सत्यमेव जयते
भारत सरकार

Azadi Ka Amrit Mahotsav

CAPACITY BUILDING COMMISSION

Innovations in Public Administration

Shri Narendra Modi
Hon'ble Prime Minister

Innovations in Public Administration

Message from Hon’ble Minister

Hon PM Narendra Modiji initiated Mission Karmyogi to enhance capabilities of civil servants to take India on path to Viksit Bharat.

I am glad that the Capacity Building Commission had undertaken a large scale search and call for innovation practices by Civil servants across the country and from every department. Based on rigorous 3 stage analysis and verification 15 innovative practices undertaken by District Administration, Railway officers, Telecommunication officials and others were identified.

This monograph on Public Administration by the Capacity Building Commission shows that most challenges can be overcome innovation. These innovations are practical and can be widely upscaled to solve many of India’s pressing developmental challenges like livelihood security, adaptation to climate change, food security and public transport. The CBC has also developed case studies for teaching in civil services based on some of these innovative practices.

I am sure that these innovations will inspire many more civil servants to overcome challenges faced by citizens through innovative public administrative measures.

Dr Jitendra Singh,
Minister of State in the Prime Minister's Office and
Ministry of Personnel, Public Grievances & Pensions

Preface

Capacity Building Commission had invited all civil servants to submit innovations in public administration undertaken by them. We had received 243 innovations from 25 states and 13 thematic areas such aa agriculture, renewable energy, Railways, livelihoods, water conservation etc.

15 innovations were selected through 3 layered process including external assessors and site visits. The innovations were primarily selected based on their potential to be replicated by other civil servants and other departments.

The innovations identified have significant potential for replication and upscaling by administrators across the nation. Many of these initiatives have potential to enhance livelihoods of citizens, conserve environment and improve ease of living.

These innovations leverage India's digital infrastructure and are easy to replicate. Capacity Building Commission has applied this initiative to develop case studies which can be used as teaching content in civil services training institutions. We would also like to thank the team that has worked on the Innovations in Public Administration and for preparation of this monograph: CBC team – Himansu Pandey, Nikhil Dhanwatey and with support from Partners – NISG, MyGOV.

We hope that this small monograph helps and inspires many more civil servants to overcome administrative challenges by innovative approaches.

Adil Zainulbhai
Dr R Balasubramaniam
Praveen Pardeshi
SP Roy

A. Introduction

"Innovation and out of the box thinking are the key to realising the dream of New India" - Prime Minister Narendra Modi, 2018

A former Prime Minister of India, in the 1980's remarked that "of every rupee we send for welfare, only 15 paise reaches the intended beneficiary". State failure in delivering welfare to needy citizens has largely been attributed to the civil services' failure to deliver results.

Challenges or failures can often be met by innovative solutions. The lament of state failure has been robustly responded to by PM Narendra Modi's innovative approach of direct transfer of benefits through Aadhar linked accounts operated by mobile phones. Now, an increasingly large share of welfare funds such as subsidies for LPG cylinders, fertilisers, PM Awas Yojana, and scholarships reach the intended beneficiary, leading to a sizable reduction in leakages (Barnwal, 2017). This transformation has been possible due to the Government's leveraging of technology, and has resulted in savings of over Rs. 2 lakh crore (The Economic Times, 2022).

The implementation of Jan Dhan-Aadhar-Mobile (JAM) Trinity is a classic example of how the civil services has supported innovation and driven the vision of the Government. This has been achieved through technological developments to implement large-scale and real-time Direct Benefit Transfers (DBTs) to millions of beneficiaries. This has helped in removing more than 9.42 crore fake/duplicate/ineligible/ non-existent beneficiaries, thereby reducing leakages of over 15% in rice, 48% in sugar and 54% in wheat distributed through public distribution system (PDS); saving over Rs 2 lakh crore of taxpayers' money (Government of India, 2022).

The fight against COVID-19 saw technology-driven innovations, such as the CoWIN portal, which enabled India to drive the largest vaccination program in the world, vaccinating over 1 billion citizens. India's COVID-19 vaccination campaign is a testimony to the many innovations silently undertaken by civil servants at various levels of governance, which need to be highlighted to motivate many civil servants.

Mission Karmayogi seeks to build on and institutionalise this culture of innovation in Indian governance. It envisions civil servants to be karmayogis who go above and beyond set rules to improve the lives of citizens, and provide innovative solutions to address citizens' needs.

This chapter highlights many of the innovations undertaken by karmayogis across India in sectors where India is facing its greatest developmental challenges - livelihoods, law and order, impact of climate change on agricultural income, transition to green energy, public transport, public health, and citizen grievance redressal. These innovations can be replicated nationally and have the potential to collectively make a big difference.

Interestingly many of the micro innovations listed here have ridden on meta innovations like India stack and Aadhar linked bank accounts which can be operated via the ubiquitous mobile phones. The story of the selected innovations is woven into India's journey towards Naya Bharat by 2047.

These innovations have been chosen for their innovativeness, transparency, inclusiveness, impact, and scalability.[1] In addition to recognising civil servants for their innovative work, the case studies presented in this chapter serve as a repository of knowledge that can be leveraged by other civil servants. The CBC hopes that these can help attune civil servants across the country to the importance of innovations in governance, and inspire them to adopt similarly innovative practices to meet the aspirations of India's citizens.

1.1 Common Attributes across Innovations

The innovations seek to provide inclusive and scalable solutions to various administrative challenges. By adopting a citizen-centric lens, they empower local communities to work with stakeholders within and outside the government in service of common goals. While the scope and design of individual innovations vary significantly, the following three attributes are common across many of the innovations.

1. **Leveraging technology:** New technologies have enabled the democratisation of information, improvements in public service delivery, and the creation of new avenues for citizen participation in governance. Technology-based innovations include the development of e-commerce platforms to support local businesses, the forecasting of electricity demand using AI/ML (artificial intelligence/machine learning) systems, and the provision of grievance-redressal portals for citizens.

2. **Developing public-private partnerships (PPPs):** Well-designed PPPs have enabled civil servants to leverage private sector capital and expertise in the pursuit of various developmental goals. Innovative PPPs have been established to facilitate the development of startups, revamp the curriculum of Industrial Training Institutes (ITIs), and increase solar power generation.

3. **Collaborating with multiple stakeholders:** Stakeholders in academia and civil society often possess capabilities which can be leveraged to improve governance. While some stakeholders such as universities are a repository of institutional knowledge, others like non-governmental organisations (NGOs) and self-help groups (SHGs) can help in facilitating rural outreach. Collaborating with these stakeholders has enabled civil servants to provide innovative solutions to challenges such as groundwater depletion, malnutrition, and left-wing extremism.

[1] Please refer to Appendix 5.1 for more details about the selection process for the competition.

B. Innovations

Theme 1: Harnessing India's demographic dividend: creating jobs, livelihoods, and entrepreneurship

In recent decades India has been one of the fastest growing economies, consistently maintaining a GDP growth of greater than 7%. However, creating formal employment and promoting entrepreneurship to produce potential job creators remains a challenge. India's demographic dividend, as expressed in its youthful population can only be channelised for Naya Bharat by promoting start-ups, skilling, and promoting innovative district comparative advantage-based livelihoods. Here are a few innovations by public servants from across India which are helping to utilise India' demographic advantage.

1.1 Rural Employment in Border Areas

Innovation Lead: Major General Hariharan Dharmarajan
Division: Department of Military Affairs, Ministry of Defence

Background

The remoteness of the border regions of the nation throws up challenges for local employment and sustenance of armed forces. The deployment of the armed forces in border areas can create opportunities for local employment. While serving in J&K, Major General Dharmarajan and his team recognised this opportunity and developed a project to source Army supplies from local communities, thereby providing them with employment. This innovation seeks to upskill and empower local communities by enabling them to provide supplies to the Army through Government e-Marketplace (GeM). It also strengthens the partnership between the Army and the local community.

Figure 1: Army's handshake with local communities provides them new employment opportunities

Solution Framework

Based on the requirements of the Army and the capacity of local vendors, the project team identified milk as one of the products that could be sourced locally. They encouraged local vendors to increase milk production under the expert guidance of the Army's veterinary surgeons. The local administration provided facilities for milk refrigeration, and product quality was ensured by partnering with firms like Amul and Verka. The project team further navigated the challenge of unreliable internet connections and trained the locals to use the GeM portal in order to sell milk directly to the army.

A similar project was set up in Lam village on the Pakistan-occupied Kashmir (PoK) border, which facilitated the setting up of a bakery run by a group of 8 women who now supply baked goods to the army (Aseem Foundation, n.d). Similarly, in Surankote village, fruits like cherries and plums are being procured by the army locally.

Impact

The project has reaped considerable dividends with GeM analytics showing that the army's contracts in J&K had reached 3.1 crores by April 2020. By May 2020 this figure had increased to 6.9 crores, and by June to 12.5 crores. By March 2021, the cumulative procurement from J&K was 68 crores.

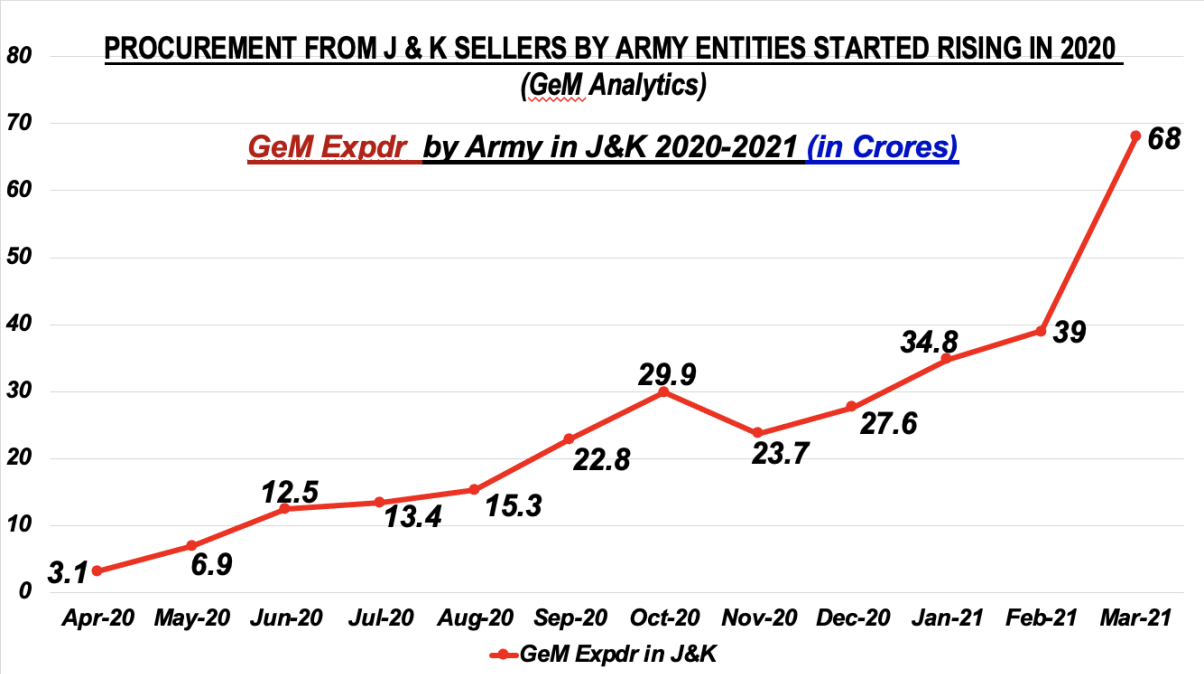

Figure 2: Procurement figures by the Indian Army in J&K in crores

Scalability

Given the pressing need for development in border areas, and the ever-present requirements of the army, there is potential for similar projects to be replicated in other border areas.

1.2 Maharashtra startup week

Innovation Lead: Mr. Deependra Singh Kushwah
Division: Maharashtra State Innovation Society

Background

India's start-up sector has very few platforms to get recognised in Government procurement, as procurement rules tend to favour experienced, existing suppliers rather than untried alternatives. The mechanisms available to the government to adopt innovative solutions on a pilot basis are limited, often inhibiting the spread of new technology in governance while also depriving startups of a viable market. To address this challenge, the Government of Maharashtra launched a programme that bypassed traditional procurement rules, and enabled the adoption of 24 startup innovations annually on a pilot basis.

Solution Framework

Maharashtra Startup Week identifies 24 startups annually for developing solutions that state governmental departments can use on a pilot basis. In selecting solutions for piloting, governmental departments are permitted to override procurement rules which favour experienced suppliers. The selected startups receive Rs. 15 lakhs each to implement their solution and to gauge its impact potential.

Impact

Annually, 24 start-ups are beneficiaries of the Maharashtra Start-up Week.[2] Across the 4 editions, the Maharashtra Innovation Society has had a cohort of 96 start-ups. In terms of the impact generated for the government through Startup Week, data indicates that innovative pilots have been conducted in 22 out of 36 districts of Maharashtra, in collaboration with 31 government departments / agencies.

Innovative start-ups like Sagar defence created jobs for 64 persons and supplied water surface cleaning drones including to the army (Sagar Defence, n.d.). KIBO, is an intelligent, personalized reading-learning companion for the visually impaired and learning-disabled helps them read any printed, handwritten, or digital content in real-time through an immersive reading-learning experience (Trestle Labs, n.d.).

PlanyTech, one of the startups selected by Maharashtra Start-up week, enables agencies to survey status of underwater assets (PlanyTech, n.d.). Maharashtra's water supply department gave Planytech a workorder to survey and assess the extent of siltation in Bhatsa Dam (Thane District) which supplies water to the cities of Mumbai and Thane.

[2] The list of start-ups identified through this initiative can be found here and here.

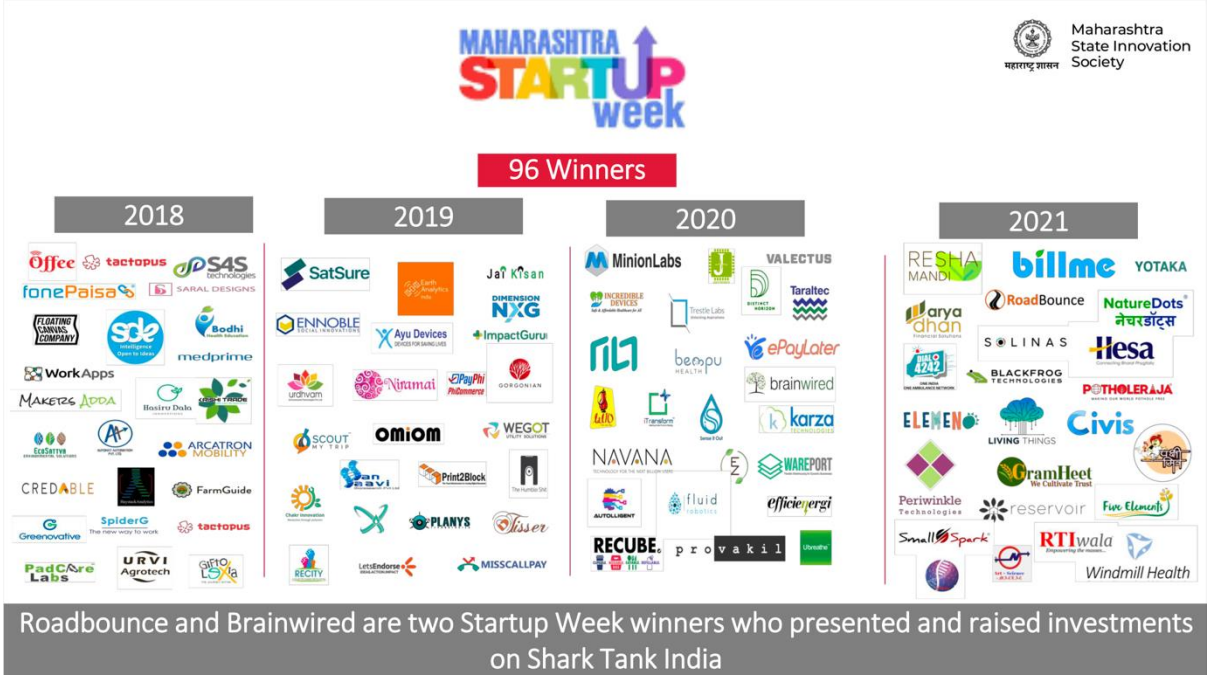

Figure 3: Impact of Maharashtra Start-up Week

Scalability

The most innovative feature of the startup week is that the Government of Maharashtra has permitted 3.5% of the district Plan as innovation fund to utilise the services of the startup selected in the startup week as per Government order (Government of Maharashtra, 2022). Other states which are trying to create conducive conditions for startup growth could learn from Maharashtra's experience in the spirit of cooperative federalism.

1.3 Skilling youth for employability

Innovation Lead: Dr. S. Selva Kumar
Division: Department of Skill Development, Entrepreneurship & Livelihood, Government of Karnataka

Background

In the 1970s, parents would caution their children that if they did not study hard then instead of an IIT, they would land up in an Industrial Training Institute (ITI). Today in state like Karnataka that would not be a misfortune as under the UDYOGA programme, ITIs have begun to provide Industry 4.0 technologies in partnership with leading technology companies with guaranteed job placements (Government of Karnataka, n.d.).

Solution Framework

The infrastructure of ITIs was revamped to enable the teaching of Industry 4.0 technologies. In partnership with leading technology companies, the coursework at the institutes was also updated to reflect Industry 4.0 needs. Due to the COVID-19 pandemic, instructors were trained on virtual learning and delivery methods.

Impact

The skilling programme involved a partnership with 18 industrial firms which ensured that ITI trainees had a near 100% placement rate (Government of Karnataka, n.d.).

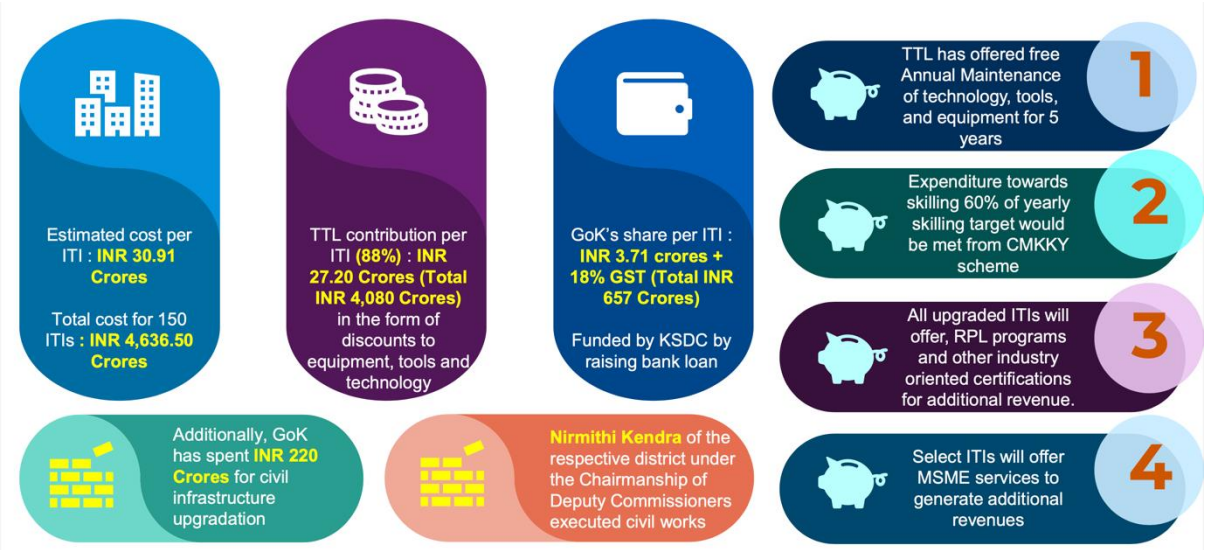

Figure 4: Financial sustainability of the UDYOGA Program

Scalability

Most ITIs across the country offer teacher centred conventional training which is not linked to industry needs. The partnership model of the UDYOGA programme can help improve placement rates in ITIs of other states. While the UDYOGA programme was specifically designed for Karnataka – other regions could emulate it through similar efforts.

Theme 2: Modernising and innovating agricultural practices

From a food deficit country in the 1950s to the world's second largest producer of wheat, rice and fruits and vegetable, India's march towards national food security has been remarkable. The Hon'ble Prime Minster Narendra Modi's vision of doubling farmers real incomes is critical for India@2047. Increased agricultural productions doesn't always translate into higher farmer incomes and balanced nutrition. The huge gap between the farmgate and consumer prices is a key reason for lag in farmers' incomes. Furthermore, climate change and environmental degradation is threatening future of sustainable agriculture. Here are some innovations by public servants which both enhance nutrition security and empower farmers to have better access to markets and climate resilient techniques.

2.1 Mitigating land degradation in agriculture

Innovation Lead: Dr. Venkatesh
Division: Government of Karnataka

Background

Climate change and resulting land degradation and depletion of groundwater is a growing challenge to India's food security and future incomes of farmers. The paucity of site-specific information on land parcels and water levels has led to improper water management and depletion of groundwater in Karnataka. The overall depletion of groundwater has also increased the input cost for farmers, leading to greater financial burden.

Solution Framework

To understand the nature of the soil, improve groundwater levels, and increase agricultural production, the Karnataka government introduced the Land Resource Inventory (LRI) programme. The LRI seeks to provide farmers with complete information about the soil and groundwater in their land holdings, recommend scientific remedies for their conservation, and suggest best practices for land use. The project provides site-specific and farmer centric land resources information.

The LRI builds a database of land holding using remote sensing (RS), geospatial information system (GIS) and mapping techniques and integrates them into the state-wide dataset that can be accessed by all the stakeholders.

Figure 5: Officers from the Government of Karnataka surveying plots of land for the LRI System

Impact

The project has brought a paradigm shift in planning and implementation of soil and water conservation programs, crop selection, nutrient management, water budgeting etc. The watershed cycle has reduced from 8 years to 4 years while the use of chemical fertilisers and pesticides has decreased as well. LRI has generated information on 14 lakh hectares of rainfed land, benefitting more than 10 Lakh farmers, and enabling the government to make targeted interventions where needed (Trivedi, 2019).

The ICAR Soil Survey Institute along with a consortium of Karnataka's Agricultural universities did a third-party assessment of the impact of LRI (Hegde et al., 2018). In the 50,000 hectares of land sampled, the assessment found that agricultural productivity increased by 20% to 25% and input costs reduced by 30% for crops like tomatoes and bananas in southern Karnataka. Productivity of Sorghum in northern Karnataka improved by 25% and farmers shifted from low value to high value crops better suited to their land conditions.

Scalability

A similar land resource mapping exercise could be useful across large parts of India where salinity, soil erosion and water depletion have degraded farmlands.

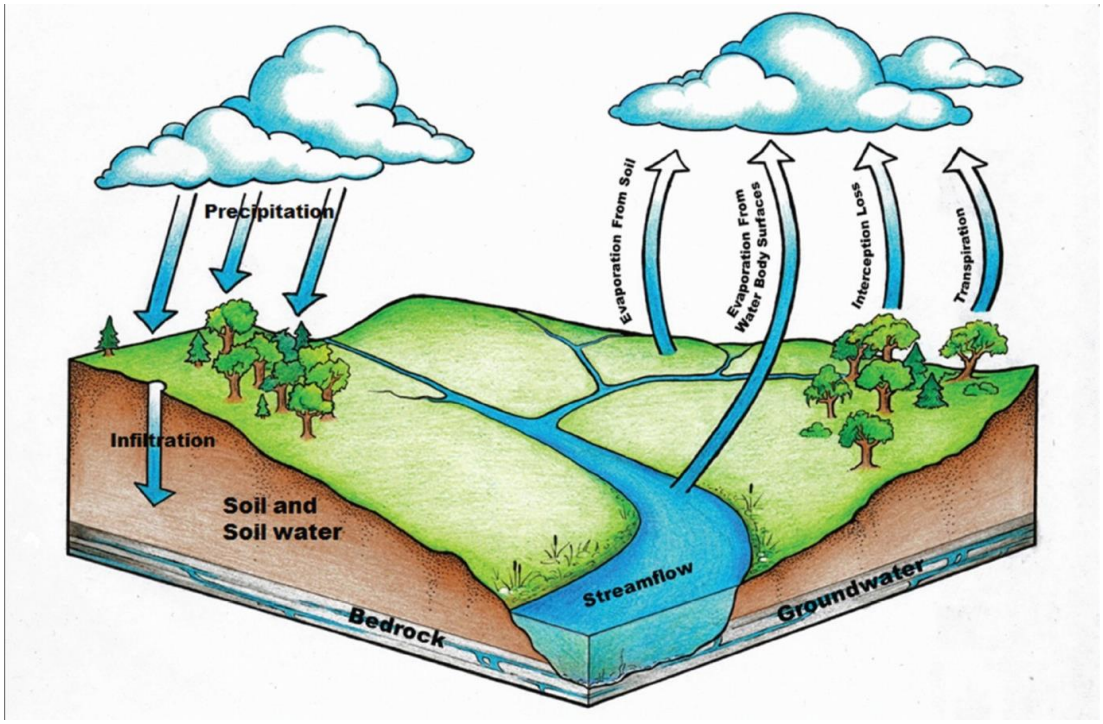

Figure 6: Explanation of the watershed cycle

2.2 Rejuvenating Ponds

Innovation Lead: Mr. Mayur Dixit
Division: Uttarakhand District Collectorate

Background

The area of Udham Singh Nagar in Uttarakhand's terai region possesses ample fertile land for agricultural purposes. Due to water-intensive farming practices and extensive presence of an industrial belt in the region, the area has witnessed an alarming depletion in groundwater levels. As the district resides within the terai region, all rivers passing the district have their discharge zones within the district itself, leading to large silt deposits. Convincing farmers and villagers to relinquish encroached land for pond creation was a hurdle. There was excessive rate of pollution and garbage dumping in village ponds. MGNREGA wage rates were not attractive enough to encourage workers to participate. Farmers were relying on tube wells at the cost of harvesting rainwater. The purpose of this initiative was to rejuvenate ponds in the district and provide employment opportunities through the same.

Solution Framework

An exhaustive plan was prepared to identify and demarcate encroached ponds in the district. Use of technology in demarcation & mapping and employment was provided to local village women and SHG members under NRLM scheme convinced male farmers to relinquish

encroached lands. The areas surrounding the ponds was additionally developed for fruit tree plantation and subsequently handed over to the NRLM SHGs for livelihood creation. Unattractive MNREGA wage rates were resolved by leveraging SHGs to construct ponds.

Impact

Out of the 550 ponds identified for restoration, 351 have been rejuvenated so far with fisheries also being developed in the rejuvenated ponds for further livelihood creation. The project resulted in an estimated rainwater conservation of 552 million litres, while the additional irrigational capacity generated was ~22,113 hectares.

Figure 7: Development of a pond in the Udham Singh Nagar District under the Rejuvenation Project

Scalability

Witnessing the success of the initiative, representatives of several villages who were not a part of the initial land demarcation exercise have reached out to the district administration to carry out pond rejuvenation work in their localities as well. With groundwater depletion being a major challenge across India, this innovation can be adapted in various other regions.

2.4 Nutritional Security through One District One Product

Innovation Lead: Varnali Deka
Division: Deputy Commissioner, Kokrajhar, Assam

Background

Kokrajhar district, which is home to a diverse population of tribal, backward, and minority groups has traditionally suffered from high rates of anaemia, malnutrition, infant mortality, and maternal mortality. Moreover, a large part of the district falls within the Bodoland Territorial Region (BTR) which generates large amounts of agricultural waste. To improve nutritional and employment outcomes, the district administration undertook a programme to facilitate the cultivation and consumption of mushrooms, by using agricultural waste, in alignment with the Government's One District One Product (ODOP) initiative.

Solution Framework

Meetings with relevant stakeholders identified mushroom cultivation and consumption as a tool to fight malnutrition in the district and utilise agricultural waste. With the cooperation of several line departments, the district administration leveraged the ODOP initiative for mushroom cultivation.

Through crowdsourced and CSR funds, mushroom supplements were provided to adolescent girls and children afflicted by severe acute malnutrition (SAM) and moderate acute malnutrition (MAM) through the mid-day meal (MDM) programme in schools, take home rations (THR), etc. Poshan clubs also engaged in generating awareness and emphasised the importance of mushrooms for pregnant and lactating women.

SHGs under the Assam State Rural Livelihoods Mission and Assam State Urban Livelihoods Mission, were trained on mushroom cultivation while the DBT-GoI Technology Incubation Centre on Mushrooms also provided technical support to farmers cultivating mushrooms.

Figure 8: Cooking and curing the raw produce grown in the ODOP project

Figure 9: Local women from Assam showing the successful produce obtained from the ODOP project

Impact

The innovation led to improvements in nutritional outcomes, and established mushroom cultivation as a viable livelihood option. There has been a 56% reduction in the number of underweight children (0-6 years), a 55% reduction in the number of wasted children (0-6 years), and a 76% reduction in anaemic children (6 months to 59 months). Anaemia among adolescent girls and women in the district has come down by 30.42%.

The district has emerged as a hub for mushroom cultivation, providing training & consultancy support on mushroom cultivation to 28 states, as well as countries such as Bhutan, Tanzania, Oman, Kuwait, Israel, New Zealand, the USA, and Ukraine. As a result, it has helped provide livelihoods to nearly 4500 farmers and 127 MSMEs, who are actively engaged in mushroom production and processing (Das, n.d.).

Scalability

Other districts in the country could enact similar programmes by leveraging the ODOP initiative.

Theme 3: Improving public security

Neither economic growth nor employment creation is possible without a crime free society where the monopoly over violence is exercised judiciously by the state. As Indians become better off and access to technology improves, new trends in crime continue to emerge. Here are some innovations undertaken by public servants to make Indian society safer and promote ease of living for its citizens.

3.1 Tackling left-wing extremism through inclusive policing

Innovation Lead: Mr. Ankit Goyal
Division: Government of Maharashtra

Background

Gadchiroli district in Maharashtra is severely affected by left-wing extremism (LWE). There is a trust deficit between the local population and the police, with mass unemployment and low incomes making the youth susceptible to radicalisation by Naxal groups. While the government has launched several welfare schemes to address the needs of the local population, communication gaps and lack of access of welfare department officials due to the insecurity and the multitude of tribal languages spoken in the area have caused the trust deficit to persist. In order to de-radicalise the population, Gadchiroli police developed a plan to improve public services in the district by providing identity related documents to locals, opening savings accounts, and promoting skilling and employment opportunities in the area.

Solution Framework

Gadchiroli police worked with other district departments to collate information about existing government schemes to make government outreach more effective. In partnership with NGOs like Pratham and rural self-employment training institutes, the police also launched the Dadalora Khidki programme to provide skilling and employment opportunities to the youth and farmers, and thereby discourage them from participating in unlawful activities.

Figure 10: Electronic enrolment of an elderly citizen into the program

Impact

Gadchiroli police's efforts have served to foster trust between the local population and the state. Since the efforts began in January 2021, incidents of Naxal violence have seen a drastic reduction.

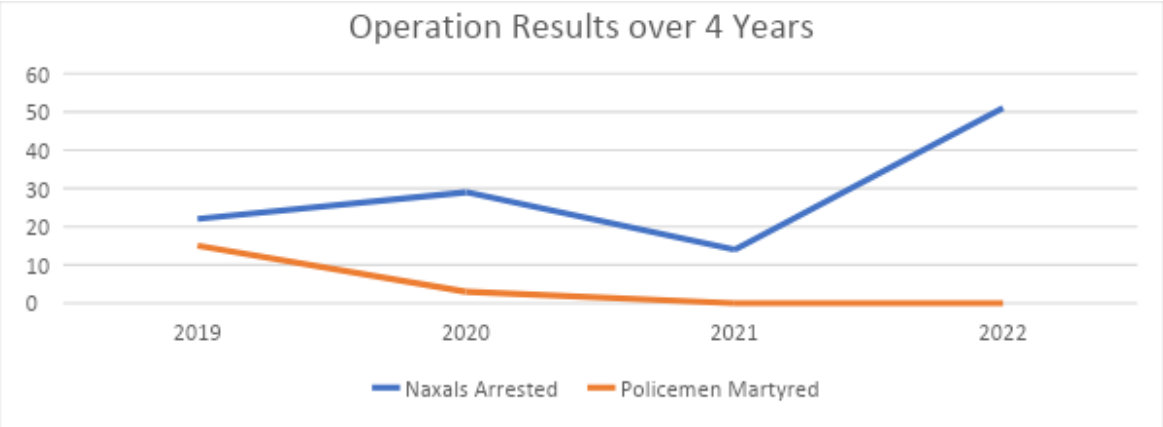

Figure 11: Delta between Naxal arrests and policemen martyred since the inception of the project in Gadchiroli

Scalability

The efforts were made possible using existing resources available to the Gadchiroli police. Similar efforts could significantly reduce LWE in other districts across the country as well.

3.2 Women's Safety during the COVID-19 Pandemic: A Community-Based Non-Policing Innovation

Innovation Lead: Mr. Ayush Prasad
Division: Government of Maharashtra

Background

The COVID-19 induced lockdowns in 2020 deepened discriminatory practices against women with increasing rates of domestic violence, neglect of women's health, child marriage, sexual abuse, etc. The lockdown resulted in a rise in school dropout rates for girls, while a disproportionate number of women became unemployed and had to face financial stress. The Government of Maharashtra and district-level officials across the state set up Women Safety and Vigilance Committees to provide a safe space for women to come forward with their problems and resolve them in a community setting.

Solution Framework

The committees were composed of members belonging to local administrative units such Gram Panchayats, Mahila Gram Sangh, and Mahila Bachat Gat, as well as Anganwadi and Asha workers. Committees would go door to door to identify cases of domestic violence, resolve them, and escalate more severe cases to the local police. The committees also set up a toll-free helpline number to empower women to seek immediate aid. The CEO of the ZP empowered the Chairperson of Women and Child welfare committee with a social purpose, to reach out to every rural home where women were facing violence or injustice.

Impact

There were a total of 1455 committees set up in Maharashtra with 21,000 members who reached out to 6032 women to prevent acts of domestic violence. 97% of domestic violence cases were resolved internally by the committees with the remaining 3% being forwarded to the police (Iyer, 2020).

The women safety and vigilance committee has successfully implemented the campaign in all Talukas in Pune in collaboration with the Pune Zilla Parishad. The committee onboarded NGOs and empowered civil society organisations to ensure last mile impact. They used e-learning platforms and existing infrastructure in Zila Parishad schools during lockdown for virtual training to spread awareness on domestic violence prevention.

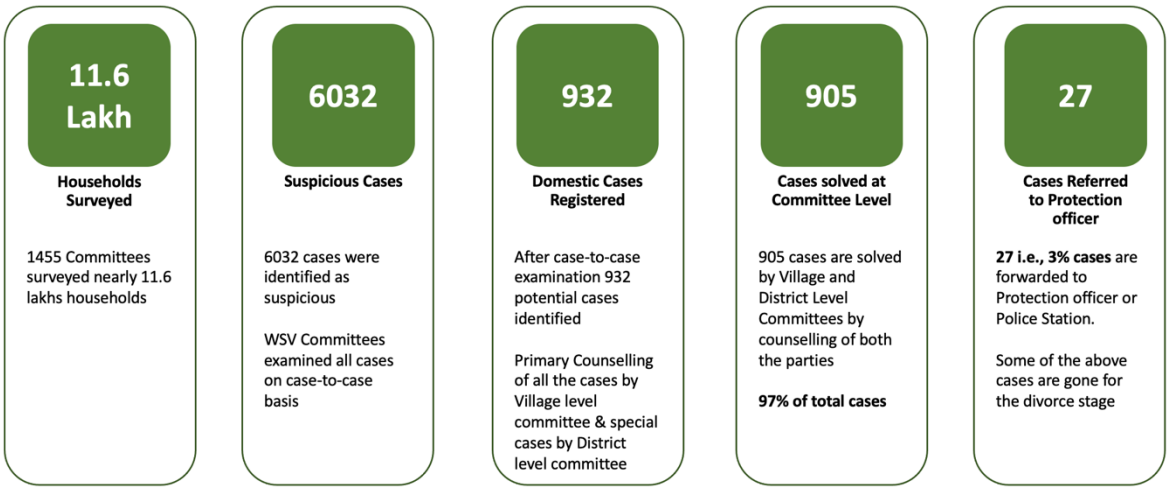

Figure 12: Outcome of the Women's Safety and Vigilance Committee

Scalability

The Ministry of Panchayati Raj ministry is rolling out an India wide capacity building programme for rural elected bodies like Gram Panchayats. Following the success of the Women Safety and Vigilance Committees in Maharashtra, the inclusion of similar committees in the Panchayati Raj capacity building programme would enhance women's safety at the community level without resorting to harsher police interventions.

Theme 4: Revolutionising public health response

The Covid Pandemic has taught the world to rely on digital solutions. Digital health tools can enable universal access to health even in remote areas with low presence of medical and health staff. Here is a telecom-based innovation to monitor Covid 19 lockdown and monitor availability of oxygen to patients.

4.1 Using AI to address the COVID-19 pandemic and other disasters

Innovation Lead: Mr. Naveen Jakhar
Division: Department of Telecommunications, Ministry of Communications

Background

People who test positive for COVID-19 are instructed to stay quarantined in their own homes. District and state government authorities initially used GPS-based applications for monitoring persons under quarantine. These applications however had two main drawbacks:

- They did not work on feature phones used by a substantial portion of Indians (55 crore subscribers)
- They were unable to track real-time geo-fences owing to limitations in data access

To address these drawbacks, a team of ITS Officers at the Department of Telecommunications designed the COVID-19 Quarantine Alert System (CQAS), using big data and Geographical Information System (GIS) technologies to track the real time locations of quarantined people.

Figure 13: Women being educated on the effects of COVID19

Solution Framework

CQAS uses telecom data to identify the location of the quarantined patient and create a geo-fence, i.e. a virtual boundary, around their location. The real-time location of the quarantined patient is then sourced from telecom networks every 15 minutes and compared with the geo-fence. Due to its use of telecom data, unlike the previously used applications, CQAS works for both feature phones and smartphones.

Figure 14: Mass-migration due to the lockdown in India

Impact

Despite the absence of an integrated national level system for quarantine management, and the operational difficulties in providing 24/7 support to all State/UT governments, CQAS has been utilised by 18 state governments, cumulatively handling more than 36 Lakh quarantined patients. It has been instrumental to the containment of COVID-19 in India and has enabled local administrations to issue prompt warnings and fines wherever needed for breaching pandemic-related protocol.

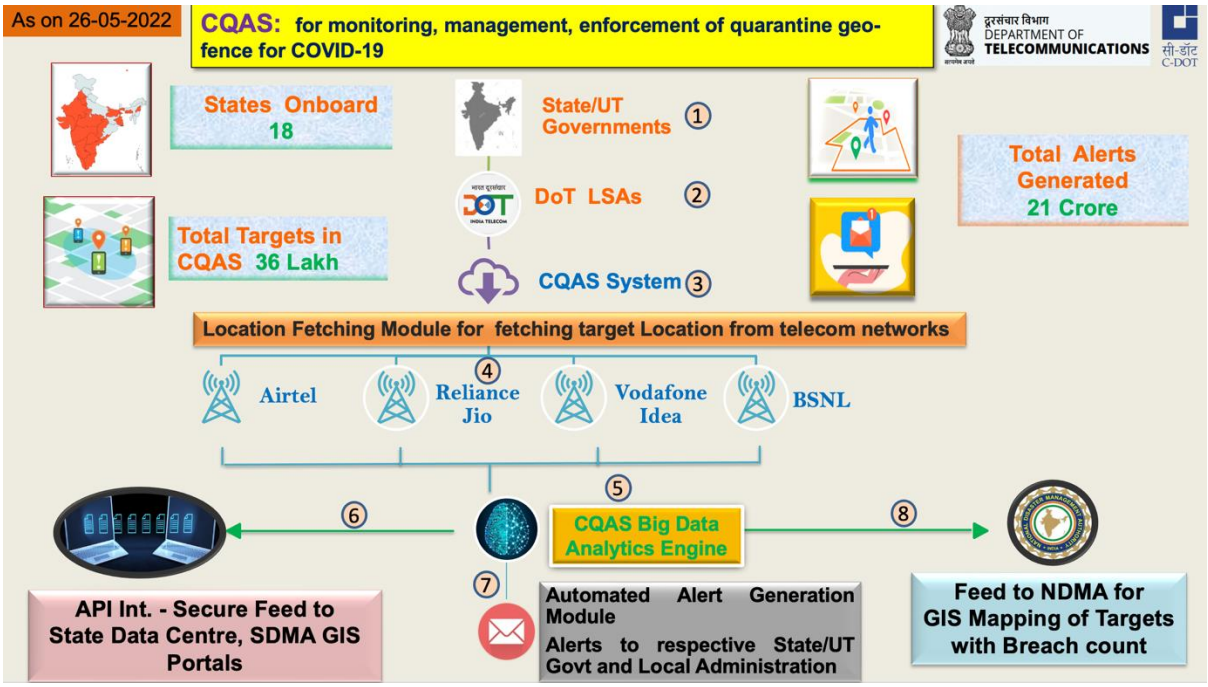

Figure 15: Flow chart of the implementation of CQAS

Scalability

During the height of the pandemic, in addition to quarantine management, CQAS-based systems also enabled state governments to track migrant workers and oxygen supplies in real-time. The team is now working to standardise CQAS as a solution for disaster management across the country.

Theme 5: Transitioning to green energy and lowering energy costs

The vision of Naya Bharat is not possible without energy security. Today India generates over 55% of its power from coal which is carbon positive. At the Paris Conference of parties on Climate Change, India had committed to net zero carbon and to reduce the carbon intensity of our GDP growth. As we are dependent on coal and oil for transportation and generate over 55% of our energy from carbon emitting coal, the path to carbon neutral growth is dependent on harnessing green energy. Here are some innovations by public servants which harness green energy and minimise energy procurement costs.

5.1 Creating well-drafted competitive bid documents

Innovation Lead: Mr. Manu Srivastava
Division: New & Renewable Energy Department, Government of Madhya Pradesh

Background

Solar energy generation in India has been spearheaded by public private partnerships (PPPs). These partnerships have tended to be expensive with most projects relying on viability gap funding (VGF) to stay viable. Since it was operating without VGF, the Rewa Ultra Mega Solar Limited (RUMSL) project needed to attract lower bids from interested partners to keep the project viable. It therefore provides a model for PPP-based solar projects to be viable without VGF.

Figure 16: Installation of solar panels under the RUMSL Project

Solution Framework

The bidding process for PPPs in India has long been hampered by poorly drafted bid documents which create significant information asymmetry for bidders, thus driving up bid prices. The RUMSL avoided this bid inflation by drafting well-researched bid documents that focused on project preparation, payment security mechanisms, land availability guarantees, etc. These documents enabled interested bidders to accurately forecast potential risks, and bid accordingly, thus enabling RUMSL to keep costs low.

Figure 17: Scale of installed solar panels under the Rewa Solar Project

Impact

Despite operating without VGF, the RUMSL project was able to achieve energy tariffs that were ~40% less than the tariffs achieved by projects which relied on VGF. By doing so it became the first project in India to break the grid parity barrier.[3] Approximately 76% of the energy generated from the project is supplied to MP DISCOMS with the lower tariffs benefitting 1.25 crore people. The remaining 24% of the energy generated is supplied to the Delhi Metro and is used to meet ~60% of its daytime energy demand.

Scalability

The key innovative feature of this initiative is the very well researched bid documents which reduced information asymmetry for the bidders by providing all the site details and all the challenges up front. This bidding procedure has now been adopted as part of standard bidding guidelines across India, and the success of the solar park in achieving the least possible rates has become a case study for several international agencies and foreign governments (Phang et al., 2021). Other solar projects could follow the RUMSL model to achieve low energy tariffs without resorting to VGF.

[3] Grid parity occurs when an alternative energy source generates power at a cost of electricity that is less than or equal to the price of power from the electricity grid.

5.2. Tapping power of solar through rooftops

Innovation Lead: Mr. Manu Srivastava

Division: New & Renewable Energy Department, Government of Madhya Pradesh

Background

Clean, renewable power is the pressing need of the hour – with non-renewable sources of energy reaching almost irretrievable rates of depletion, solar power is a beacon of hope for the 21st century – as recognized by this novel project in its attempt a rapid conversion to clean power. The project furthers the climate agenda, aiding government institutions in achieving a Net Zero target. This is accomplished by building solar projects on the rooftops of government institutions, without any investment or expenditure derived by them for the same. To implement the Solar Rooftop Project in the state, it was deemed necessary to engender confidence amongst both the critical partners for this project, i.e., the beneficiaries and the solar developers.

Solution Framework

The project has been implemented in over a hundred government organisations in MP. During its 25-year contract period, the government organisations possess no other responsibility save paying the power production price; the rates of solar power being less than one third of the usual DISCOM rate.

All requisite government departments were approached with the assurance that the project would not require any investment from them whatsoever and would lead to savings from its very outset. The bid was issued, and the project implemented only for those departments and organisations which had evinced a clear interest.

The concerned project documents were shared with the departments, so that transparency and confidence in the same was inculcated, to proceed with the of signing the PPA once the bidding was complete. To avail the trust of investors, MPUVN designed project documents that de-risked the initiative, rendering it bankable for the investors.

Thus, the project attempted to directly address the interests of both the solar developers and the owners of the buildings, from the present ranging over the next 25 years. It was precisely this strategy that culminated in the lowest rates of power in the country, also leading to the successful completion of the project in over a hundred organisations, including those under the Central Government.

Impact of the Project

The project has been effectively implemented in over a hundred government organisations in the state. Solar power at the lowest rate under the project and in the country is being procured by two GoI organisations, IIM Indore and Central Academy of Police Training (under MHA, GoI), within which solar projects with the capacity of 460 kW and 450 kW respectively have been established. The World Bank has utilized the Madhya Pradesh model as a template for reaching out to other states in the country. ISA has additionally signed an MoU with the Government of MP during the COP25 in Madrid that campaigned for a replication of best practices as adhered to in MP, in the field of solar energy within various member-countries of the ISA.

Sustainability & Scalability

The tariff escalates by 3% annually. It has been observed that DISCOMS possess an average tariff increase of around 4-5%. Thus, the benefit to government organisations continues to increase, enabling them to retain savings throughout the tenure of the project. Over the 25-year project period, the responsibility of operation and maintenance of the project rests with the developer.

5.3 Electricity demand projection to minimise procurement costs

Innovation Lead: Mr. Nagulapalli Srikant
Division: Government of Andhra Pradesh

Background

Electricity demand depends on a variety of factors, rendering manual forecasting techniques inadequate in predicting dynamic changes in demand. To address this challenge, the Andhra Pradesh State Load Dispatch Centre (APSLDC) created an AI-based model to accurately forecast electricity demand. This enables the APSLDC to adequately prepare for demand surges by purchasing electricity at cheaper rates in the day-ahead market (DAM), rather than having to buy electricity at more expensive rates in the real-time market (RTM).

Solution Framework

The APSLDC team used machine learning techniques and neural networks to develop the AI model. Weather data is collected from sources such as the Andhra Pradesh State Development Planning Society (APSDPS), Real Time Governance (RTG) State Centre, etc. and inputted into the model to forecast electricity demand on a daily basis. Despite the challenges associated with collecting the required input data from various organisations, verifying its accuracy, and processing it into an inputtable form, the model has enabled APSLDC to forecast electricity demand accurately and purchase the required quantity of electricity in the DAM.

Impact

The AI model has an accuracy of 97-98%. Over 3 crore DISCOM consumers in Andhra Pradesh have benefitted from this energy forecasting model as they are now supplied with reliable, uninterrupted electricity.

As electricity demand is forecasted on a daily basis, any shortfall/surplus is calculated accordingly and the required electricity is purchased from IEX/PXIL (power exchanges) at DAM rates. By purchasing electricity at DAM rates rather than RTM rates, over 985 crores have been saved over the last two years.

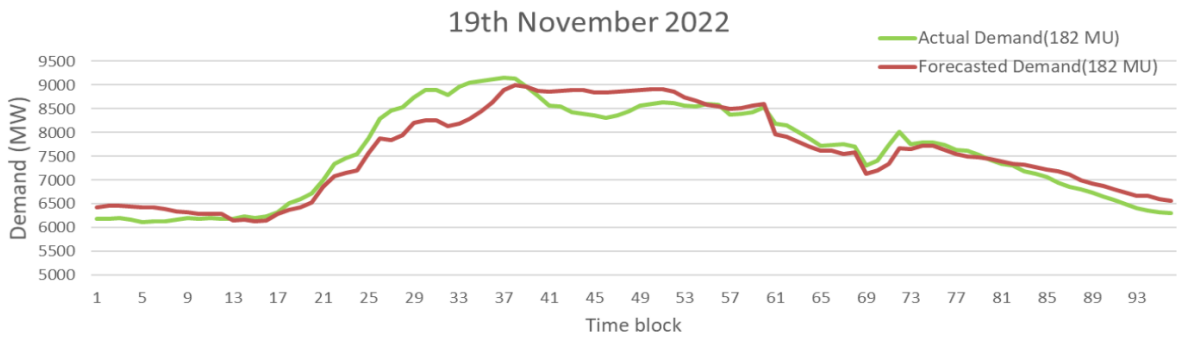

Figure 18: Accuracy of AI Forecasted Demand vs. Actual Demand

Scalability

Many industrial states in India like Maharashtra face electricity shortages while others like Himachal or energy surplus. Models like this one could be used by energy deficit states to prepare for electricity demand surges in a more economical way.

Figure 19: Power cables in India

Theme 6: Making public transportation citizen-centric

India's commitment to net zero carbon entails increasing the proportion of Indians using public and non-motorised transport. Indian Railways in passenger and freight transport and reducing the use of individual oil fuelled road transport. Indian Railways operates more than 12,000 trains; carrying more than 4 million tons in freight & 20 million passengers daily. However unlike in western Europe where mass public transport like railways and metros are the preferred means of travelling by all class of people, in India, railways and suburban trains have *been largely used only by the poor due to the perception of their unreliable services. Here are many innovations by public servants which are making public transportation comfortable and responsive to customer needs.*

6.1 Resolving passenger grievances through RailMadad

Innovation Lead: Mr. Vivek Srivastava
Division: Ministry of Railways

Background

The Indian railway network spans 18 zones and 68 divisions. Each division and zone used to register grievances through multiple channels such as the Centralised Public Grievance Redressal and Monitoring System (CPGRAMS), Complaints Management System (COMS), social media, etc. The absence of a centralised customer service channel to handle these enquiries used to lead to long delays in grievance redressal. The RailMadad project of the Indian Railways seeks to leverage technology to address this issue.

Solution Framework

A detailed study of the existing customer service channels was conducted and data on multiple service delivery indicators such as inquiry calls, average grievance disposal time, customer service sentiment, staff competencies, etc. was collected and analysed. Based on the study, a mobile application, "RailMadad," was developed to unify all customer service channels. The unified interface enables grievances to reach the relevant frontline officers in a timely manner, leading to prompt grievance redressal.

Figure 20: Policewomen taking feedback from passengers in Indian Railways

Impact

The RailMadad application has revamped customer service management in the Indian Railways. It has served to capture customer grievance data in a structured manner while at the same time sensitising railway staff towards the value of good customer service.

Since its launch in July 2019, use of the application has increased with the volume of daily enquiries rising from 500 to 3200. In the same period, the average time taken for grievance redressal has reduced from 7 days to 2 hours, with 86% of the complaints being redressed within 2 hours.

Scalability

This initiative of the Indian Railways has served more than 300 million customers and is a pioneering example of citizen-centricity at the heart of governance. Its approach to grievance redressal can serve as a template for other government service providers.

Figure 21: Screenshot of the RailMadad Application

6.2 Inclusive rail services for the physically challenged

Innovation Lead: Mr. Ashish Ujlayan
Division: Railways, Gujarat

Background

The sense of citizen centricity is not complete till the last person in line – antyodaya, is served. Demonstrating a true example of inclusiveness, the Indian Railways has made tremendous efforts to ensure that all able and differently abled citizens are served well. The Rail Divyang Saarthi is wonderful testimony towards same.

Indian Railway provides a concession in rail journey fares to handicapped passengers (divyangjan). The concession is based on valid medical certificates and is predominantly an offline process. To avail these services, citizens had to repeatedly visit their local railway offices; follow a lengthy process; fill out multiple forms; waste time in resolving queries and all this was proving to be a difficult endeavour. This process, being offline, was dealt with only during in office hours on weekdays and the verification of disability certifications could only be done by a limited number of commercial inspector visits to civil hospitals.

Solution Framework

Using next-generation technologies, available on both Android/iOS and the web, a one-of-a-kind application has been developed, enabling divyangjan to easily apply, manage and track concession applications on their fingertips. Ease-of-use features of this application include:

- Language accessibility: The application is designed to be multilingual.
- Voice Module: A partially or completely blind person can access it using voice support.
- Support: an active support system is available via phone & email, which regularly.
- Quality of Service: Prioritising efficiency, the mobile application is designed to accept only valid documents from applicants; leading to quick disposal of the cases at the governments end.

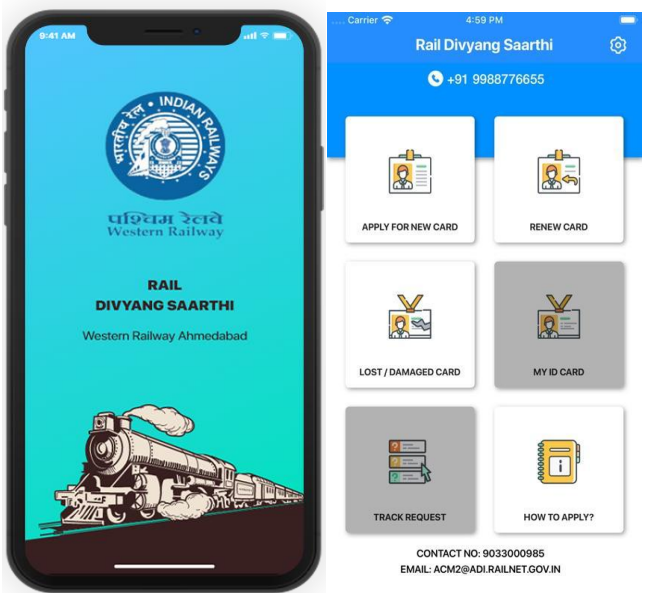

Figure 22: Screenshot of Rail Divyang Saarthi Mobile Application

Impact

Post digitization, the number files dealt in a month has increased from an average of 160 to more than 230; an approximate increase of 45% in case handling capacity. Processing time for cases has reduced from an average of 4-6 weeks to under 1 week, a reduction of 84% in processing time.

Figure 23: Indian Railways staff assisting a divyangjan Passenger

Scalability

The following roadmap has been envisaged for scalability:

- Expand the reach of application across all Zonal railways of Indian railways.
- Enable electronic know-your-customer (eKYC) processes for doorstep delivery of physical concession cards.
- Policy amendments for accepting digitally signed concession cards.
- Outreach to civil and private hospitals to expand the benefit to all possible divyangjan There are many schemes which provide concessional assistance or monthly pension to divyangan (physically challenged) like the National Social Assistance Programme. However, each programme requires a complicated physical verification at very limited civil hospital facilities to certify extent of physical handicap before the person can avail of the benefits. This programme provides an IT solution to enhance the ease of living for more inclusive society.

The approach adopted by Rail Divyaang Saarthi can aid the service delivery to differently abled citizens by other government departments.

6.3 Promoting carbon-neutral mobility

Innovation Lead: Mr. Vikramaditya Singh Malik
Division: Government of Uttar Pradesh

Background

The nationwide COVID-19 induced lockdown in 2020 saw large numbers of migrant workers return to their hometowns. Often these journeys were made on bicycles, and Bijnor district in Uttar Pradesh became a major way station for many of the migrants undertaking this journey. Since the Bijnor district administration had arranged special trains and buses to transport the migrant workers to their hometowns, many of them ended up abandoning their bicycles in the district. Instead of letting these bicycles fall into disrepair and contribute to urban waste, the local administration in the town of Bijnor formulated a plan to utilise these bicycles and create an alternative form of public transportation.

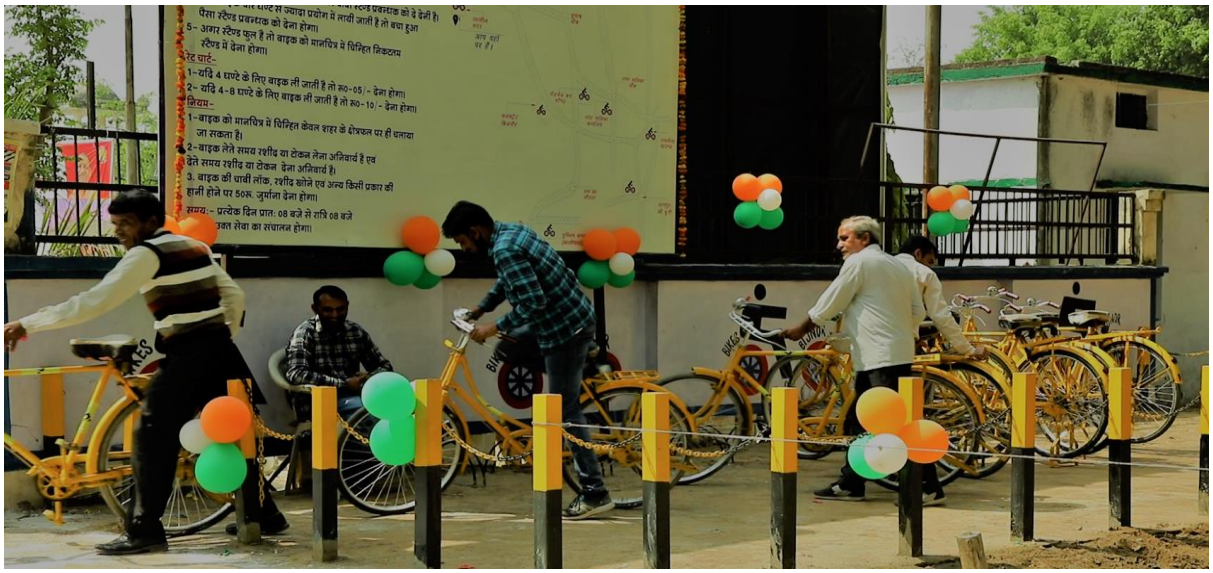

Figure 24: Setting-up of the bicycles in Bijnor

Solution Framework

Around 400 bicycles were abandoned in the town of Bijnor. With the consent of the owners of these bicycles, the bicycles were repaired and repainted using CSR funds by the local administration, and a bike sharing/renting model was instituted. The bicycles were made available to be hired daily for a fixed fee.

Impact

The innovation provides Bijnor town's 2.5 lakh residents with a cost effective, sustainable, public transport system for local residents.

Figure 25: A Bikes of Bijnor rental station

Scalability

Most Indian cities lack access to carbon-neutral, sustainable options like public bicycles. The Bijnor example can be replicated in other congested cities with abandoned bicycles.

C. Conclusion

Effective public administration is an exercise in providing high-quality public services in the face of resource and operational constraints. The innovations in this chapter illustrate how *karmayogis* have devised solutions to meet this developmental challenge in sectors ranging from livelihoods to public transportation.

Through their initiative and entrepreneurial spirit, the *karmayogis* who have led these innovations have acted as catalysts for change; pioneering simple, effective, and scalable solutions to meet various governance challenges. Their innovations can serve as templates for civil servants across the country to learn from and adapt to meet the needs of their local environments.

It is the endeavour of the CBC to promote a culture of innovation amongst India's civil servants by highlighting these solutions. As a part of this endeavour, the CBC aims to continue conducting the "Innovations in Public Administration" competition on an annual basis. The Commission also intends to create a repository of effective and feasible innovations for the benefit of practitioners and researchers.

Reference List

Alberti, A., & Bertucci, G. (2006). Replicating Innovations in Governance: An Overview. In the United Nations Department of Economic and Social Affairs, *Innovations in Governance and Public Administration: Replicating what works.* New York: United Nations Publication.

Aseem Foundation. (n.d.). *Lam Bakers.* https://www.aseemfoundation.org/lam.html

Barnwal, P. (2017). Curbing leakage in public programs: Evidence from India's Direct Benefit Transfer Policy. International Growth Centre.

Das, S. (n.d.). Consolidated Report Of Rural Mushrom Technology For Entrepreneurship Development With Mushroom Culture & Farming. https://buniv.edu.in/uploadfiles/file/TIC%20UPDATE_compressed.pdf

Etech. (2022). *Digital tech, DBT system helped India save Rs. 2.23 lakh crore: PM Modi.* The Economic Times. https://economictimes.indiatimes.com/tech/tech-bytes/digital-tech-dbt-system-helped-india-save-rs-2-23-lakh-crore-pm-modi/articleshow/92661499.cms

Government of India. (2022). *Estimated Gains. https://dbtbharat.gov.in/*

Government of Karnataka. (n.d.). *About the Program.* https://www.udyoga.karnataka.gov.in/dashboard

Government of Maharashtra, (2022). *Transforming Lives Through Innovation.* https://drive.google.com/file/d/1p9kVjg0uf8EMguJz3nPrsmy2arewqgpy/view

Government of Maharashtra, (2022). *5th Edition Maharashtra Startup Week 202.* *https://drive.google.com/file/d/1BzpnlrJ0c-qqGVOCYcOwGgypyAbmwtyi/view*

Government of Maharashtra. (2022). https://gr.maharashtra.gov.in/Site/Upload/Government%20Resolutions/Marathi/20221213123749494316.pdf

Hegde, R., Niranjana, K.V., & Srinivas, S. (2018). Site-Specific Land Resource Inventory for Scientific Planning of Sujala Watersheds in Karnataka. https://www.researchgate.net/publication/327252678_Site-Specific_Land_Resource_Inventory_for_Scientific_Planning_of_Sujala_Watersheds_in_Karnataka

Iyer, K. (2020, May 17). Maharashtra lockdown: Women politicians begin to discuss the 'shadow pandemic'. *The Indian Express.* https://indianexpress.com/article/cities/mumbai/women-politicians-begin-to-discuss-the-shadow-pandemic-6414187/lite/

Phang, S.Y., Bhattacharya, L., & Joseph, F. *Rewa Solar India: PPP Innovation Unleashed.* *https://store.hbr.org/product/rewa-solar-india-ppp-innovation-unleashed/SMU937*

PlanyTech. (n.d.). *Home*. https://planytech.com/

PTI. (2018). *Innovation key to realising dream of 'New India': Narendra Modi*. *The Economic Times.* *https://economictimes.indiatimes.com/news/politics-and-nation/innovation-key-to-realising-dream-of-new-india-narendra-modi/articleshow/63550347.cms?from=mdr*

Sagar Defence. (n.d.). *About Us.* https://www.sagardefence.com/

Trestle Labs. (n.d.). *Our Products.* https://www.trestlelabs.com/

Trivedi, D. (2019, June 14). Karnataka adopts new approach to enhance impact of watershed programme. *The Energy and Resources Institute.* https://www.teriin.org/article/karnataka-adopts-new-approach-enhance-impact-watershed-programme

You, N., & Kitio, V. (2006). Best Practices Knowledge Management Framework. In the United Nations Department of Economic and Social Affairs, *Innovations in Governance and Public Administration: Replicating what works.* New York: United Nations Publication.

Appendix 1

Selection Process

More than 150 eligible innovation applications were received as part of the “Innovations in Public Administration” competition organised by the CBC. To select the innovations described in this chapter, the CBC partnered with the National Institute of Smart Governance (NISG).

Based on the parameters described below, the 15 innovations highlighted in this chapter were selected.

1. **Innovativeness**: Innovations draw on new ideas, methods, or technologies to generate change that improves the lives of citizens.
    a. The innovation draws on tools, resources or networks that have not been used before within the target area (locality/organisation). This can include adapting solutions that have been successfully implemented in another locality/organisation.
    b. The tools, resources or networks mobilised by the solution are relevant and useful ways to solve the problem. Solutions draw on indigenous resources and fit well into the cultural context.
2. **Transparency**: Innovations are implemented in a way that is comprehensible for stakeholders and information about the project is easily accessible.
    a. The reasoning behind the specific solution is clear.
    b. The processes of the innovation are well-documented.
3. **Inclusiveness**: The impact of innovations targets vulnerable groups, including socially and economically weaker sections
    a. The design process of the innovation considered the concerns of multiple stakeholders, and/or consulted with them.
    b. The impact of the innovation affects vulnerable groups, including socially and economically weaker groups.
4. **Exceptional Achievement & Outcome**: Innovations have a significant impact on their intended recipients and the change in quantifiable outcomes is visible.
    i. Breadth - the initiative impacts many beneficiaries.
    ii. Depth - the initiative has a significant impact on targeted stakeholders. Projects use well-selected, clearly defined measurable outcomes to gauge impact.
    iii. Impact metrics are outcome-based and include outcomes beyond the number of beneficiaries reached
5. **Sustainability & Scalability**: Projects can be expanded to reach a greater number of recipients and can continue with new leadership and scope.
    i. The initiative has been successfully operationalized beyond its pilot period. Applicants have a detailed plan in mind for the initiative over the next year (e.g., including specific next steps and dependencies).
    ii. The initiative has been successfully scaled up/adapted to include stakeholders beyond its original scope.
    iii. The initiative has continued despite changes in leadership.

Appendix 2

State Wise Breakdown of Innovation Applications

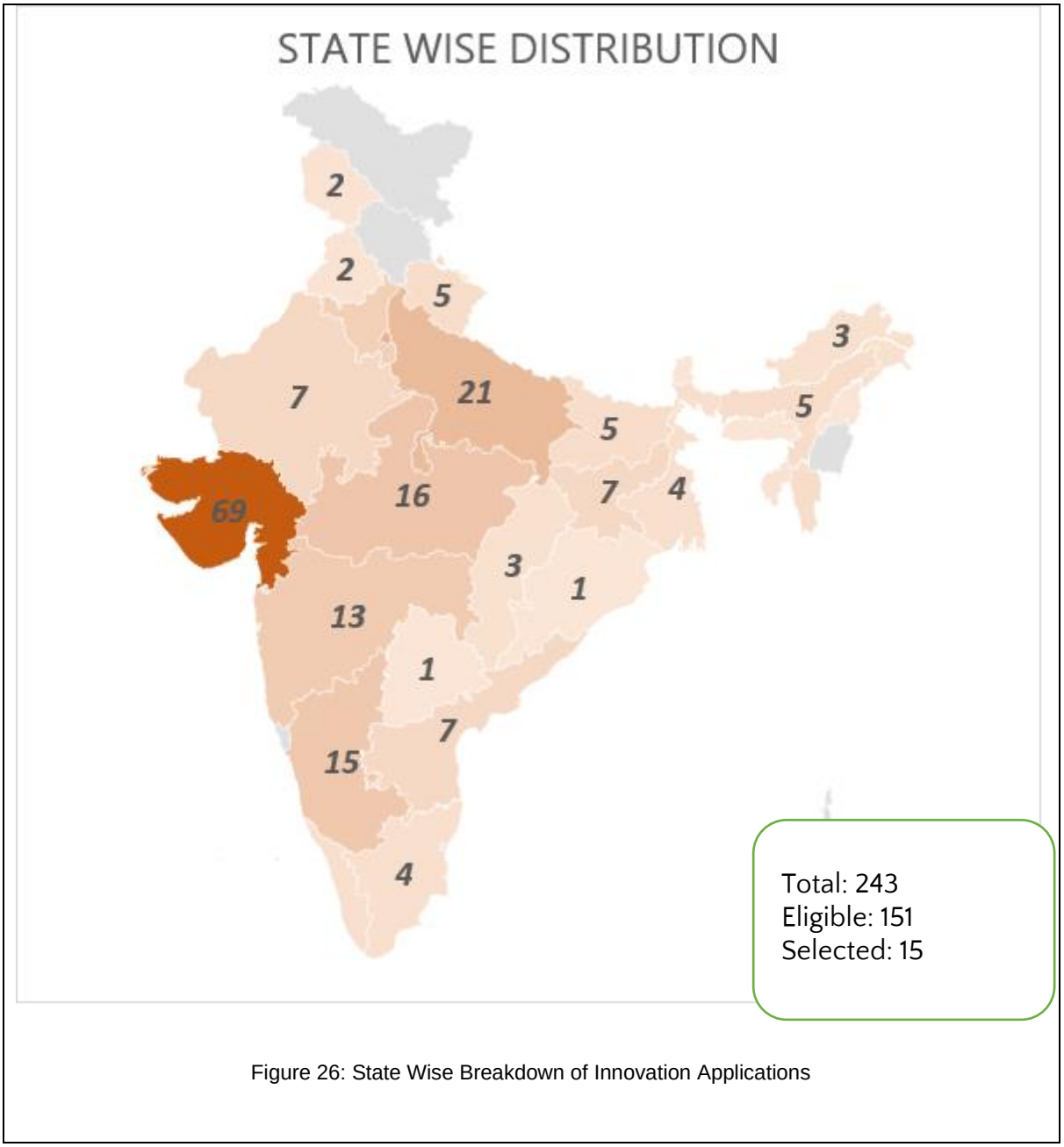

Figure 26: State Wise Breakdown of Innovation Applications

Appendix 3

Service Wise Breakdown of Innovation Applications

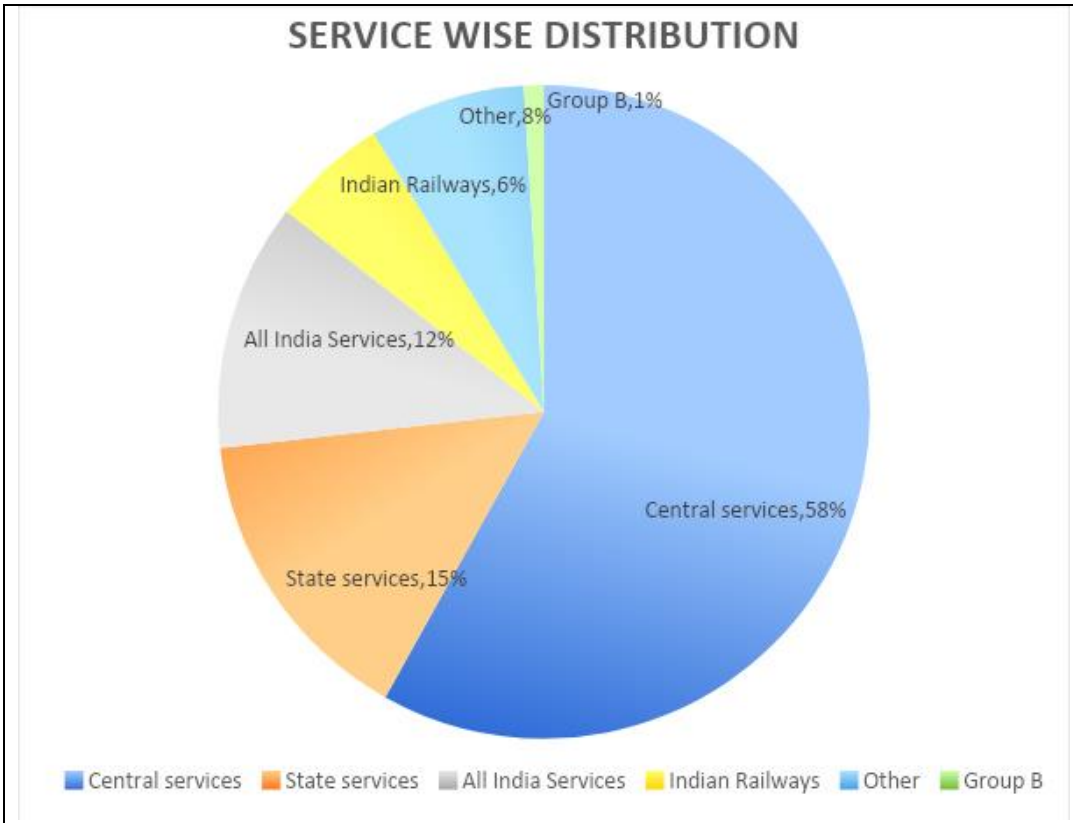

Figure 27: Service Wise Breakdown of Innovation Applications

Appendix 4

Sectoral Breakdown of Selected Innovations

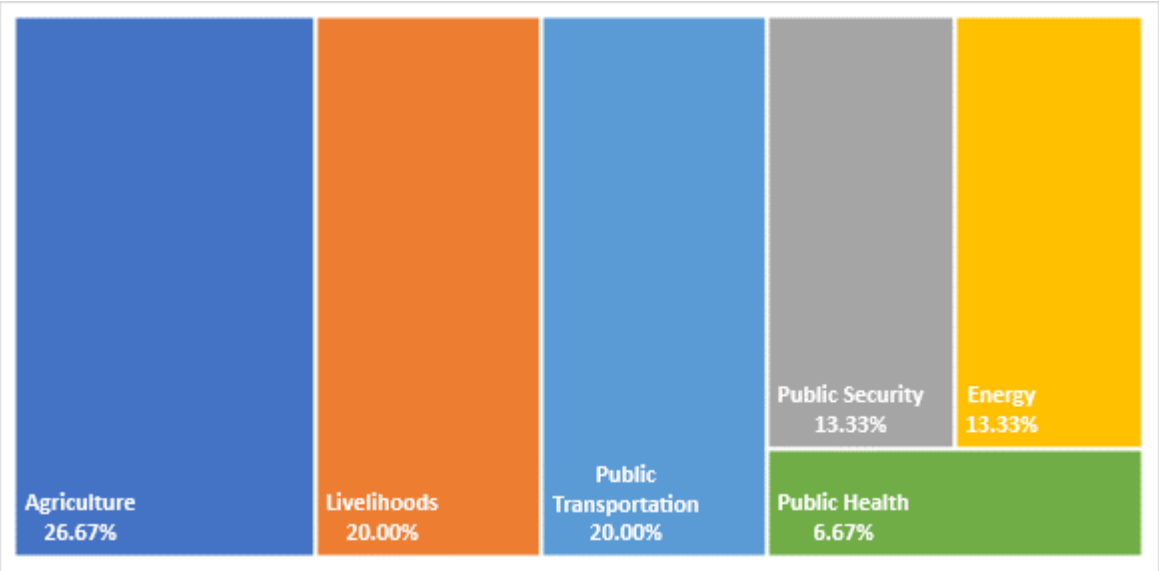

Figure 28: Sectoral Breakdown of Selected Innovations

CAPACITY
BUILDING
COMMISSION