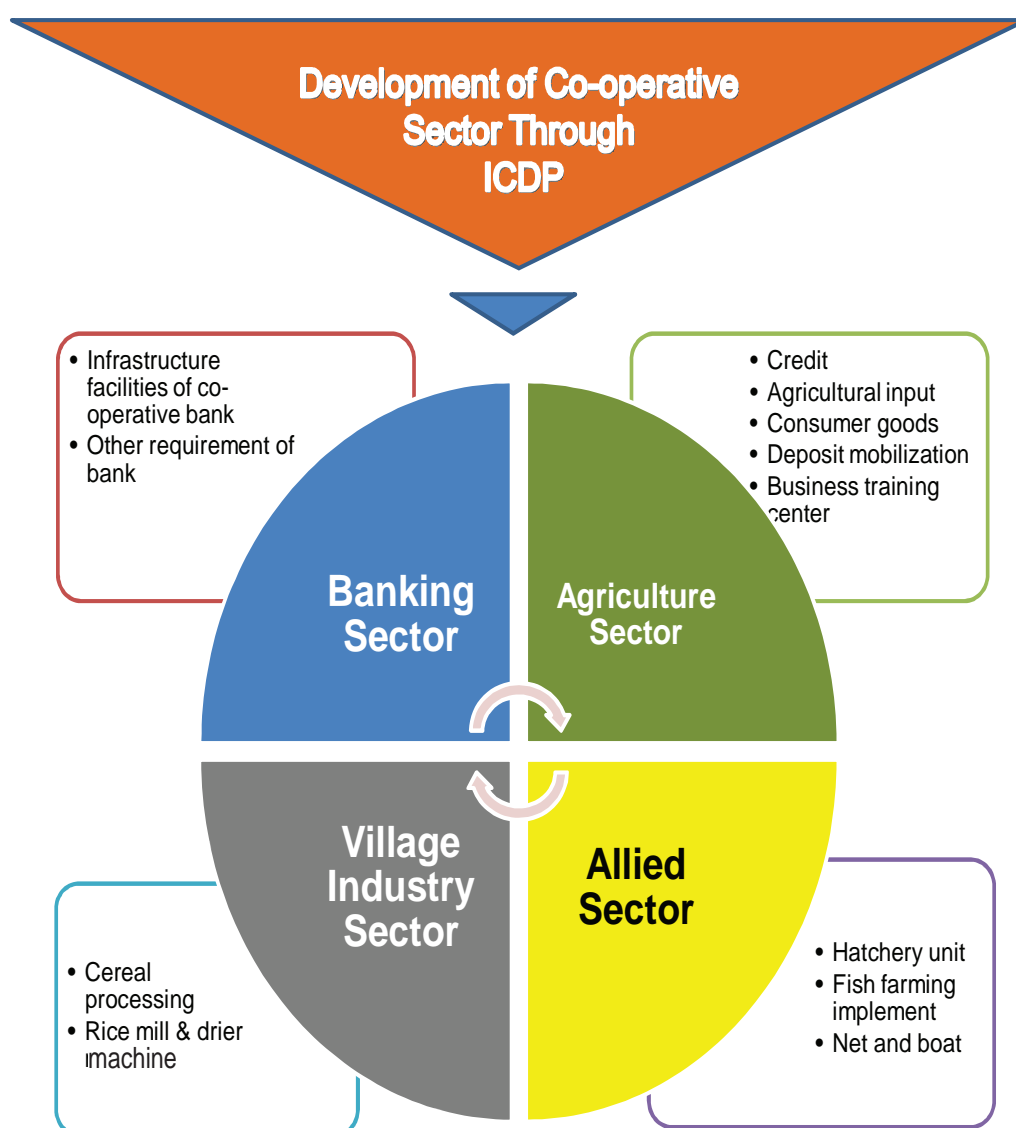
Cooperative

OUTCOME

INTERVENTION

- NPC prepared Integrated Cooperative Development Project reports for Muzaffarpur, Nawada and Banka districts;
- The reports were prepared for district-level co-operative development projects in various sectors like agriculture, allied, village industries and development of co-operative banking sector.

- These project reports will help promote overall development of selected districts through cooperative efforts in agriculture and allied sectors;
- These integrated reports will help strengthen cooperative network, promote business development plans by forging effective linkage with credit and other institutional structures in the area;
- The reports will also help in development of Primary Agriculture Credit Societies as multipurpose entities and modernisation of management of cooperatives.



7. List of Training Programmes

S. No.	Title of the Training Programme	Venue	From	To	No. of Participants	Client Name, if Applicable
AGRI-BUSINESS GROUP						
1	e-Learning Course on Food Safety Risk Management in Food Supply Chains	New Delhi	20-Nov-17	23-Nov-17		Asian Productivity Organisation, Tokyo, Japan
2	Course on ICT-based Services for Agriculture Extension	New Delhi	27-Nov-17	30-Nov-17		Asian Productivity Organisation, Tokyo, Japan
ECONOMIC SERVICES GROUP						
3	Modern Office Management & Strategic Financial Planning	Gangtok, Sikkim	01-May-17	05-May-17	13	Self Run
4	Effective Office Administration & Financial Management	Leh, Ladakh	24-Jun-17	28-Jun-17	26	Self Run
5	Effective Office Administration & Financial Management	Goa	09-Oct-17	13-Oct-17	16	Self Run
6	Project Management, Monitoring and Evaluation	Port Blair, A&N Islands	20-Nov-17	24-Nov-17	22	Self Run
HUMAN RESOURCE MANAGEMENT GROUP						
7	Three one-day Training and Development Sessions for ICAI employees	Delhi	21-Apr-17	28-Apr-17	137	Institute of Chartered Account of India
8	5-day Training Programme on Project Management for J&K Institute of Management, Public Administration and Rural Development, Srinagar, Kashmir	Srinagar	29-May-17	03-Jun-17	20	Institute of Management, Public Administration & Rural Development
9	Programme on Safeguards to be taken in Tendering, Procurement and Contracting	Delhi	17-Nov-17	-	44	Department of Public Enterprises
10	Stress Management and Conflict Resolution Strategies	Kathmandu	22-May-17	26-May-17	12	Self Run

11	Developing Leadership Skills for Effective Teamwork	Munnar	21-Jun-17	25-Jun-17	5	Self Run
12	Managerial Leadership & Team Building	Udaipur	10-Aug-17	14-Aug-17	11	Self Run
13	Stress Management Resilience Traininga	Kanyakumari	28-Sep-17	02-Oct-17	8	Self Run
14	Stress Coping and Time Managementa	Puri	20-Nov-17	24-Nov-17	20	Self Run
15	Effective Communication and Presentation Skills	Goa	06-Dec-17	10-Dec-17	9	Self Run
INFORMATION TECHNOLOGY GROUP						
16	Role of ICT in driving Government Performance	Leh	15-May-17	29-May-17	12	Self Run
17	Good Governance & Transparency through RTI	Kodaikanal	05-Jun-17	09-Jun-17	12	Self Run
18	Digital Transformation through e-Governance	Munnar	10-Jul-17	14-Jul-17	13	Self Run
19	Leadership Challenges in Digital Economy	Ooty	01-Aug-17	05-Aug-17	12	Self Run
20	Enhancing Organisational Productivity through ICT	Goa	11-Sep-17	15-Sep-17	24	Self Run
21	Innovation & Creativity through Knowledge Management	Kanyakumari	09-Oct-17	13-Oct-17	19	Self Run
22	Good Governance & Transparency through RTI	Goa	13-Nov-17	17-Nov-17	28	Self Run
23	Digital Transformation through e-Governance	Goa	18-Dec-17	22-Dec-17	32	Self Run
INTERNATIONAL SERVICES GROUP						
24	e-Learning Course on Customer Satisfaction Management for the Service Sector	New Delhi	21-Aug-17	24-Aug-17	21	Asian Productivity Organisation, Tokyo, Japan
25	e-Learning Course on ICT-based Services for Agricultural Extension	New Delhi	27-Nov-17	30-Nov-17	17	Asian Productivity Organisation, Tokyo, Japan
26	e-Learning Course on Food Safety Risk Management in Food Supply Chains	New Delhi	20-Nov-17	23-Nov-17	22	Asian Productivity Organisation, Tokyo, Japan

27	e-Learning Course on Green Productivity	New Delhi	13-Nov-17	16-Nov-17	21	Asian Productivity Organisation, Tokyo, Japan
28	e-Learning Course on Management Innovation in SMEs	New Delhi	11-Dec-17	14-Dec-17	13	Asian Productivity Organisation, Tokyo, Japan

List of Training Programmes by Regional Directorates

S. No.	Title of the Training Programme	Venue	From	To	No. of Participants	Client Name, If Applicable
REGIONAL DIRECTORATE, BENGALURU						
1	Preparatory Training Course for Prospective Energy Manager / Energy Auditor	Bengaluru	04-Sep-17	08-Sep-17	13	Self-Run
2	In-company Training Programme on Energy Audit & Conservation at Bhabha Atomic Research Centre	Mysore	09-Oct-17	11-Oct-17	28	Bhabha Atomic Research Centre
3	One-day Workshop on Efficient Operation and Maintenance of Boilers	Bengaluru	15-Dec-18	-	56	Central Boiler Board
4	One-day programme on Capacity Building on Time and Motion Study at a leading manufacturing company	Dodda-ballapura	11-Jan-18	-	13	Yg Cutting Tools Corporation Pvt Ltd
5	One-day Capacity Building Workshop on Waste Management Rules, 2016 at Bruhat Bengaluru Mahanagara Palike	Bengaluru	03-Nov-17	-	186	Bruhat Bengaluru Mahanagara Palike
REGIONAL DIRECTORATE, BHUBANESWAR						
6	Workshop on Human Resource Management	PURI, Odisha	12-Jan-17	14-Jan-17	12	Naval Dockyard , Mumbai
7	Changeover from ISO 9001:2008 to ISO9001:2015	Bangalore	19-Jan-17	20-Jan-17	In company	Grindwell Norton Ltd.
8	Behaviour Based Safety training	Gangtok	20-Mar-17	24-Mar-17	5	Nhpc,Nmdc, Ntpc, Naval Training

9	Change over programme from ISO 9001:2008 to ISO 9001:2015	AIP, Chennai	19-Apr-7	21-Apr-17	6	Drdo,Erde, Kesoram Cement
10	Organisation Behaviour & Soft Skills	BBSR	25-Apr-17	26-Apr-17	In company	Cifa
11	Internal IMS auditing	AIP, Chennai	26/-Apr-17	28-Apr-17	10	Pfc,Erde,Vssc, Ordnance Factory
12	Awareness programme on ISO50001:2011 energy management system(EnMS)	AIP, Chennai	11-May-17	12-May-17	13	Dvc, J.k.cement, Csir,Hal,Nib, Chennai Petroleum,
13	Tools & Techniques for Quality Environment and Safety Professionals	AIP, Chennai	08-Jun-17	9-Jun-17	20	Ramco Industries,Drdo, Erde, Jswsteel, Kiocl,Nih,Iocl, Rain Cii Carbon
14	Incident Accident Investigations	AIP, Chennai	13-Jun17	14-Jun-17	11	Nmdc, Jsw Cements, Nlc,Drukair Air Port
15	PAT regional workshop for designated consumers of eastern region	Bhubaneswar	13-Jul-17	14-Jul-17	50	Sda,Jspl, Optcl,Bhushan Steel
16	TQM & SIX Sigma	AIP, Chennai	19-Jun-17	21-Jun-17	10	Mcf,8 Brd, Sri Kalahasthi Pipes, Sona College, Tnphc
17	Lean Management Through Success Stories	AIP, Chennai	16-Aug-17	18-Aug-17	7	Hpcl, Murmugao Port, Ramco Cements
18	Emotional intelligence	Manali, HP	21-Aug-17	25-Aug-17	7	Sccl Mines, Drdo Delhi
19	PTC programme	BBSR	28-Aug-17	01-Aug-17	19	Sda, Bhushan Steel
20	Organisation productivity through synchronous management	AIP, Chennai	19-Sep-17	21-Sep-17	7	O/E/N India Limited, Mcf Bangalore, India Cements
21	Improving Effectiveness of Personnel assistant/Private secretaries	Puri, Odisha	9-Oct-17	13-Oct-17	29	Nin,Nf ,Icar,Ugc, Thdc, Arci,Meda, Mowr,Sfio, Ade(Drdo)
22	Training programme on migration to ISO 9001:2015	AVADI, Chennai	23-Nov-17	24-Nov-17	In company	8Brd,Air Force
23	Programme on EPF & MP ACT 1952	AIP, Chennai & Hyderabad	24-Jan-18	25-Jan-18	14	Redington(I) Ltd., Brakes India,Csi Kalyani Hospital

24	Challenges safety professionals	PURI, Odisha	05-Feb-18	09-Feb-18	14	Iaf, Southern Naval Commanad, Naval Dockyard, Eastern Coalfields Limited, Isro,Nlc
REGIONAL DIRECTORATE, CHANDIGARH						
25	Advanced Course on Right to Information Act and Modern HR Practices	Gangtok	15-May-17	19-May-17	20	Self Run
26	Effective Office Management & Administration and General Financial Rules & CCS Rules	Manali	22-May-17	26-May-17	4	Self Run
27	Modern Management Practices for improving organisational performance	Leh, J & k	05-Jun-17	09-Jun-17	8	Self Run
28	Systematic Problem Solving, Conflict Resolution & Change Management	Manali	12-Jun-17	16-Jun-17	5	Self Run
29	Effective implementation of Right to Information Act with CIC/SIC judgments and modern HR Practices	Ooty	19-Jun-17	23-Jun-17	7	Self Run
30	Improving Leadership, Managerial and Administrative Skills	Puri	21-Aug-17	25-Aug-17	7	Self Run
31	Modern Office Management and Performance Management	Dharamshala	11-Sep-17	15-Sep-17	7	Self Run
32	Advanced Course on Right to Information Act and Modern HR Practices	Gangtok	18-Sep-17	22-Sep-17	8	Self Run
33	Advanced Course on Right to Information Act and Modern Management Practices	Mount Abu	06-Nov-17	10-Nov-17	12	Self Run
34	Waste to Wealth	Goa	13-Nov-17	17-Nov-17	8	Self Run
35	Modern Office Management and Performance Management	Manali	18-Dec-17	22-Dec-17	11	Self Run
36	Capacity Building Programme on Waste management rules	Chandigarh	12-Jul-17	-	300	Central Pollution Control Board, New Delhi

37	Capacity Building Programme on Waste management rules	Karnal	07-Sep-17	-	60	Central Pollution Control Board, New Delhi
38	Certificate Programme on Productivity Practitioners (Basic)	Jalandhar	18-Sep-17	22-Sep-17	45	Dav, Institute Of Engineering & Technology, Jalandhar
39	Efficient Operation and maintenance of Boilers	Ludhiana	15-Dec-17	-	30	Central Boiler Board,DIPP, Govt. Of India
40	Waste minimisation and Waste management rules	Ponta Saheb	16-Dec-17	-	45	Central Pollution Control Board(Cpcb), New Delhi
41	ZED Consultant Programme	Ludhiana	18-Dec-17	22-Dec-17	24	Quality Council Of India, New Delhi
REGIONAL DIRECTORATE, DELHI						
42	Green Productivity and Waste Minimisation for Himachal Pradesh State Pollution Control Board	Baddi, HP	24-Apr-17	26-Apr-17	50	Himachal Pradesh State Pollution Control Board
43	Resource Conservation & Environment Protection	Delhi	26-Apr-17	-	74	Rashtrapati Bhawan
44	Resource Conservation & Environment Protection, Rashtrapati Bhawan	Delhi	27-Apr-17	-	65	Rashtrapati Bhawan
45	Training of Trainers Programme on six Waste Rules, 2016 at Delhi	Delhi	29-Jun-17	30-Jun-17	80	Central Pollution Control Board
46	Capacity Building Programme on six Waste Rules, 2016 at Chandigarh	Chandigarh	12-Jul-17	-	250	Central Pollution Control Board, New Delhi
47	Capacity Building Programme on six Waste Rules, 2016 at Jaipur	Jaipur	25-Jul-17	-	200	Central Pollution Control Board, New Delhi
48	Capacity Building Programme on six Waste Rules, 2016 at Kanpur	Kanpur	09-Aug-17	-	266	Central Pollution Control Board, New Delhi

49	Capacity Building Programme on six Waste Rules, 2016 at Ranchi	Ranchi	24-Aug-17	-	180	Central Pollution Control Board, New Delhi
50	Capacity Building Programme on six Waste Rules, 2016 at Indore	Indore	31-Aug-17	-	300	Central Pollution Control Board, New Delhi
51	Capacity Building Programme on six Waste Rules, 2016 at Raipur	Raipur	28-Oct-17	-	100	Central Pollution Control Board, New Delhi
52	Capacity Building Programme on six Waste Rules, 2016 at Bangalore	Bangalore	03-Nov-17	-	186	Central Pollution Control Board, New Delhi
53	Capacity Building Programme on six Waste Rules, 2016 at Jabalpur	Jabalpur	22-Dec-17	-	145	Central Pollution Control Board, New Delhi
54	Preparatory Training Course for prospective candidates of National Certification Examination for NTPC Engineers	PMI Noida	30-Aug-17	01-Sep-17	45	Power Management Institute, Noida
55	Strengthening Institutional Capacity to support Energy Efficiency in Afghanistan	Delhi	03-Oct-17	17-Oct-17	35	Deutsche Gesellschaft Fur Internationale Zusammenar Be It (Giz)
56	Leadership & Teamwork for Performance Excellence	Manali	15-May-17	19-May-17	10	Self Run
57	Work life Balance & Stress Management	Kodaikanal	12-Jun-17	16-Jun-17	11	Self Run
58	Negotiation & Conflict Resolution Strategies	Leh	10-July-17	14-Jul-17	13	Self Run
59	Effective Office Management & RTI	Ooty	28-Aug-17	01-Sept-17	26	Self Run
60	Effective Office Management and RTI	Goa	18-Sept-17	22-Sept-17	21	Self Run
61	Work life Balance & Stress Management	Kanyakumari	20-Nov-17	24-Nov-17	21	Self Run
62	Leadership & Teamwork for Performance Excellence	Goa	11-Dec-17	15-Dec-17	23	Self Run
63	Innovation & Change Management for Organisational Excellence	Port Blair	29-Jan-18	02-Feb-18	21	Self Run

64	Work-life Balance & Stress Management	Port Blair	05-Feb-18	09-Feb-18	24	Self Run
65	Negotiation & Conflict Resolution Strategies	Goa	12-Mar-18	16-Mar-18	22	Self Run
REGIONAL DIRECTORATE, GANDHINAGAR						
66	Advanced Course on Secretarial Effectiveness for ES, PPS, PA, PS & Office Staff	Mount Abu	17-Apr-17	21-Apr-17	15	Self Run
67	Waste to wealth	Udaipur	17-Jul-17	21-Jul-17	7	Self Run
68	Right to Information Act and Effective Office Management	Goa	21-Aug-17	25-Aug-17	9	Self Run
69	Enhancing Performance Excellence with a focus on time, stress and teamwork management	Diu-Somnath	18-Sep-17	22-Sep-17	10	Self Run
70	Advanced Course on Modern Office and Productivity Management	Mount Abu	23-Oct-17	27-Oct-17	10	Self Run
71	Positive Attitude and Ownership training at Narmada Cleantech Ltd	Ankleshwar	01-Jul-17	-	30	Self Run
72	Effective Office Management with a focus on office productivity tools	Goa	18-Dec-17	22-Dec-17	9	Self Run
REGIONAL DIRECTORATE, GUWAHATI						
73	Customised Residential Training programme for the executive members of trade unions of OIL, Duliajan	Kochi	09-July-17	14-July-17	20	Oil India Limited
74	Customised Residential Training programme for the employees of OIL, Duliajan	Shillong	24-July-17	29-July-17	22	Oil India Limited
75	Awareness programme on Lean Six Sigma for Armed Forces Officers/Staff in Assam	Guwahati	23-Aug-17	23-Aug-17	20	1 Advance Base Workshop, Indian Army
76	Customised Residential Training programme for the employees of OIL, Duliajan	Digha	27-Aug-17	01-Sep-17	21	Oil India Limited

77	Customised Residential Training programme for the employees of OIL, Duliajan	Puri	10-Sep-17	15-Sep-17	26	Oil India Limited
78	Customised Residential Training programme for the employees of OIL, Duliajan	Jaipur	22-Oct-17	27-Oct-17	20	Oil India Limited
79	Customised Residential Training programme for the employees of OIL, Duliajan	Udaipur	19-Nov-17	24-Nov-17	27	Oil India Limited
80	Customised Residential Training programme for the employees of OIL, Duliajan	Kolkata	10-Dec-17	15-Sep-17	22	Oil India Limited
REGIONAL DIRECTORATE, HYDERABAD						
81	Preparatory Training Course for Energy Auditors and Energy Managers	Hyderabad	01-Aug-17	05-Aug-17	15	Self-Run
82	Preparatory Training Course for Energy Auditors and Energy Managers	Hyderabad	27-Aug-17	31-Aug-17	15	Self-Run
83	Preparatory Training Course for Energy Auditors and Energy Managers	Hyderabad	11-Sep-17	15-Sep-17	15	Self-Run
84	Energy Audit & Conservation on Compressed Air Systems for Gemini Edible Oils	Krishna-patnam	May-17	May-17	30	Gemini Edible Oils And Fats, Krishnapatnam
85	Training Programme on Electrical System for Gemini Edible Oils	Krishna-patnam	Nov-17	Nov-17	30	Gemini Edible Oils And Fats, Krishnapatnam
86	Workshop on Energy Conservation	Hyderabad	15-Dec	15-Dec	50	Tsredco Hyderabad
87	Mandatory Training Programmes for Senior-Level Executives at Software Technology Parks of India, Hyderabad	New Delhi	26-Apr-17	27-Apr-17	25	Software Technology Parks Of India, Hyderabad
88	Mandatory Training Programmes for Support Staff at Software Technology Parks of India, Hyderabad	Hyderabad	16-Aug-17	17-Aug-17	25	Software Technology Parks Of India, Hyderabad

89	Mandatory Training Programmes for Support Staff at Software Technology Parks of India, Hyderabad	Hyderabad	21-Aug-17	22-Aug-17	25	Software Technology Parks Of India, Hyderabad
90	Mandatory Training Programmes for Support Staff at Software Technology Parks of India, Hyderabad	Chennai	04-Sep-17	05-Sep-17	25	Software Technology Parks Of India, Hyderabad
91	Mandatory Training Programmes for Support Staff at Software Technology Parks of India, Hyderabad	Bengaluru	25-Sep-17	26-Sep-17	25	Software Technology Parks Of India, Hyderabad
92	Mandatory Training Programmes for Support Staff at Software Technology Parks of India, Hyderabad	Bengaluru	04-Oct-17	05-Oct-17	25	Software Technology Parks Of India, Hyderabad
93	Mandatory Training Programmes for Support Staff at Software Technology Parks of India, Hyderabad	Bhubaneswar	23-Oct-17	24-Oct-17	25	Software Technology Parks Of India, Hyderabad
94	Mandatory Training Programmes for Support Staff at Software Technology Parks of India, Hyderabad	Noida	08-Nov-17	09-Nov-17	25	Software Technology Parks Of India, Hyderabad
95	Mandatory Training Programmes for Support Staff at Software Technology Parks of India, Hyderabad	Noida	13-Nov-17	14-Nov-17	25	Software Technology Parks Of India, Hyderabad
96	Training Programme on 5S for the Executives of MIDHANI	Hyderabad	01-Jun-17	03-Jun-17	25	Midhani, Hyderabad
97	Capacity Building Programme on Waste Management Rules 2016	Raipur	28-Oct-18	28-Oct-18	200	Raipur Municipal Corporation
REGIONAL DIRECTORATE, KANPUR						
98	Stress Management through Productivity Quality Humanity model	Mount Abu	17-Apr-17	21-Apr-17	5	Self Run

99	Modern Office Management for Personal Assistant, Private Secretary and Office Staff	Goa	20-Nov-17	24-Nov-17	11	Self Run
100	Performance Management & Measurement and 3Ps (Productivity & Performance through People) with the help of Productivity Quality Humanity Model	Goa	18-Dec-17	22-Dec-17	15	Self Run
REGIONAL DIRECTORATE, KOLKATA						
101	Five-day Training Programme on Energy Efficiency Improvement	Chandrapura	17-Apr-17	21-Apr-17	25	Damodar Valley Corporation, Chandrapura
REGIONAL DIRECTORATE, MUMBAI						
102	In-company Programme on Energy Audit for Electrical Officers of Railways	Nasik	21-Aug-17	01-Sep-17		Indian Railways Institute For Electrical Engineering
103	In-company Programme on Energy Efficiency	Mumbai	03-Aug-17	04-Aug-17		Godrej & Boyce Mfg. Co. Ltd.
104	Self-run programme on Energy Managers/ Auditors (PTC)	Mumbai	07-Aug-17	11-Aug-17		Self Run

8. CONSULTANCY PROJECTS

List of Consultancy Projects

S.No.	Title of the Consultancy Projects	Client's Name
ECONOMICS SERVICES GROUP		
1	Independent Study for Examining the Effect of FDI in Brownf eld and Greenf eld Pharmaceutical Industry	Department of Industrial Policy & Promotion, Ministry of Commerce & Industry, Government of India, New Delhi
2	Feedback on Ease of Doing Business (Delhi & Mumbai)	Department of Industrial Policy & Promotion, Ministry of Commerce & Industry, Government of India, New Delhi
3	Evidence-based Research Study on Medical Devices Manufacturing in India for Effective Public Policy Interventions in Health Sector	Department of Industrial Policy & Promotion, Ministry of Commerce & Industry, Government of India, New Delhi
4	Evaluation Study of Centrally Sponsored Scheme for development of Infrastructure Facilities for the Subordinate Judiciary during the 12 th Five Year Plan	Department of Justice, Ministry of Law and Justice, Government of India
5	Evaluation of Central Sector Scheme ' Swadesh Darshan ' (Integrated Development of Theme-based Tourist Circuits during the 12 th Five Year Plan)	Ministry of Tourism, Government of India
6	Evaluation of Scheme for Action Research and Studies on Judicial Reforms during the 12 th Five Year Plan	Department of Justice, Ministry of Law and Justice, Government of India
7	Evaluation of Central Sector Scheme ' Prasad ' (Pilgrimage Rejuvenation and Spiritual Augmentation Drive) during the 12 th Five Year Plan	Ministry of Tourism, Government of India
8	Evaluation of Scheme of Assistance to IHMs/FCIs/IITTM/ICI/NCHMCT during the 12 th Five Year Plan	Ministry of Tourism, Government of India
9	Evaluation of the ongoing Overseas Promotion and Market Development (OPMD) Scheme of Ministry of Tourism during the 12 th Five Year Plan	Ministry of Tourism, Government of India
10	Impact study of the activities of National Cooperative Union of India during the 12 th Five Year Plan	National Cooperative Union of India (NCUI), New Delhi
11	Evaluation of Access to Justice in Northeastern States and J&K under the 12 th Five Year Plan	Department of Justice, Ministry of Law and Justice, Government of India

12	Evaluation of Central Sector Scheme for Assistance to Central Agencies for Tourism Infrastructure Development during the 12 th Five Year Plan	Ministry of Tourism, Government of India
13	Evaluation of Centrally Sponsored Scheme for Financial Assistance for establishing and operationalising Gram Nyayalayas	Department of Justice, Ministry of Law and Justice, Government of India
14	Evaluation of the Four Central Sector Schemes of Ministry of Culture being dealt in ZCC Bureau	Ministry of Culture, Government of India
15	World Competitiveness Yearbook 2017	International Institute of Management Development, Switzerland
16	Evidence-based Research Study on Medical Devices Manufacturing in India for Effective Public Policy Interventions in Health Sector	Ministry of Commerce and Industry, Govt. Of India
HUMAN RESOURCE MANAGEMENT		
17	Productivity Analysis of News Print Handlers and Buyers of Sahibabad Unit	Bennett Coleman & Co. Ltd., Sahibabad
18	Manpower Recruitment for Department of Justice (DoJ)	Ministry of Law and Justice, GoI, New Delhi
19	Preparation of Human Resource Manual and Schedule of Power (SoP)	National High Speed Rail Corporation, New Delhi
20	Productivity Analysis of Buyers	Bennett Coleman & Co. Ltd., New Delhi

List of Consultancy Projects by Regional Directorates

S.No.	Title of the Consultancy Projects	Client's Name
REGIONAL DIRECTORATE, BENGALURU		
1	Productivity Improvement Study	Bennett Coleman & Co Ltd (Times of India Group), Bengaluru
2	Manpower Assessment Study	Bangalore Electricity Supply Company Ltd, Bengaluru
3	Production Norms and Manpower Assessment Study	Mysore Polymers and Rubber Products Ltd, Mysuru
4	Production Norms Study	Moog Controls India Pvt Ltd, Bengaluru
5	Manpower Assessment Study	Kirloskar Ferrous Industries Limited, Koppal
6	Energy Audit Study	Hindustan Aeronautics Limited, Bengaluru

7	Concurrent monitoring of coaching programmes (2016-17) run through empanelled coaching institutions / organisations / centres under Free Coaching and Allied Scheme	Ministry of Minority Affairs, New Delhi
8	Evaluation and impact assessment of 'Free coaching and allied scheme' from 2013-14 to 2015-16	Ministry of Minority Affairs, New Delhi
9	Survey of Beneficiaries of Artificial Limbs Manufacturing Corporation of India (ALIMCO) Products	MTies, Govt. Of India
REGIONAL DIRECTORATE, BHUBANESWAR		
10	Energy Audit at 03 Iron Ore Mines	Odisha Mining Corporation Ltd, Odisha
11	Implementation of Integrated Management System at 05 Mines	Odisha Mining Corporation Ltd, Odisha
12	Implementation of Social Accountability (8000) at 05 Mines	Odisha Mining Corporation Ltd, Odisha
13	Sustainability Report preparation for Odisha Mining Corporation	Odisha Mining Corporation Ltd, Odisha
14	Implementation of Integrated Management System at Bangur underground Mines	Odisha Mining Corporation Ltd, Odisha
15	Implementation of Social Accountability (8000) at Bangur underground mines	Odisha Mining Corporation Ltd, Odisha
REGIONAL DIRECTORATE, CHANDIGARH		
16	Manpower Assessment Study	Umang Dairies Ltd
17	Manpower Assessment Study	EICL, Yamuna Nagar
18	Implementation of ISO 9001:2015	Mahatma Gandhi State Institute for Public Administration , Punjab
19	Detailed Energy Audit	Verka Ludhiana Dairy
20	Detailed Energy Audit	Satluj Jal Vidyut Nigam (formerly Nathpa Jhakri Power Corporation Ltd), Jhakri
21	Preparation of Investment Grade Energy Audit Report for water works	Energy Efficiency Services Limited, Noida
22	Mandatory Energy Audit	Nabha Power Ltd, Rajpura, Punjab
REGIONAL DIRECTORATE, DELHI		
23	Emirates Energy Award for DSCE, Dubai	Dubai Supreme Council of Energy, Dubai
24	Energy Audit at Cairn - Pipeline Operations	Cairn India Limited ,Gurgaon
25	Third-party Evaluation of Energy Savings for BEE	Bureau of Energy efficiency, New Delhi

26	Energy Audit at THSTI, Faridabad	Translational Health Science & Technology Institute, Faridabad
27	Water Balance study at Badarpur Thermal Power Station	NTPC, Badarpur
28	Regional (4) and National (1) Workshops on Efficient Operation & Maintenance of Boilers	Central Boiler Board, Department of Industrial Policy & Promotion (DIPP)
29	Preparation of IGEA Report for Public Water Works & Sewerage Systems in identified cities	Energy Efficiency Services Limited, Noida
30	Independent review of energy audit of 157 sub-divisions of Jodhpur Discom	Jodhpur Vidyut Vitaran Nigam Limited
31	Strengthening Institutional Capacity to support Energy Efficiency in Afghanistan	GIZ (Gesellschaft für Internationale Zusammenarbeit), New Delhi
32	Third-party Verification for Star Rating of Office Buildings	Bureau of Energy efficiency, New Delhi
33	Techno-Economic feasibility of Waste Heat Recovery for Trigenation	Energy Efficiency Services Limited Noida
34	Evaluation of Department of Health Research (DHR) Schemes at Government Medical College, Trivandrum and Tirunelveli Medical College, Tirunelveli, Tamil Nadu.	Department of Health Research Ministry of Health & Family Welfare Government of India
35	Evaluation and Impact Assessment of 'Padho Pardesh' Scheme from 2014-15 to 2016-17	Ministry of Minority Affairs(MoMA), New Delhi
36	Evaluation and Impact Assessment of 'Nai Udaan' Scheme from financial year 2013-14 to 2016-17	Ministry of Minority Affairs(MoMA), New Delhi
37	Evaluation and Impact Assessment of Free Coaching and Allied Scheme	Ministry of Minority Affairs(MoMA), New Delhi
38	Waste Minimisation Assessment at Ishapore Ordnance Factory	Ordnance Factory Board (OFB), Kolkata
39	Hosting of 8th Meeting of Regional 3R Forum of Asia-Pacific Environment Unit of United Centre for Regional Development (UNCRD)	Ministry of Housing & Urban Affairs, New Delhi
40	Concurrent monitoring of coaching programmes (2016-17) run through empanelled coaching institutions/centres under Free Coaching and Allied Scheme	Ministry of Minority Affairs(MoMA), New Delhi
41	Training Programme on GP and WM for Pharmaceutical Industry	Himachal Pradesh State Pollution Control Board(HPSPCB)
42	Evaluation and Impact Assessment of 'Seekho aur Kamao' scheme for seven states for three years	Ministry of Minority Affairs(MoMA), New Delhi

43	Surveying HRD Programme and Assessing Feasibility of Development FDDI as Centre of Excellence	Feasibility of Development (FDDI), New Delhi
44	Evaluation of Implementation of Indian Leather Development Programme during the 12 th Five Year Plan	Department of Industrial Policy & Promotion (DIPP), Mo C & I, New Delhi
45	Waste Minimisation for Water Conservation Study	Namaste India Pvt. Ltd. , Kanpur, U.P. , India
46	Review of EMS (ISO 14001) at the President's House	Rastrapati Bhawan, New Delhi
47	Project Management Consultant for the Sub-Scheme for Mega Leather Clusters under Indian Leather Development Programme	Department of Industrial Policy & Promotion (DIPP), Mo C & I, New Delhi
48	Project Monitoring Agency for Modified Industrial Infrastructure Upgradation Scheme	Department of Industrial Policy & Promotion (DIPP), Mo C & I, New Delhi
49	Project Management Consultant for upgrading Common Effluent Treatment Plants under Indian Leather Development Programme (Phase – I)	Department of Industrial Policy & Promotion (DIPP), Mo C & I, New Delhi
50	Third-party Evaluation of Plan Scheme on 'Creation of Infrastructure for Management of Hazardous Substances'	Ministry of Environment & Forest (MoEF), New Delhi
51	Preparation of Comprehensive Industry Document and Development of Environmental Standard for Hot Mix Plants	Central Pollution Control Board (CPCB), New Delhi
52	Preparation of Comprehensive Industry Document and Development of Environmental Standard for Small Paint Industries	Central Pollution Control Board (CPCB), New Delhi
53	Conduct Departmental Test for promotion from Group B to C	North Delhi Municipal Corporation (NDMC), New Delhi
54	Training & Conduct A.A.O Grade Examination for NDMC	North Delhi Municipal Corporation (NDMC), New Delhi
55	Recruitment for Various Posts in Paradip Port Trusts	Paradeep Port Trust, Paradeep
56	Restructuring and Manpower Assessment Study	Petroleum and Explosives Safety Organisation (PESO), Ministry of Commerce and Industry, Department of Industrial Policy & Promotion, Government of India
57	Evaluation of the scheme of Market Research and Professional Services	Ministry of Tourism
58	Evaluation study of a scheme of the Indian Institute of Corporate Affairs	Ministry of Corporate Affairs

59	Evaluation of Five Schemes of the Department of Health Research	Department of Health Research Ministry of Health & Family Welfare Government of India
60	Assessment and Evaluation of Corporate Data Management Schemes of Ministry of Corporate Affairs	Ministry of Corporate Affairs
61	Manpower Requirement	Airport Authority of India
62	Productivity Improvement Study at TATA International Limited	TATA, Dewas
REGIONAL DIRECTORATE, GANDHINAGAR		
63.	Psychometric Assessment Test at Narmada Cleantech Ltd	M/s Narmada Cleantech Ltd
64.	Verification study for Manpower Optimization at Cadila Healthcare Ltd	M/s Cadila Healthcare Ltd
65.	Positive Attitude and Ownership training at Narmada Cleantech Ltd	M/s Narmada Cleantech Ltd
66.	Productivity Practitioners Course (Basic & Advanced) at Pandit Deendayal Petroleum University	M/s Pandit Deendayal Petroleum University
67.	Competency (Skills) Evaluation Study at Bharuch Enviro Infrastructure Ltd.	M/s Bharuch Enviro Infrastructure Ltd.
68.	Competency (Skills) Evaluation Study at Shroff S. R. Rotary Institute of Chemical Technology	M/s Shroff S. R. Rotary Institute of Chemical Technology
69.	Organisation Structure Development at Narmada Cleantech Ltd	M/s Narmada Cleantech Ltd
70.	Competency (Skills) Evaluation Study at Bharuch Enviro Infrastructure Ltd. (BEIL Research and Consultancy Pvt. Ltd.)	M/s Bharuch Enviro Infrastructure Ltd.
71.	Audit Inspection of Security Printers	RD, NPC, Mumbai
72.	Third Party Independent Agency for Revised Accelerated Power Development Reform Program [RAPDRP]	Power Finance Corporation, New Delhi- through NPC, HQ
REGIONAL DIRECTORATE, GUWAHATI		
73.	Assessment of the annual administrative cost payable to North Eastern Development Finance Corporation Ltd	Department of Industrial Policy and promotion, Govt. of India
74.	Implementation of ISO 9001 QMS at the office of Commissioner of Industries & Commerce, Government of Assam	Office of Commissioner of Industries and Commerce , Government of Assam

75.	Implementation of ISO 9001 QMS at the office of DC Goalpara	Office of DC Goalpara, Government of Assam
76.	Investment appraisal as per NEIIP 2007	M/s Ramji Mohan Tea Company, M/s Laojan Tea Co. (P) Ltd, M/s Modi Tea Industries, M/s Devi Industries, M/s Purbanchal Timber Industries, M/s Umadutt Industries, M/s Gitanjali Udyog, M/s Quality Pharma, M/s Jain Hometex, M/s Prabhu Agarwalla pvt Ltd., M/s B R Metallica., M/s Progressive Fertichem Ltd, M/s Kuber Polymer, M/s Tulip Tea Co. Ltd., M/s Shah Industries, M/s ITC Ltd., M/s Hotel Ravongala, M/s Maa Durga Steel, M/s RMC Readymix, M/s Anubhav Printers, M/s Kuber Tubes and Fittings Pvt. Ltd, M/s Ozone Ayurvedic - Unit II, M/s Godrej Consumer Product Pvt Ltd, M/s Jyothy Laboratories Pvt Ltd Unit IV, M/s Bajaj Corp Ltd., M/s Ozone Ayurvedics Pvt Ltd ,M/s Khongea Tea Estate, M/s Joonktolee Tea & Industry, M/s Arian Woods
77.	Impact Evaluation of Spiritual Circuits in Manipur (Under Ministry of Tourism)	Ministry of Tourism, Government of India
78.	Impact Evaluation of Free Coaching and Allied Scheme of the Ministry of Minority Affairs - Meghalaya and Assam	Ministry of Minority Affairs
79.	Mid-term Evaluation Study for Department of Health Research, Ministry of Health and Family welfare	Ministry of Health and Family Welfare, Government of India
80.	Impact Evaluation of Learn & Earn Scheme of the Ministry of Minority Affairs	Ministry of Minority Affairs
81.	Concurrent monitoring of the Free Coaching and Allied Scheme of the Ministry of Minority Affairs	Ministry of Minority Affairs
REGIONAL DIRECTORATE, HYDERABAD		
82.	Performance Management System for Non-Teaching Staff	Birla Institute of Technology and Science Pilani, Hyderabad
83.	Energy Audit Study of Cement Plant and its associated Thermal Power Plant	UTCL Gujarat Cement Works, Gujarat, UTCL Sewagram Cement Works, Gujarat, UTCL Rawan Cement Works- CG, UTCL Aditya Cement Works, Rajasthan
84.	Energy Audit Study of Cement Plant	UTCL, Andhra Pradesh Cement Works, AP
85.	Energy Audit Study of Cement Plant.	UTCL Cement Works, Rajasthan
86.	Energy Audit Study of Hetero Labs Limited, Nakkapalli Unit	Hetero Drugs Ltd, Hyderabad
87.	Energy Audit Study of National Mineral Development Corporation Buildings	National Mineral Development Corporation Ltd.

88.	Emirates Energy Awards for Dubai Supreme Council of Energy, UAE	Dubai Supreme Council of Energy, UAE
89.	Manpower Productivity Improvement Study	Birla Institute of Technology and Science Pilani, Hyderabad
90.	Value Stream Mapping and Time & Motion Study	Tata Global Beverages Ltd., Hyderabad
91.	Productivity Improvement and Production Norms Study	Usha International Ltd., Hyderabad
92.	Cleaner Production Study	Andhra Pradesh Pollution Control Board
93.	Conversion of water meters from Domestic to Commercial category	Hyderabad Metropolitan Water Supply & Sewerage Board
REGIONAL DIRECTORATE, KOLKATA		
94.	Consultancy service to a power distribution company in West Bengal for formation of Quality Circle by facilitating and spreading Total Quality Management activities at 120 Customer Care Centres (CCCs) as well as formation of Helpdesk at 500 CCCs	West Bengal State Electricity Distribution Company Ltd.
95.	Implementation of ISO 9001:2015	Hindustan Copper Limited, Kolkata; Siliguri Jalpaiguri Development Authority (SJDA); DM office, Purba Burdwan District; Office of the PWD, Government of Mizoram
96.	Manpower Rationalisation Study	M/s Shyam Sel & Power Ltd.
97.	Manpower Study	M/s Sai Surfactants Pvt. Ltd., Falta, West Bengal,
98.	Manpower Study	M/s Bhagirathi Packaging Pvt. Ltd., Paschim Medinipur
99.	Water Balance Study	NTPC-SAIL Power Corporation Ltd, Durgapur
100.	Energy Efficiency Study	Indian Oil Corporation Lube, Budge Budge Plant
101.	ISO Certification Consultancy for 19 sections of Malda Collectorate	Office of the District Magistrate Malda
102.	One-day Training Programme on Energy Conservation & Energy Efficiency	Meghalaya State Designated Agency (MSDA)
103.	Thermography study	National Thermal Power Corporation Ltd., Barh Super Thermal Power Station
104.	External Safety Audit	Durgapur Steel Thermal Power Station, Damodar Valley Corporation, Andal
105.	Electrical Safety Audit at SBI, Jeevan Sudha Bhawan, Kolkata	State Bank of India (Global Marketing Unit); State Bank of India (Global Marketing Unit)
106.	Energy Audit of Mines of OMC	Odisha Mining Corporation

107.	One-day Regional Workshop on 'Efficient operation and maintenance of boilers' in Kolkata	Central Boiler Board, New Delhi
108.	Evaluation of Scheme 'Seekho and Kamao'	Ministry of Minority Affairs, Govt. of India
109.	Waste Minimisation Assessment	Ordnance Factory Board, Ishapore
110.	Concurrent Monitoring of Coaching Centres for 2016-17 under Free Coaching and Allied Scheme	Ministry of Minority Affairs, Govt. of India
111.	Evaluation of Scheme for Free Coaching & Allied Scheme	Ministry of Minority Affairs, Govt. of India
112.	Capacity Building Programme for ULBs of CPCB under Swachh Bharat Mission	Ministry of Housing and Urban Development
REGIONAL DIRECTORATE, MUMBAI		
113.	Production Norms & Manpower Assessment Study	Amber Bush Rubber Industries Pvt.Ltd., Badalapur
114.	Manpower Assessment Study	Rashtriya Chemicals & Fertilizers Ltd.
115.	Job Evaluation Study	JCB India Ltd., Pune
116.	Job Evaluation Study	Siemens India Ltd., Thane
117.	Manpower Assessment Study	Automobile Corporation of Goa Ltd., Goa

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