DRAFT REPORT

THIRD PARTY EVALUATION STUDY OF ASSISTANCE TO PHARMACEUTICAL INDUSTRY FOR COMMON FACILITIES (APICF)

Submitted to
Department of Pharmaceuticals, Ministry of Chemicals and Fertilisers
Government Of India

Conducted by
Prof. Ashok Vishandass
Dr Saket Bihari

India Institute of Public Administration
New Delhi

July 2025

ACKNOWLEDGEMENTS

We wish to place on record our sincere thanks to the Department of Pharmaceuticals, Ministry of Chemicals and Fertilisers, Government of India, for entrusting with us the task of third-party evaluation of the scheme of Assistance to Pharmaceutical Industry for Cluster Facility (APICF). We extend our sincere thanks to Ms. Palka Sahani, Joint Secretary to Government of India, Dr Himanshu Roy, Director, Ms. Gunjan Verma, Joint Director, Shri Dharmender Yadav, Under Secretary for continuous support, valuable insights, and facilitation, which enabled us to conduct the evaluation of the scheme efficiently and effectively. We are grateful to all those Pharmaceutical manufacturing Units /Office bearers of Associations of these Units, and those handling Clusters in SPVs for generously sharing their valuable time, providing us with all necessary inputs and other requisite data and information. The support extended by SIDBI is remarkable.

Thanks are due to Ms. Deepa, Shri Asif, Shri Rahul, Ms. Shree (research team of IIPA) for their tireless work, dedication, and contributions at all stages of report preparation including data collection and visits to Pharmaceutical manufacturing Units. Their sincere efforts enriched the report.

We also grateful Shri S. N. Tripathi, IAS (Retd), Director General, IIPA, for his relentless encouragement, guidance and oversight during the study. We would also like to express our gratitude to Shri Amitabh Ranjan, Registrar, IIPA, for providing necessary administrative and infrastructural support to facilitate smooth research operations.

We hope that the findings and recommendations of this study will enable the Department of Pharmaceuticals to further strengthen the APICF scheme.

Prof. Ashok Vishandass
and Dr. Saket Bihari,
Faculty Members IIPA

Date: July 27, 2025
Place: New Delhi
.

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY 5
1.1 Assistance to Pharmaceutical Industry for Common Facilities (APICF) scheme. 5
1.2 The key findings of the study are as under: 6
2. OVERVIEW OF THE SCHEME 10
2.1 Background of the scheme 13
2.2 Brief write up on the scheme including objectives, Implementation Mechanism, Scheme architecture/design 14
2.3 Implementation Mechanism 14
2.4 Scheme Architecture 16
2.5 Name of Sub-schemes/components 16
2.6 Year of commencement of scheme 16
2.7 Present status with coverage of scheme (operational/non-operational) 17
2.8 Sustainable Development Goals (SDG) Served 17
2.9 Alignment with Viksit Bharat 2047 Vision 18
2.10 Fund Flow mechanism 18
2.11 Budgetary allocation and Expenditure Pattern of the scheme 19
2.12 Summary of past evaluation since inception of scheme 23
3. METHODOLOGY 26
3.1 Sample size and sample collection process 27
3.2 Baseline data on KPIs 28
3.3 Status of supported Projects 32
3.4 Evaluation tools 35
3.5 Data collection tools 35
3.6 OBJECTIVES OF THE STUDY 36
3.7 Financial achievement of the scheme 36
3.8 Common facilities installed in the covered SPVs 38
3.9 Demand of the scheme 41
4. Performance of the scheme based on the output/outcome indicators 47

4.1 Better quality and affordability of medicines as a public health priority 50
4.2 Additional Parameters 53
4.3 Training/capacity building of administrators/facilitators 54
4.4 Asset/Service creation and its maintenance plan 54
4.5 Benefits (Individual, Community) 55
4.6 Convergence with scheme of own Ministry/Department or of other Ministry/department 55
4.7 Gaps in achievement 56
4.8 Key Bottlenecks & Challenges 57
4.9 Input Use Efficiency 57
4.10 Best Practices & Case study 59
4.11 Most Significant Changes 61
5. OBSERVATION AND RECOMMENDATIONS 63
5.1 Observations 63
5.2 Recommendations 64
5.3 Thematic Assessment 65
5.4 Improving value for money 66
5.5 Assessing the continued relevance 67
5.6 Reduction in avoidable overhead expenditure on consultants, administration etc. 67
5.7 Externalities 68
5.8 Issues & Challenges 68
5.9 Vision for the future 69

LIST OF TABLES

Table 1: Financial Outlay with professional charges 15
Table 2: Fund flow under the scheme 19
Table 3: Budget allocation and expenditure pattern of the APICF Scheme 20
Table 4: MAPE & Exponential Smoothing 21
Table 5: SPVs covered under the scheme 29
Table 6: Key Performance Indicators 31
Table 7: Release of instalments across projects 32
Table 8: Status of supported projects under the scheme 33
Table 9: Financial achievements of the projects 36
Table 10: Access to eligible activities across clusters covered under the scheme 38
Table 11: Pharma Clusters in the Country 41
Table 12:: Proposed common facility support to SPVs 47
Table 13:Quality and affordability components 51
Table 14 : Change in the annual turn over 51
Table 15: T-test: Two-Sample Assuming Unequal Variances 52
Table 16: Mapping of the objectives 57
Table 17: Input efficiency of the scheme 57

LIST OF FIGURES

Figure 1: Financial Status of the scheme 21
Figure 2:Exponential smoothing of the expenditure pattern.....21
Figure 3: Financial Achievement of APICF 30
Figure 4: Eligible activities and status.....40
Figure 5: Demand and Supply for SPVs.....46
Figure 6: No. of projects and units under APICF scheme 58
Figure 7: Study Team visited M/s Welzo Research and Development.....60
Figure 8: Study Team in Baddi, Himachal Pradesh 60

1. EXECUTIVE SUMMARY

1.The Pharmaceutical industry, one of the fastest growing industries in India, has shown a growth rate of over 8% in 2024 and with expected growth of over 8.2% in 2025. The Department of Pharmaceuticals (DoP) is providing financial assistance to strengthen their existing pharmaceutical clusters and enhance their manufacturing capabilities by creating common facility with the implementation of:

1.1 Assistance to Pharmaceutical Industry for Common Facilities (APICF) scheme.

2. The DoP is supporting the pharma industry to enhance manufacturing capabilities by increasing investment in green field projects. There exists approximately 7673 MSMEs under 118 pharma clusters. The Department provides support to the pharmaceutical manufacturing units in a cluster who have come together to form a Special Purpose Vehicle (SPV) to execute the project of developing common facilities.

3. In this context, the 'Assistance to Pharmaceutical Industry for Common Facilities (APICF)' scheme emerges as a cornerstone initiative by DoP, strategically designed to fortify the pharmaceutical ecosystem and advance the vision of Atmanirbhar Bharat in healthcare manufacturing. This comprehensive scheme addresses the critical imperatives of enhancing manufacturing capabilities, elevating quality standards, and fostering sustainable practices within India's pharmaceutical sector, with a emphasis on strengthening existing pharmaceutical clusters.

4. The implementation framework of APICF is structured to address the needs of pharmaceutical clusters across different regions, recognizing that each cluster may have unique characteristics, challenges, and opportunities. The scheme provides for the establishment of common facilities such as (i) Research and development Labs, (ii) Testing Laboratory for Pharma Products (iii) Effluent Treatment Plants (iv) Logistic Centres and (v) Training Centres.

5. To evaluate the effectiveness of the scheme, study objectives were framed. The objectives of the study were: (i) to assess the financial achievement of the scheme, (ii) to find out the common facilities installed in the covered SPVs, (iii) to examine the demand of the scheme, and (iv) to suggest measures to improve the effectiveness of the scheme.

6. To study objectives and find responsive feedback on the elements of indicators, a mixed method approach was employed. The approach adopted for the evaluation of the scheme was goal-based, process-based and outcome-based. The goal-based approach measures if the objectives of the scheme were duly met. The process-based approach studied the strengths

and weaknesses of the scheme and the outcome-based approach evaluated if the outcomes aligned with the pre-specified objectives of the scheme. In this light, the evaluation strategy relied on primary and secondary sources for the purpose of data collection. The secondary information on funds released and allocated was collected from the Department of Pharmaceuticals, Ministry of Chemicals & Fertilizers. The previous third-party evaluation has also been referred to/reviewed in order to get insights into the subject covered under the study.

7. The sample size for this study was determined based on a comprehensive assessment of clusters that had received financial assistance for common facilities by the DoP within the specified timeframe. A systematic random sampling approach was employed to ensure representativeness and minimize selection bias. From the sampling frame, two firms were randomly selected using a probability sampling method, ensuring that each eligible firm had an equal chance of being included in the study. The selection criteria included firms that had successfully received financial and demonstrated operational status during the study period. This approach was designed to capture diverse perspectives and experiences from the target population while maintaining methodological rigour. In addition to visits to the site, we received responses from 8 units using Video-Conferencing (VC). The methodological framework of the study employed tools like (i) questionnaire, (ii) In-depth interview, (iii) Observation and (iv) Focus Group Discussion (FGD).

1.2 The key findings of the study are as under:

i. The information received from the sources reveals that the financial achievements of the projects under the APICF scheme operated through Grant-in-Aid. It was sanctioned for ten different SPVs involving improving their common facility. M/s Chennai Pharma Industrial Infrastructure Upgradation Company (CPIIUC) got an approved project cost of ₹ 11.02 crores and an approved Grant-in Aid of ₹ 7.71 crores. Tindivanam Pharma Park Association got an approved project cost of ₹ 31.76 crores and approved Grant-in Aid of ₹ 15.88 crores. M/s Kala Amb Infrastructure Development Company (KIDC) got an approved project cost of ₹ 7.20 crores and approved Grant-in Aid of ₹ 5.04 crores.

ii. M/s Jeedimetla Effluent Treatment Ltd. got an approved project cost of ₹ 29.88 crores and approved Grant-in Aid of ₹ 20.00 crores. Devbhumi Pharmaceutical Testing and Training Foundation got an approved project cost of ₹ 23.68 crores and approved Grant-in Aid of ₹ 20.00 crores.

iii. M/s Welzo Research and Development Pvt. Ltd. got an approved project cost of ₹ 29.90 crores and approved Grant-in Aid of ₹ 19.53 crores. Hyderabad Pharma City Ltd. got an approved project cost of ₹ 26.02 crores and approved Grant-in Aid of ₹ 18.87 crores.

M/s Tirupati Research & Development Pvt. Ltd. (TREND) got an approved project cost of ₹ 39.51 crores and an approved Grant-in Aid of ₹ 20.00 crores.

iv. M/s Inducare Pharmaceuticals and Research Foundation (IPRF) got an approved project cost of ₹ 14.37 crores and an approved Grant-in Aid of ₹ 7.18 crores. The financial performance metrics reveal that the scheme has achieved operational maturity and institutional stability. This performance profile positions the APICF Scheme as a model for replication across similar development interventions, demonstrating that well-designed schemes with appropriate implementation frameworks can achieve both high approval rates and strong expenditure performance.

v. In fact, utilization figures reflect the scheme's success in reaching its intended beneficiaries and generating meaningful developmental impact. The financial performance also indicates strong institutional learning and adaptive management within the scheme's implementation framework. The ability to maintain such high utilization rates suggests that implementing agencies have developed robust project management capabilities, and effective stakeholder coordination mechanisms.

vi. With regard to the second objective of the study i.e. to find out the common facilities installed in the 8 SPVs, the responses were gathered on five key infrastructure components, namely (i) Research and development labs, (ii) Testing laboratories, (iii) Effluent treatment plants, (iv) Logistics centers, and (v) Training centers.

vii. The study reveals that M/s Welzo Research and Development Pvt. Ltd, Baddi, Himachal Pradesh has installed research and Development labs. M/s Jeedimetla Effluent Treatment Limited, Hyderabad has installed effluent treatment plant. M/s Tindivanam Pharma Park Association, Villupuram, Tamil Nadu has also installed effluent treatment plant. M/s Devbhoomi Pharmaceutical Analytical Testing and Training Foundation Roorkee, Uttarakhand has installed testing laboratory.

viii. M/s Tiruputi Research and development Pvt Ltd., Tirupati, Andhra Pradesh has installed research and Development labs. M/s Telangana Lifesciences Foundation (earlier Hyderabad Pharmacity Limited), Hyderabad, Telangana has installed effluent treatment plant. M/s Inducare Pharmaceuticals & Research Foundation, Pune, Maharashtra have installed both research and Development labs and testing laboratories. M/s Himachal Pradesh Testing Lab Limited, Baddi, Himachal Pradesh has installed an effluent treatment plant.

8. With regard to third objective of the study, i.e., to examine the demand of the scheme, it was found that a total of 118 pharmaceutical clusters are distributed across various states of our country. These clusters house a total of 7,673 MSMEs, comprising 1,995 micro units, 2,393

small units, 2,331 medium units, and 954 large units. Against the total survey SPVs (118), the demand has been catered to only 10 SPVs. This needs to be increased to cover other pharmaceutical clusters. This would catalyze a desirable transformation in the pharmaceutical industry, transforming them to promising ventures.

i. The APICF scheme demonstrates strong alignment with multiple Sustainable Development Goals, creating a comprehensive framework that addresses both good health and economic development. The scheme is in line with SDG no. 3 (Ensure healthy lives and promote well-being for all ages), 6 (Ensure availability and sustainable management of water and sanitation for all), 8 (Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all), and 9 (Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation).

ii. The APICF scheme contributes to India's vision of becoming a developed nation by 2047 through development of manufacturing hub, technological advancement and modernization, environmental sustainability, human capital development, healthcare security and self-reliance and economic prosperity and inclusive growth. The development of the pharmaceutical sector through common facilities does contribute to the aspirational values of Viksit Bharat.

iii. With regard to the fourth objective of the study, i.e., to suggest measures to improve the effectiveness of the scheme, the following recommendations are made. These are:

iv. Increase of financial Assistance

The financial support to clusters needs to be enhanced keeping in view the **Market Price Index**.

A. Need of comprehensive survey

A comprehensive survey needs to be conducted to identify the number of actually functional clusters so that they can be brought under the scheme's ambit.

B. Strengthen the Clusters

To improve the competitiveness of the clusters under the SPV, it is essential to strengthen R&D capabilities and build a skilled workforce by establishing a common R&D center and organizing regular training programs focused on GMP, regulatory compliance, and quality assurance.

C. Developing Smart and Innovative Pharma Hubs

To transform India into a resilient and innovation-driven pharmaceutical manufacturing hub, the policy should encourage the subsequent integration of Industry 4.0 technologies into cluster infrastructure. Eligible components should cover AI (Artificial Intelligence), ML (Machine Learning), Digital Twin,

Process Simulation, and cloud-based LIMS (Laboratory Information Management Systems), as well as data containers, to ensure regulatory compliance and readiness for audits.

D. Needs for additional facilities

To catalyze the effectiveness of SPVs, three more facilities are proposed, namely 1) Blockchain-enabled supply chain centre, 2) AI-oriented training and capacity building centre, and 3) Digital quality assurance center. Such facilities should enable end-to-end supply chain visibility through blockchain and AI for tracking drug provenance and detecting counterfeits, support real-time quality monitoring and predictive analytics using AI/ML in manufacturing, and offer specialized skill development programs in AI, data science, and digital regulatory compliance tailored for pharmaceutical professionals.

E. Need for scaling up

Since a total of 118 clusters have been identified and only a total of 10 clusters has been covered under the scheme, the scheme needs to be expanded to cover the uncovered clusters. This could also be in line with the growing demand for pharmaceutical products and tapping skilled graduates into employment opportunities.

9. A Pharmaceutical Census in India may be undertaken to deepen the insights and foresights into the structure, composition and spread of the Industry. This is a prerequisite for reducing, if not eliminating, dependence of India on China for its key APIs supplies.

10. In addition, support to more pharmaceutical clusters should be extended by increasing the bandwidth of the scheme.

11. Based on the analytical rigour of this Third-Party Evaluation study, it emerges that the scheme 'Assistance to Pharmaceutical Industry for Common Facilities' (APICF) will contribute to pharmaceutical industry's growth and alignment with global manufacturing standards. Accordingly, it is recommended that DOP need to continue supporting the pharmaceutical industry through APICF which is critical to the Nation's Good Health and Well-being.

****

2. OVERVIEW OF THE SCHEME

2.1.1. The fact that pharmaceutical industry in India stands as a pivotal sector in the nation's quest to achieve wellness for all Indians, serving not merely as a manufacturing base but as a comprehensive healthcare solution provider that ensures accessible and affordable medicines reach every corner of the country. The sector's importance extends beyond mere economic metrics, as it plays a fundamental role in providing employment opportunities to a vast spectrum of trained personnel, ranging from research scientists and quality control analysts to production technicians and regulatory affairs specialists, thereby creating a multiplier effect that benefits countless families and communities across the nation.

2.1.2. The Department of Pharmaceuticals is supporting the pharma industry to enhance manufacturing capabilities by increasing investment in green field projects. There exists approximately 7673 MSMEs under 118 pharma clusters. The Department provides support to the pharmaceutical manufacturing units in a cluster who have come together to form a Special Purpose Vehicle (SPV) to execute the project of developing common facilities.

2.1.3. In this context, the 'Assistance to Pharmaceutical Industry for Common Facilities (APICF)' scheme emerges as a cornerstone initiative by the Department of Pharmaceuticals, Government of India, strategically designed to fortify the pharmaceutical ecosystem and advance the vision of Atmanirbhar Bharat in healthcare manufacturing. This comprehensive scheme addresses the critical imperatives of enhancing manufacturing capabilities, elevating quality standards, and fostering sustainable practices within India's pharmaceutical sector, with a particular emphasis on strengthening existing pharmaceutical clusters and empowering Micro, Small, and Medium Enterprises (MSMEs) that form the backbone of the industry.

2.1.4. In juxtaposition, the Atmanirbhar Bharat initiative, with its visionary approach toward self-reliance in critical sectors, particularly emphasizes the need for indigenous capabilities in healthcare products manufacturing. This strategic vision recognizes that true national security encompasses not only defense capabilities but also the ability to produce essential medicines and healthcare products domestically, ensuring that the nation's health security is not dependent on external supply chains that can be disrupted during global crises. The pharmaceutical sector's alignment with this vision is evident in its capacity to serve both domestic needs and international markets, positioning India as a reliable global supplier while maintaining healthcare security for its own population.

2.1.5. The scheme highlighted the need for targeted interventions that could address infrastructure deficits, quality enhancement requirements, and sustainability concerns that were not adequately covered by existing policy frameworks. The state-of-the-art facilities and technologies to be made available to pharmaceutical clusters would improve the overall functioning of MSMEs and simmer down the high costs of individual investments in sophisticated equipment, quality control systems, and environmental compliance infrastructure.

2.1.6. The scheme's primary focus on improving productivity, quality, and sustainability within existing pharmaceutical clusters reflects an instrumental implication for the sector's current challenges and future requirements. Productivity enhancement is addressed through the establishment of common facilities that allow multiple manufacturers to access sophisticated equipment and services without bearing the full cost individually, thereby improving operational efficiency and reducing per-unit production costs. Quality improvement is facilitated through shared access to advanced testing laboratories, quality control systems, and regulatory compliance infrastructure that might otherwise be financially prohibitive for smaller enterprises to establish independently.

2.1.7. The implementation framework of APICF is structured to address the diverse needs of pharmaceutical clusters across different regions, recognizing that each cluster may have unique characteristics, challenges, and opportunities. The scheme provides for the establishment of common facilities such as (i) Research and development Labs, (ii) Testing Laboratory for Pharma Products (iii) Effluent Treatment Plants (iv) Logistic Centres and (v) Training Centres. The indicative common facilities mentioned above are illustrative and each cluster could have its own specific requirement based on the nature of units being set up and the products proposed to be manufactured.

2.1.8.Testing laboratory means a public or private laboratory that (i) offers or performs tests of pharmaceuticals, (ii) offers no service other than such tests, and (iii) is accredited by an accrediting body. Effluent treatment plants are categorically to be used as a treatment plant exclusively established to treat the process waste of any kind generated by pharma industries according to the prevailing law, statutes, or rules. Logistic centres are the places within which all activities relating to transport and distribution of pharmaceutical products and/or medical devices-both international and national transit are carried out by various operators on a commercial basis. Training centres under the scheme incorporate a place where people undergo skills training for work. However, the aforesaid components are only indicative and not exhaustive.

2.1.9. The cluster development implies a development of pharmaceuticals manufacturing units where focus is concentrated in selected areas. The common facilities embedded under the scheme unfold all facilities intended for the shared use by the subscribers and consist of creation of tangible assets as common facility.

2.1.10. The provision of common utility services under the APICF scheme addresses another critical challenge faced by pharmaceutical manufacturers, particularly in cluster environments where individual utility systems may be inefficient or inadequate. The scheme supports the development of centralized steam generation and distribution systems, compressed air networks, purified water generation facilities, and reliable power backup systems that ensure consistent and high-quality utility services to all cluster participants. This shared infrastructure approach not only reduces individual capital requirements but also ensures higher reliability and quality of utility services, which are critical for pharmaceutical manufacturing operations.

2.1.11. Environmental compliance and sustainability are addressed through the establishment of common effluent treatment plants and waste management systems that enable pharmaceutical clusters to meet increasingly stringent environmental regulations while sharing the costs of sophisticated treatment technologies. These facilities are designed to handle the complex mix of chemical waste generated by pharmaceutical manufacturing, including organic solvents, acids, bases, and other chemical compounds that require specialized treatment processes. The common facilities approach allows for the implementation of advanced treatment technologies that are economically unfeasible for individual manufacturers but become viable when costs are shared across multiple enterprises.

2.1.12. The implementation process of the APICF involves PMC to invite project proposals for assistance in the scheme by issuing open advertisements in newspapers and website, setting up a cut-off date for receiving application. The applicants who may be industry association/groups of entrepreneurs/SPVs to submit complete project proposal in prescribed formats. The PMC scrutinizes the project proposals and submits its appraisal report with recommendations to SSC within one month of the last day of receipt of application for considering grant of in-principal approval. In-principal approval is granted to those applicants who submit a complete project proposal with technical recommendation and have availability of land. Such in-principal approval is valid for a period of six months from the date of approval. In case final approval is not accorded to the project within 6six months, in-principal approval is automatically lapse, unless it is specifically extended by the SSC. The PMC guides the

applicants who obtain the I stage approval, to fulfill all necessary conditions in the guidelines with 6 months.

2.1.13. The final approval of the project is accorded by the SSC, if the laid down conditions are fulfilled which are:

I. Establishment of project specific SPV,
II. Execution of shareholders agreement and other related agreements between the SPV and members,
III. Preparation of project proposal by SPV and its appraisal by PMC,
IV. Procurement of requisite land by the SPV
V. Establishment of project specific account with scheduled Commercial Banks by the SPV. DoP credits funds into the account, and
VI. Tying up of sources of funds for the balance account.
VII. In case of any deviation from the approved project proposal or timeline, the approval of DoP is to be sought for the continuation of the project. The projects are to be completed in 2 years. However, SSC can grant an extension of 1 year for delays due to reasons not under the control of SPV.

2.1 Background of the scheme

2.1.14. The Assistance to Pharmaceutical Industry for Common Facilities (APICF) scheme emerges from the recognition that India's pharmaceutical industry, despite being a global leader in generic drug manufacturing, it faces significant infrastructure and capability challenges at the level of existing pharmaceutical clusters and Micro, Small, and Medium Enterprises (MSMEs). With over 118 pharmaceutical clusters distributed across the country and more than 7673 manufacturing facilities of varying scales, the sector has demonstrated remarkable growth and resilience, contributing substantially to both domestic healthcare needs and global pharmaceutical supply chains. However, the Department of Pharmaceuticals identified that while larger pharmaceutical companies possessed the resources to invest in state-of-the-art facilities, sophisticated testing equipment and advanced environmental management systems, smaller enterprises and existing clusters often struggled with the high capital requirements for individual investments in critical infrastructure such as quality control laboratories, effluent treatment plants and advanced manufacturing utilities.

2.1.15. The conceptual foundation of the APICF is embedded in achieving wellness for all. The scheme strengthens the existing pharmaceutical clusters' capacity for their sustained growth by creating tangible assets as Common Facilities. It addresses the need for large-scale greenfield investments and capacity expansion, there remains a critical gap in supporting

existing pharmaceutical infrastructure and smaller enterprises that required modernization, quality enhancement and sustainability improvements.

2.2 Brief write up on the scheme including objectives, Implementation Mechanism, Scheme architecture/design

2.2.16. The Assistance to Pharmaceutical Industry for Common Facilities (APICF) scheme is a strategic initiative by the Department of Pharmaceuticals designed to strengthen India's pharmaceutical ecosystem by establishing shared infrastructure and support services within existing pharmaceutical clusters. The scheme helps in creating tangible assets as 'Common Facilities', such as testing labs, R &D Labs, Effluent treatment Plant (ETP) and training Centres etc. to strengthen the existing pharmaceutical clusters' capacity for their sustained growth. The financial outlay of the scheme is 178.40 crore in the last five years. Additionally, the scheme aims to reduce individual capital investment burdens on smaller enterprises while creating employment opportunities for skilled pharmaceutical professionals and strengthening India's position as a reliable global pharmaceutical supplier in alignment with the Atmanirbhar Bharat vision of healthcare.

2.3 Implementation Mechanism

2.3.17. The implementation mechanism of the APICF scheme operates through a multi-tiered governance structure involving the Department of Pharmaceuticals as the nodal agency at the national level and pharmaceutical cluster associations or Special Purpose Vehicles (SPVs) as operational entities at the ground level. The implementation of the scheme involves a systematic process beginning with cluster identification and assessment based on criteria such as existing pharmaceutical manufacturing concentration, growth potential, and industry participation, followed by detailed project preparation, stakeholder consultations, regulatory approvals, infrastructure development, and facility operationalization with appropriate training and capacity building programmes.

2.3.18. Under the scheme the PMC has to invite project proposals for assistance in the scheme by issuing open advertisements in newspapers and website, setting up a cut-off date for receiving applications. Applicants who may be an industry association/group of entrepreneurs/SPVs are to submit complete project proposal in prescribed formats to PMC through online. The PMC scrutinizes the project proposals and submits the appraisal report with recommendations to SSC within one month of the last day of receipt of application for considering grant of in-principal approval. In-principal approval is granted to those applicants who submit a complete project proposal with technical recommendation and have availability of land. Such in-principal approval is valid for a period of 6 months from the date of approval.

In case final approval is not accorded to the project within 6 months, in-principal approval is automatically lapsed, unless it is specifically extended by the SSC. The PMC has to guide the applicants who obtain the first stage approval to fulfill all necessary conditions in the guidelines within 6 months.

2.3.19. The final approval is accorded by the SSC, if the laid down criteria are met viz. establishment of project specific SPV, execution of shareholders agreement and other related agreements between the SPV and members, preparation of Project Proposal by SPV and its appraisal by PMC, procurement of requisite land by the SPV, Establishment of project specific account with scheduled commercial banks by the SPV and tying up of the sources of funds for the balance amount. In case of any deviation from the approved project proposal or timeline, approval of DoP must be sought for continuation of project. Projects are to be completed in 2 years. However, SSC can grant an extension of one year for delays due to reasons not in control of SPV.

2.3.20. The implementation process also includes activity-wise time schedules, milestone for payments, expected date of commissioning, delay and expected risks and monitorable quantified targets for reporting on outcomes. Importantly, preference in assistance is given to those proposals which utilizes leverage for scaling up production and financing of common cluster facilities. The SIDBI is the implementation agency that charges 2.35% of the budget as PMC charge, which is given from Professional Services Head of the APICF Scheme. The grant of aid and professional services charged proposed by the Department are populated in the table given below:

TABLE 1: FINANCIAL OUTLAY WITH PROFESSIONAL CHARGES

Sr. No.	FY	Financial Outlay (Rs. In crore)		
		Grant in Aid	**Professional Services**	**Total**
1	2021-22	10.00	0.30	10.30
2	2022-23	35.50	1.10	36.60
3	2023-24	60.00	1.90	61.90
4	2024-25	52.50	1.60	54.10
5	2025-26	15.00	0.50	15.50
	Total	**173.00**	**5.40**	**178.40**

(Source: Department of Pharmaceuticals)

2.3.21. The APICF scheme financial allocation placed in the table reveals a strategic implementation pattern over five years (2021-26) with a total outlay of Rs. 178.40 crores, demonstrating a typical government scheme lifecycle that begins with modest funding of Rs.

10 crores in 2021-22 for initial setup and planning, escalating significantly during the core implementation phase with peak allocations of Rs. 60 crore and Rs. 52.5 crore in 2023-24 and 2024-25 respectively and then tapers down to Rs. 15 crores in 2025-26 indicating scheme completion or transition. The professional services component, totaling Rs. 5.4 crore across all years, maintains a consistent proportion of approximately 3% of the total allocation, suggesting sustained emphasis on technical expertise, consultancy, and capacity building. The relatively small but consistent professional services allocation indicates that the scheme involves significant technical assistance and other similar components.

2.4 Scheme Architecture

2.4.22. The scheme architecture is designed around the establishment of comprehensive common facilities that serve multiple pharmaceutical enterprises within targeted clusters, creating economies of scale and shared access to infrastructure. The core components include common analytical and quality control laboratories equipped with advanced testing instruments. The architecture of the scheme contains (i) activity wise time schedule, (ii) Milestone for payments, (iii) excepted date of commissioning (iv) delay and expected risk, and (v) Monitorable quantified targets for reporting on outcomes. The comprehensive design of the scheme ensures that participating pharmaceutical enterprises can access world-class manufacturing support services while sharing costs and risks, thereby improving their competitiveness, sustainability, and compliance capabilities in both domestic and international markets while contributing to the broader national objectives of pharmaceutical sector growth and healthcare security.

2.5 Name of Sub-schemes/components

2.5.23. The 'Assistance to Pharmaceutical Industry for Common Facilities (APICF)' is a sub-scheme under 'Strengthening of Pharmaceuticals Industry'. There exist no sub-schemes under the scheme.

2.6 Year of commencement of scheme

2.6.24. The scheme was started by Department of Pharmaceuticals as "Cluster Development Programme for Pharma Sector (CDP-PS) in 2015 under the umbrella scheme "Development of Pharmaceutical Industry" to enhance quality, productivity and innovative capabilities of SME in the country. The scheme was subsumed as sub-scheme 'Assistance to Pharmaceutical Industries for Common facilities (APICF)' under the umbrella scheme 'Strengthening of Pharmaceuticals Industry (SPI)' in 2022.

2.7 Present status with coverage of scheme (operational/non-operational)

2.7.25. The APICF scheme is a pan India scheme. The coverage of the scheme is in all across states/UTs of the country. However, the footprints of the scheme have been found in the states of (1) Andhra Pradesh (2) Himachal Pradesh (3) Maharashtra (4) Tamil Nadu (5) Telangana and (6) Uttarakhand. As such, the scheme is operational in six states. The SPV like Chennai Pharma Industrial Infrastructure upgradation company for common effluent treatment plant (CETP), Indu care Pharmaceuticals and research Foundation for common testing facility, R& D with pilot plant and common logistic centre and Kala Amb Infrastructure development company (KDIC) for common effluent treatment plants were approved.

2.7.26. A total of four installments were released against three SPVs in FY 2021-22, namely Inducare Pharmaceuticals and Research Foundation (IPRF), Kala Amb Infrastructure Development Company (KIDC) and Tindivanam Pharma Park Association. Inducare Pharmaceuticals and Research Foundation (IPRF) was released II installment of ₹ 6.51 crore, Kala Amb Infrastructure Development Company (KIDC)'s II and III instalment for ₹ 1.51 crore and 0.64 crore respectively and Tindivanam Pharma Park Association. Inducare Pharmaceuticals and Research Foundation (IPRF)'s IV instalment of ₹ 1.04 crore were released.

2.7.27. A total of ₹ 17.83 crore was released for four SPVs in FY 2023-24. They were Welzo Research and Development, Devbhumi Pharmaceutical Analytical Testing and Training, Tirupati Research and Development, and Telangana Life Science Foundation. Ms. Welzo Research and Development PVT Limited was given ₹ 4.88 of ₹5.86 crore as II instalment, Devbhumi Pharmaceutical Analytical Testing and Training ₹3.24 crore of ₹ 8.24 crore as II installment, Tirupati Research and Development ₹ 5.00 crore as I instalment, and Telangana Life Science Foundation ₹ 4.71 crore as I instalment.

2.8 Sustainable Development Goals (SDG) Served

2.8.28. The 'Assistance to Pharmaceutical Industry for Common Facilities (APICF)' scheme demonstrates strong alignment with multiple Sustainable Development Goals, creating a comprehensive framework that addresses both good health and economic development. The scheme is in line with SDG no. 3 (Ensure healthy lives and promote well-being for all ages), 6 (Ensure availability and sustainable management of water and sanitation for all), 8 (Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all), and 9 (Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation). The scheme directly contributes to SDG 3 (Good

Health and Well-being) by strengthening India's pharmaceutical manufacturing capabilities to ensure accessible and affordable medicines for all, thereby supporting universal health coverage and reducing health inequalities. It significantly advances SDG 8 (Decent Work and Economic Growth) through job creation for skilled pharmaceutical professionals, enhancement of manufacturing productivity, and promotion of inclusive economic growth by empowering MSMEs within pharmaceutical clusters.

2.8.29. The scheme's emphasis on common effluent treatment plants, waste management systems, and sustainable manufacturing practices aligns with SDG 6 (Clean Water and Sanitation) by ensuring proper wastewater treatment. Additionally, the scheme supports SDG 9 (Industry, Innovation and Infrastructure) by establishing world-class common facilities, fostering innovation through shared R&D infrastructure, and building resilient pharmaceutical manufacturing ecosystems that enhance industrial competitiveness. As such, the APICF is an ambitious scheme that can bring about desirable changes to the ecosystem of pharmaceutical clusters. It is catering to sustainable development goals by catalyzing the ecosystem of pharmaceutical products.

2.9 Alignment with Viksit Bharat 2047 Vision

2.9.30. The APICF scheme contributes to India's vision of becoming a developed nation by 2047 through manufacturing hub development, technological advancement and modernization, environmental sustainability, human capital development, healthcare security and self-reliance and economic prosperity and inclusive growth. The development of the pharmaceutical sector through common facilities does contribute to the aspirational values of Viksit Bharat.

2.10 Fund Flow mechanism

2.10.31. The fund flow under the scheme goes with four instalments, viz. 30% each for first, second and third instalments and fourth instalment as 10%. The first installment of 30% is given on mobilization advance against an indemnity bond on final approval of the project by SSC. The second instalment is given against the production of bills, 60% utilization of first instalment and proportionate expenditure incurred by the SPV. The third instalment is given against the production of bills, 100% utilization of the first instalment, 60% utilization of the second instalment and proportionate expenditure incurred by the SPV. The fourth is given based on SPV's mobilization, SPV spending entirely sanctioned Grant-in-Aid and spent its full share.

The details are as under:

TABLE 2: FUND FLOW UNDER THE SCHEME

Instalment	Percentage of funds	Pre-requisites
1st	30	Mobilization advances against an Indemnity Bond, on final approval of the project by SSC.
2nd	30	Against the production of Bill 60% utilization of 1st instalment Proportionate expenditure incurred by the SPV.
3rd	30	Against the production of Bills 100% utilization of 1st instalment 60% utilization of 2nd instalment Proportionate expenditure incurred by the SPV.
4th	10	SPV has mobilized Spent entire sanctioned Grant-in-Aid Spent its full share

2.10.32. The SPV is expected to submit the Utilization Certificate (UC) in prescribed form (GFR-12A), generated through PFMS portal, duly certified by CA and countersigned by the Head of SPV for the amounts utilized in accordance with GFR-2017. Also, the expenditure details need to be uploaded in the EAT-02 module of PFMS before processing the case for subsequent instalments. Accounts of SPV is subject to audit by the Comptroller & Auditor General of India.

The limit of incentive under the scheme is 70% of the approved project cost or Rs. 20 crores, whichever is less, as per the approval of SSC. In the case of Himalayan States and states in the Northeast region, the grant-in-aid is Rs. 20 crore per cluster or 90% of the project cost of the common infrastructure facilities, whichever is less.

2.11 Budgetary allocation and Expenditure Pattern of the scheme

2.11.33. The budgetary allocation with regard to budget estimate, revised estimate and actual expenditure is populated as under:

TABLE 3: BUDGET ALLOCATION AND EXPENDITURE PATTERN OF THE APICF SCHEME

(₹ in Crore)			
FY	**BE**	**RE**	**Actual**
2021-22	₹ 18.00	₹ 15.61	₹ 9.88
2022-23	₹ 36.00	₹ 32.00	₹ 30.89
2023-24	₹ 51.00	₹ 44.50	₹ 23.84
2024-25	₹ 50.00	₹ 50.00	₹ 33.06
Total	₹ **155.00**	₹ **142.11**	₹ **97.67**

(Source: Department of Pharmaceuticals)

2.11.34. Based on the budget allocation and expenditure pattern of the APICF scheme presented in the table above, several important trends and observations emerge regarding the scheme's financial implementation and utilization patterns over the four-year period from 2021-22 to 2024-25.

2.11.35. The budget allocation of the APICF scheme reveals that BE has tripled from ₹18 crore to ₹51 crore between 2021-24, reflecting the Department of Pharmaceuticals' recognition of the scheme's importance. However, the actual expenditure stands low in sharp contrast with the revised expenditure. The utilization rate has dropped from 63% of revised estimates in 2021-22 to just 54% in 2023-24, with the 53% shortfall in 2023-24 where actual spending (₹23.84 crore) fell short of the original budget estimate (₹51 crore). This widening gap between policy intentions and ground-level execution, continuing into 2024-25 with only ₹33.06 crore utilized against ₹50 crore allocated, represents administrative diversity. It signifies missed opportunities for beneficiaries, delayed developmental outcomes, and a fundamental disconnect between policy design and implementation machinery. The consistent pattern of underutilization even after mid-year budget revisions suggests that the implementing agencies face structural bottlenecks in absorbing and effectively deploying available resources, making increased allocations merely paper promises rather than tangible development interventions.

2.11.36. The average BE over the years is ₹ 38.8 crores, ₹ 34.8 crores as RE and ₹ 24.4 crores as actual expenditure. Barring FY 2022-23, the increase in the revised expenditure with a sharp contrast to budgeted expenditure shows that the actual expenditure has incurred based on the requirements expressed under the scheme.

The same may also be shown through the bar diagram drawn below:

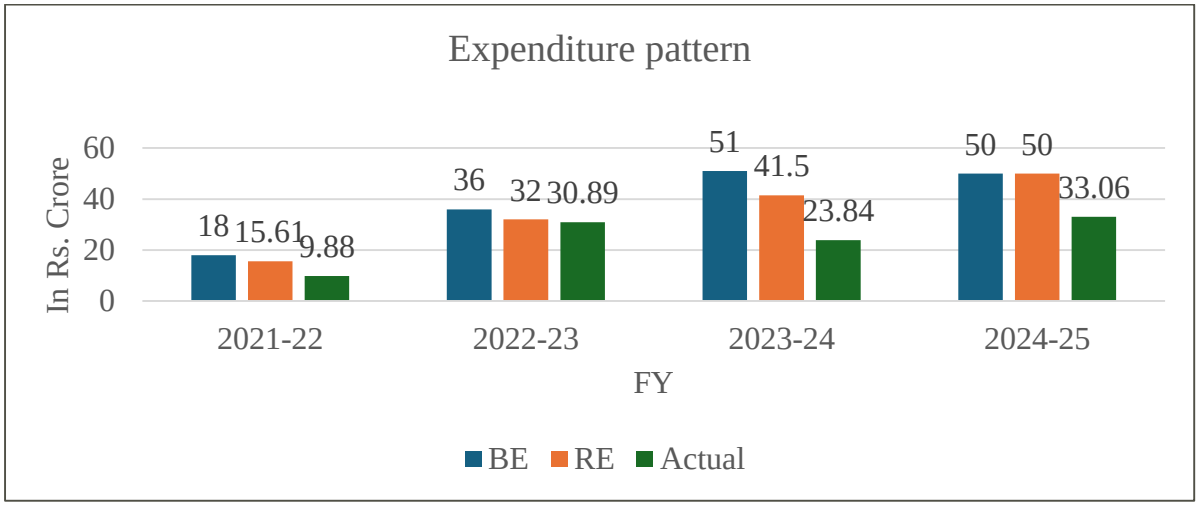

FIGURE 1: FINANCIAL STATUS OF THE SCHEME

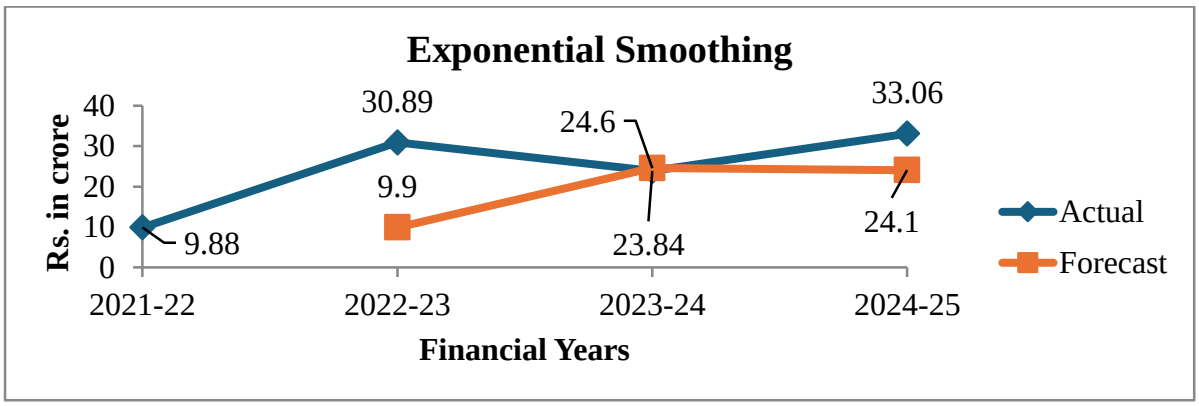

FIGURE 2: EXPONENTIAL SMOOTHING OF THE EXPENDITURE PATTERN

2.11.37. The graph above shows the actual expenditure and predicted expenditure for the FYs. The expenditure pattern shows that for 2021-24, the expenditure pattern relating to actual and predicated are almost alike. Relatively, a small gap has been observed during the year 2022-23. The same seems to have little rationalized for FY 2024-25. There exists absolutely no gap for the FY 2023-24. Overall, the actual expenditure pattern appears in congruence with the predicted expenditure. As such, the expenditure pattern of the scheme has been found to be logically rational. The same has also been tested through Mean Absolute Percentage Error (MAPE) to arrive at the conclusion as to whether the model employed is meaningful.

TABLE 4: MAPE & EXPONENTIAL SMOOTHING

(₹in Crore)			
FY	**Actual**	**Predicted**	**Absolute Percentage Error**
2021-22	9.88	9.88	0.0
2022-23	30.89	24.6	20.4

2023-24	23.84	24.1	0.8
2024-25	33.06	30.4	8.2
MAPE			**7.4**

2.11.38. One of the most common measures used to calculate forecasting accuracy is mean absolute percentage error (MAPE) that has been used in exponential smoothing. The formula to calculate MAPE is as follows:

MAPE = (1/n) * Σ (|actual – forecast| / |actual|) * 100

2.11.39. The MAPE value calculated is 7.4 % which shows a slight difference between the actual expenditure and forecasted expenditure. However, the lower the value for MAPE, the better a model can forecast values with the existing expenditure and forecasted expenditure. The difference is not considered acceptable when it gets recorded above 10%. As such, the forecasted line graph is potentially able to predict the expenditure pattern against the actual expenditure considering the expenditure pattern of the scheme across the years.

2.11.40. The figures presented through the table reveal MAPE (Mean Absolute Percentage Error) and Exponential Smoothing analysis for the APICF Scheme expenditure. It provides valuable insights into the predictability and forecasting accuracy of the scheme's financial utilization patterns over the four-year period from 2021-22 to 2024-25.

2.11.41. The exponential smoothing forecasting model demonstrates remarkably high accuracy in predicting the APICF scheme's expenditure patterns, as evidenced by the exceptionally low Mean Absolute Percentage Error (MAPE) of 7.4% (7.4%<10%), which falls well within the acceptable range for financial forecasting and indicates that the model can predict actual expenditures with over 92.6% accuracy. The year-wise analysis reveals that the model achieved perfect prediction in the base year 2021-22 with zero percentage error, as expected since this serves as the starting point for the exponential smoothing calculation. The most significant deviation occurred in 2022-23 where the predicted expenditure of ₹24.6 crores underestimated the actual expenditure of ₹30.89 crores by 20.40%, reflecting the substantial increase in scheme implementation momentum and absorption capacity that the model had not fully captured from the limited historical data available at that time.

2.11.42. The overall MAPE of 7.4% indicates that the APICF scheme's expenditure pattern, despite showing some volatility in the initial implementation phase, follows a relatively predictable trend that can be effectively modeled using exponential smoothing techniques. This suggests that the scheme has matured into a more stable implementation phase where

financial planning and budget utilization can be forecasted with high confidence, enabling better financial management and resource allocation for future years while also indicating that the scheme's implementation challenges have been largely addressed, resulting in more consistent and predictable expenditure patterns that support effective long-term planning for pharmaceutical infrastructure development.

2.12 Summary of past evaluation since inception of scheme

Name of the Agency Evaluated: Centre for Global Development Research Private Limited

Year of Evaluation: 2020-21.

2.12.43. The scheme was evaluated by the agency highlighting the objectives of the scheme coupled with its inception. The objectives highlighted by the agency include (1) strengthening the existing infrastructure facilities in order to make Indian pharma industry a global leader in pharma sector, (2) easy access to standard testing facilities and value addition in the domestic pharma industry especially to SMEs through creation of common world class facilities for increased competitiveness, (3) to help industry meet the requirements of standards of environment at a reduced cost through innovative methods of common waste management system and (4) exploit the benefits arising due to optimization of resources and economies of scale.

2.12.44. The performance of the scheme based on output/outcome indicators describes the guideline of steering committee vide office memorandum date 16.06.2015 to approve the project and monitor their implementation by granting in-principal approval and later final approval. The project details with regard to CFC pharmaceutical industry have been populated in a table detail the projects etc. The schedule to PMC, key decision dates, scope of the LSTK work order, time of completion, project implementation schedule, invoice and role of PMC are the highlights of the initial part of the report.

2.12.45. The report includes a diagram on process flow. The physical progress of the project has been verified by on-site visit that also includes interaction with the implementing agencies. The report has also detailed physical progress in value terms distribution of cost by major activities payment schedule and pending work. The share of SC and female employment have also been included in the report. The report has brought out the fact that SC employment was 69% in 2016-17, gone up to 71% in 2017-18 and further improved to 78% in 2018-19. The female employment has grown up imperceptibly over the years, as the report posits. The exiting implementation mechanism of that time has also been mentioned. No gap in achievement has been found by the agency with regard the scheme. The key bottlenecks and

challenges have been included in the report with the least categorical description. It has additionally been mentioned that the department does not have its institutional set up to implement such a scheme and relies on external agencies which are not under its control. These agencies present their case for obtaining the funding, but they cannot be held accountable by the Department for defaults, inefficiencies and mismanagement. Input use efficiency and thematic assessment have been left blank in the report.

2.12.46. The report unfolds for future projects of the Department; it is important to gather the information for carrying out monitoring and delay analysis. This information was sought by the study team of the agency but was not made available to them. It has been suggested to keep activity-wise time schedule of the project with planned and actual dates covering all milestones including planning, drawing preparation, drawing approvals, civil construction, orders for equipment, arrival of equipment, erection and commissioning. Milestone for payments as planned, dates of invoice raised, date of request for approval, recommendation for payment and date of actual payments. In the same schedule activities, it was expected to provide the expected date of approvals, execution and commissioning for the remaining work and activity. The final expected date for commissioning and handover was also suggested to be ensured.

The need for Programme Evaluation Technique (PERT) has been observed in the report. The need for better coordination between SPV, PMC and Department has been emphasized.

2.12.47. The report finds externalities as: improving the technological level in manufacturing sector, impact on environment, focus on establishment of CETP for effluent treatment and sewage benefiting the regional commitment. The additional externality has been found as preserving water etc. For the vision for future, the report has suggested developing DoP with more experience and expertise for installation and operation of the Pharmaceutical Industry specific CETP through institutional mechanism. It has been suggested to set up section 8 company under the Department of Pharmaceuticals to take responsibility. In the recommendation part, the agency has stated that the Indian pharmaceutical industry has come in the age of displaying its prowess in formulation manufacture.

2.11.48. However, small and medium scale units need tangible support, which can be extended through establishment of CFCs. Improvement in the competitiveness of SME sector would provide much more robust base of manufacturing in the pharmaceutical sector. The scheme of CFC for pharmaceutical industry (APICF or CDS-PS) is therefore a highly progressive scheme and it has enormous potential to help Indian Manufacturing Sector in the field of manufacturing pharmaceutical formulations. It can also be great stimulus to the Make in India

initiatives to the Central Government. Therefore, the scheme must be implemented. Only after the implementation of a few projects, improvements can be made for better targeting.

2.12.49. The key recommendations of the report are:

1. Need for better coordination between SPV, PMC and the Department,
2. Need for development of experience and expertise for installation and operation of pharmaceutical industry, specific CETP through institutional mechanism.
3. Status of acceptance: These recommendations were accepted by the DoP.

****

3. METHODOLOGY

3.1. 1. The methodology of the third-party evaluation employed a mixed-methods approach. The approach adopted for the evaluation of the scheme was goal-based, process-based and outcome-based. The goal-based approach measures if the objectives of the scheme were duly met. The process-based approach studied the strengths and weaknesses of the scheme and finally, the outcome-based approach evaluated if the outcomes aligned with the pre-specified objectives of the scheme. In this light, the evaluation strategy relied on primary and secondary sources for the purpose of data collection. The secondary information on funds released and allocated was collected from the Department of Pharmaceuticals, Ministry of Chemicals & Fertilizers. The previous third-party evaluation has also been consulted to get a view on the subjects covered under the scheme.

3.1.2. Importantly, the evaluation study has been conducted following the Template prepared by the NITI Aayog, vetted by the Department of Expenditure and the scheme guidelines provided by the Department of Pharmaceuticals. Details available at the website of the Department of Pharmaceuticals have also been used to formulate the strategy for evaluation of the scheme. In addition, the research team of IIPA has used several resources for conducting this study, which include literature review, budget outlay, secondary data on production, National Accounts, trade, interaction with the officials of the Department and lab owners. The current evaluation report on the APICF provides comprehensive information pertaining to the implementation, structure and design of the Scheme, wherefrom the recommendations have also flowed.

3.1.3. Primary data was collected in the form of a questionnaire, which was designed to be administered to lab owners. The Questionnaire was made applicable to the executive heads (the beneficiaries) in two stages, namely before and after the beneficiaries had been impacted owing to the scheme. Changes in responses are observed in the backdrop of the prevailing financial conditions before and after the APICF.

3.1.4. Overall, the information obtained from the Questionnaire helped us identify key bottlenecks that the scheme needs to address and also measure whether the scheme can meet its objectives. The set of Questionnaires that plays a pivotal role in the evaluation strategy takes into account a holistic view of situations by blending both birds' and warm's eye view.

3.1 Sample size and sample collection process

3.1.5. The sample size for this study was determined based on a comprehensive assessment of clusters that had received financial assistance for common facilities by the DoP within the specified timeframe. A systematic random sampling approach was employed to ensure representativeness and minimize selection bias. From the population of financial assistance, two firms were randomly selected using a probability sampling method, ensuring that each eligible firm had an equal chance of being included in the study. The selection criteria included firms that had successfully received financial and demonstrated operational status during the study period. This approach was designed to capture diverse perspectives and experiences from the target population while maintaining methodological rigour. However, we received responses from 8 units.

3.1.6. Before conducting field visits, comprehensive preparatory measures were undertaken to ensure effective data collection. The study team established formal communication channels with the selected clusters, providing advance notice about the research team's visit and objectives thereof. This pre-visit communication served multiple purposes: it ensured the availability of key personnel, facilitated scheduling of appropriate meeting times, and allowed the clusters to prepare relevant documentation and information.

3.1.7. Detailed information packets were shared with the participating clusters, outlining the study's purpose, methodology, and expected duration of the visit. This transparent approach helped establish trust and cooperation between the research team and the participating clusters. The primary data collection was conducted through in-person visits to the selected firms' facilities. This approach was chosen to ensure direct observation of operational processes, facilitate face-to-face interactions with key stakeholders, and enable real-time clarification of responses.

3.1.8. During each visit, the research team engaged with multiple levels of organizational hierarchy to obtain comprehensive insights. The presence and participation of both staff members and senior executive leadership were actively sought and secured. This multi-level engagement strategy ensured that diverse perspectives were captured, ranging from operational-level insights to strategic management viewpoints. Structured interviews were conducted using a predetermined questionnaire designed to address the study's research objectives. Specific, targeted questions were posed to the participants, and detailed responses were systematically recorded. The research team employed active listening techniques and followed-up questioning to ensure a comprehensive understanding of the participants' perspectives.

3.1.9. Several challenges were encountered during the data collection process that required adaptive strategies. Notably, the pharma cluster owners and senior management personnel demonstrated a strong focus on their day-to-day operational responsibilities and expressed preferences for expedited completion of the interview sessions. This operational urgency was understandable given the demanding nature of their business environment.

3.1.10. Recognizing the time constraints while maintaining the integrity of the research process, the study team implemented flexible data collection strategies. This included adjusting interview schedules to accommodate the participants' operational priorities, conducting brief but focused sessions, and following up with additional questions when necessary to ensure complete data capture.

3.1.11. The research team demonstrated persistence and professionalism in obtaining the required information, recognizing the critical importance of this study for broader policy and academic understanding. When initial responses were insufficient for the study's analytical requirements, the team employed follow-up techniques, including structured follow-up questions and requests for specific data points and documentation.

3.1.12. The study encompassed a comprehensive review of projects identified within a specific timeframe. A total of 8 units have been covered under the study of APICF scheme. This selective approach, while focused on a smaller sample size, was designed to provide deep, qualitative insights rather than broad quantitative coverage. The methodology prioritized the quality and depth of information over the quantity of respondents, ensuring that the collected data would provide meaningful insights into the financial assistance programmes impact and effectiveness.

3.1.13. The field visits were conducted systematically, with each visit lasting sufficient time to gather comprehensive information while respecting the operational constraints of the participating clusters. This balanced approach ensured both research quality and participant cooperation throughout the data collection process.

3.2 Baseline data on KPIs

3.2.14. The baseline data on 'Key Performance Indicators (KPIs)' were garnered. The establishment of baseline data for KPIs was essential to measure the impact and effectiveness of financial assistance on participating firms. Baseline measurements were collected for the period immediately preceding the financial assistance implementation, capturing critical operational metrics.

3.2.15. The comprehensive baseline dataset served as the foundational reference point against which post-financial assistance performance could be evaluated, enabling the study to quantify the actual impact of the intervention. The baseline data collection process involved reviewing records, financial statements, operational reports, and conducting interviews with key personnel to ensure accuracy and completeness. These pre-intervention measurements were systematically documented and verified through multiple sources to establish a reliable benchmark for subsequent comparative analysis, thereby ensuring the validity and reliability of the study's impact assessment methodology. The baseline data on 3.2.14. KPIs included information captured on the efficacy and sufficiency received from the subsidy. The information received from SPV for KPIs is as under:

TABLE 5: SPVS COVERED UNDER THE SCHEME

S. no.	Name	Project	Place	Approved Project Cost
1.	Chennai Pharma Industrial Infrastructure Upgradation Company (CPIIUC)	Common Effluent Treatment Plant (CETP)	Alanthur, Tamil Nadu	Rs. 11.02 Crores
2.	Inducare Pharmaceuticals and Research Foundation (IPRF)	Common Testing Facility, R&D with pilot plant and common logistic center	Pune, Maharashtra	Rs. 31.44 Crores
3.	Kala Amb Infrastructure Development Company (KIDC)	Common Effluent Treatment Plant (CETP)	Sirmaur, Himachal Pradesh	Rs. 7.20 Crores
4	Jeedimetla Effluent Treatment Ltd.	Common Effluent Treatment Plant (CETP)	Hyderabad, Telangana	Rs. 29.17 Crores
5	Devbhumi Pharmaceutical Testing and Training Foundation	Testing Laboratory	Haridwar, Uttarakhand	Rs. 23.68 Crores
6	Tindivanam Pharma Park Association	Common Effluent Treatment Plant (CETP)	Viluppuram, Tamil Nadu	Rs. 39.51 Crores
7	Welzo Rsearch and Development Pvt. Ltd.	Research & Development and Testing Laboratory	Baddi, Himachal Pradesh	Rs. 29.90 Crores

8	Hyderabad Pharma City Ltd.	Centre of Excellence on Antimicrobial Resistance (AMRCoE)	Hyderabad, Telangana	Rs. 26.02 Crores
9	Tirupati Research & Development Pvt. Ltd. (TREND)	Common Facility Centre for Research & Development and Testing & Training facility	Tirupati, Andhra Pradesh	Rs. 29.90 Crores
10	Inducare Pharmaceuticals and Research Foundation (IPRF)	Upgradation of Common Testing Facility Quality Control Laboratory (GLP certified) Process	Pune, Maharashtra	Rs 14.38 Crores
11	**Total**			**Rs. 242.22**

3.2.16. The APICF scheme has sanctioned ₹242.22 crores across 10 projects to develop shared pharmaceutical infrastructure including research labs, effluent treatment plants, and testing facilities across states like Himachal Pradesh, Telangana, Tamil Nadu, and Maharashtra. With a total financial outlay for ten supported units, Rs. 242.22 crores that involves also the carried forward components. The financial outlay and sanction grant-in-aid is shown through the pie chart drawn below:

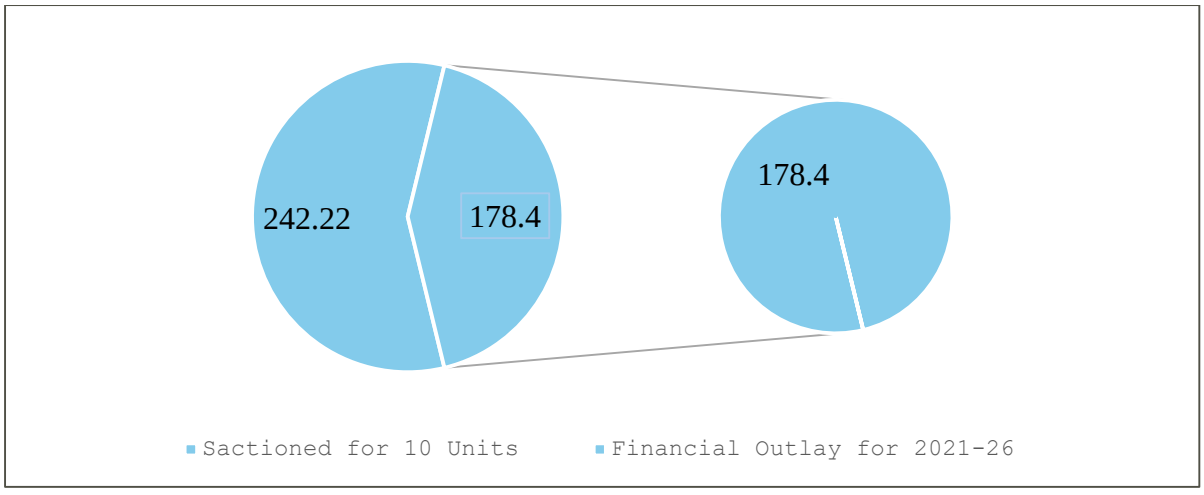

FIGURE 3: FINANCIAL ACHIEVEMENT OF APICF

3.2.17. The pie chart represents the financial outlays and amount sanctioned to cover 10 SPVs. The financial outlay for FY 2021-26 has been ₹178.40 crore whereas the sanctioned amount is ₹ 242.22 crores for supporting 10 units for the common facilities. It shows the over utilization of funds based on information received from the field. The gap appears to be desirable as against the sanctioned 10 units the financial outlay for the FY 201-26 is less. The visual distribution highlights that the government has committed substantial resources to

develop pharmaceutical infrastructure through the APICF scheme, the actual flow of funds to project implementers suggests the active participation of stakeholders be it the department or the beneficiaries.

3.2.18. The key performance indicators envisaged under the scheme are as under:

TABLE 6: KEY PERFORMANCE INDICATORS

Sr. No.	Key Performance Indicators
1	No. of SPV supported for the common Facility during FY 2021-26.
2.	Status of Supported Projects

The common facility supported under the APICF scheme during the FY 2021-26 are as under:

1. A total of four installments were released against three SPVs in FY 2021-22, namely Inducare Pharmaceuticals and Research Foundation (IPRF), Kala Amb Infrastructure Development Company (KIDC) and Tindivanam Pharma Park Association. Inducare Pharmaceuticals and Research Foundation (IPRF) was released II installment of ₹ 6.51 crore, Kala Amb Infrastructure Development Company (KIDC)'s II and III instalment for ₹ 1.51 crore and 0.64 crore respectively and Tindivanam Pharma Park Association. Inducare Pharmaceuticals and Research Foundation (IPRF)'s IV instalment of ₹ 1.04 crore were released.
2. A total of ₹ 17.83 crore was released for four SPVs in FY 2023-24. They were Welzo Research and Development, Devbhumi Pharmaceutical Analytical Testing and Training, Tirupati Research and Development, and Telangana Life Science Foundation. Ms. Welzo Research and Development PVT Limited was given ₹ 4.88 of ₹5.86 crore as II instalment, Devbhumi Pharmaceutical Analytical Testing and Training ₹3.24 crore of ₹ 8.24 crore as II installment, Tirupati Research and Development ₹ 5.00 crore as I instalment, and Telangana Life Science Foundation ₹ 4.71 crore as I instalment.

The information is placed in Table-7:

TABLE 7: RELEASE OF INSTALMENTS ACROSS PROJECTS

S. no.	Name	Project	Approved Project Cost
1.	Chennai Pharma Industrial Infrastructure Upgradation Company (CPIIUC)	Common Effluent Treatment Plant (CETP)	Rs. 11.02 Crores
2.	Inducare Pharmaceuticals and Research Foundation (IPRF)	Common Testing Facility, R&D with pilot plant and common logistic center	Rs. 31.44 Crores
3.	Kala Amb Infrastructure Development Company (KIDC)	Common Effluent Treatment Plant (CETP)	Rs. 7.20 Crores
4	Jeedimetla Effluent Treatment Ltd.	Common Effluent Treatment Plant (CETP)	Rs. 29.17 Crores
5	Devbhumi Pharmaceutical Testing and Training Foundation	Testing Laboratory	Rs. 23.68 Crores
6	Tindivanam Pharma Park Association	Common Effluent Treatment Plant (CETP)	Rs. 39.51 Crores
7	Welzo Research and Development Pvt. Ltd.	Research & Development and Testing Laboratory	Rs. 29.90 Crores
8	Hyderabad Pharma City Ltd.	Centre of Excellence on Antimicrobial Resistance (AMRCoE)	Rs. 26.02 Crores
9	Tirupati Research & Development Pvt. Ltd. (TREND)	Common Facility Centre for Research & Development and Testing & Training facility	Rs. 29.90 Crores
10	Inducare Pharmaceuticals and Research Foundation (IPRF)	Upgradation of Common Testing Facility Quality Control Laboratory (GLP certified) Process	Rs 14.38 Crores

3.3 Status of supported Projects

3.3.19. Based on the information received from various sources, the status of supported projects for common facilities have been found out. The completion of supported projects is

the testament of the APICEF scheme's success. The supported projects actually take two years in certain cases; the period may also be increased from taking consent from SSC. The details are given below:

TABLE 8: STATUS OF SUPPORTED PROJECTS UNDER THE SCHEME

S. no.	Name	Project	Place	Approved Project Cost	Approved Grant-in-aid	Status
1.	Chennai Pharma Industrial Infrastructure Upgradation Company (CPIIUC)	Common Effluent Treatment Plant (CETP)	Alanthur, Tamil Nadu	Rs. 11.02 Crores	Rs. 7.71 Crores	Completed
2.	Inducare Pharmaceuticals and Research Foundation (IPRF)	Common Testing Facility, R&D with pilot plant and common logistic center	Pune, Maharashtra	Rs. 31.44 Crores	Rs. 20.00 Crores	Completed
3.	Kala Amb Infrastructure Development Company (KIDC)	Common Effluent Treatment Plant (CETP)	Sirmaur, Himachal Pradesh	Rs. 7.20 Crores	Rs. 5.04 Crores	Completed
4	Jeedimetla Effluent Treatment Ltd.	Common Effluent Treatment Plant (CETP)	Hyderabad, Telangana	Rs. 29.17 Crores	Rs. 20.00 Crores	Final Approval: 13.03.2023 1 Instalment released.
5	Devbhumi Pharmaceutical Testing and	Testing Laboratory	Haridwar, Uttarakhand	Rs. 23.68 Crores	Rs. 20.00 Crores	Final Approval: 22.03.2023

	Training Foundation					3 Instalments released
6	Tindivanam Pharma Park Association	Common Effluent Treatment Plant (CETP)	Viluppuram, Tamil Nadu	Rs. 39.51 Crores	Rs. 20.00 Crores	Final Approval: 17.03.2023 1 Instalment released.
7	Welzo Research and Development Pvt. Ltd.	Research & Development and Testing Laboratory	Baddi, Himachal Pradesh	Rs. 29.90 Crores	Rs. 19.53 Crores	Final Approval: 15.03.2023 3 Instalments released
8	Hyderabad Pharma City Ltd.	Centre of Excellence on Antimicrobial Resistance (AMRCoE)	Hyderabad, Telangana	Rs. 26.02 Crores	Rs. 18.87 Crores	Final Approval: 21.09.2023 1 Instalment released.
9	Tirupati Research & Development Pvt. Ltd. (TREND)	Common Facility Centre for Research & Development and Testing & Training facility	Tirupati, Andhra Pradesh	Rs. 29.90 Crores	Rs. 20.00 Crores	Final Approval: 02.01.2024 1 Instalment released.
10	Inducare Pharmaceuticals and Research Foundation (IPRF)	Upgradation of Common Testing Facility Quality Control Laboratory (GLP certified) Process	Pune, Maharashtra	Rs 14.38 Crores	Rs. 7.18 Crores	In Principle approval was accorded to SPV on 12.08.2024.

3.4 Evaluation tools

3.4.20. The evaluation employed multiple analytical tools including exponential smoothing, budgetary analysis, input-use efficiency metrics, measures of central tendency, and cost-benefit analysis to comprehensively assess the APICF scheme's performance. These descriptive tools were strategically selected to evaluate scheme efficacy and, based on field data collection, actionable recommendations, generated for improvement in the scheme. Performance assessment utilized both output and outcome indicators to measure effectiveness, while input-output analysis determined how well the financial assistance translated into the scheme's core objectives of improving medicine quality and affordability as a public health priority. The chosen methodological framework provided a robust foundation for evaluating whether the scheme's implementation delivered on its promised outcomes in strengthening India's pharmaceutical infrastructure. The tools have been used systematically to assess the expected outcome laid down.

3.5 Data collection tools

3.5.21. Data collection tools used in the third-party evaluation of the scheme included (i) questionnaire, (ii) In-depth interview, (iii) Observation and (iv) Focus Group Discussion (FGD). The research tools that enhanced the third-party evaluation are as under:

3.5.22. Questionnaire: The questionnaire was designed for SPVs. The contents in the Questionnaire pertaining to the beneficiaries include the basic profile of the SPV, its basic profile, and prevailing financial conditions before and after the implementation of APICF scheme. Process-related and multiple issues were identified to examine the opportunities and crises generated along with the coverage and effectiveness of the scheme and the challenges it faced. A total of three SPV firms were physically verified. However, maximum information was garnered through an extensive VC interaction where many SPV heads came up with their ideas and aspirations.

3.5.23. In-depth interview: In depth interview was conducted with the heads of the SPVs, which helped in providing comprehensive details regarding the objective, structure, implementation and the existing challenges of the scheme. The minutes of the discussion immensely contributed to the findings of the study.

3.5.24. Observation: Key observations were made during the course of incorporating the responses in the Questionnaire of the SPV owners. The observations drawn from the responses provided deep insights into the implementation and the benefits experienced by SPVs. The in-depth interview with the SPV enhanced the qualitative findings.

3.5.25. Focus Group Discussions: Focus Group Discussions (FGD) were conducted with the employees working in pharma clusters at different levels. The focus group discussion sought to assess the status of employees in terms of their retention and overall satisfaction. The focus group discussion enabled us to know the nuances pertaining to the existing scheme guidelines. A total of 8 focus group discussions were conducted. Most of focus group discussions were conducted through Video Conferencing (VC).

3.6 OBJECTIVES OF THE STUDY

The objectives of the study are as under:

1. To assess the financial achievement of the scheme,
2. To find out the common facilities installed in the targeted SPVs,
3. To examine the demand of the scheme, and
4. To suggest measures to improve the effectiveness of the scheme.

3.7 Financial achievement of the scheme

The financial achievement of the scheme has been measured considering the financial outlay and the actual amount sanctioned to the SPVs. The details are as under:

TABLE 9: FINANCIAL ACHIEVEMENTS OF THE PROJECTS

S. no.	SPVs	Project	Approved Project Costs	Approved Grant-in-aid
1.	Chennai Pharma Industrial Infrastructure Upgradation Company (CPIIUC)	Common Effluent Treatment Plant (CETP)	Rs. 11.02 Crores	Rs. 7.71 Crores
2.	Inducare Pharmaceuticals and Research Foundation (IPRF)	Common Testing Facility, R&D with pilot plant and common logistic center	Rs. 31.44 Crores	Rs. 20.00 Crores
3.	Kala Amb Infrastructure Development Company (KIDC)	Common Effluent Treatment Plant (CETP)	Rs. 7.20 Crores	Rs. 5.04 Crores
4	Jeedimetla Effluent Treatment Ltd.	Common Effluent Treatment Plant (CETP)	Rs. 29.17 Crores	Rs. 20.00 Crores

5	Devbhumi Pharmaceutical Testing and Training Foundation	Testing Laboratory	Rs. 23.68 Crores	Rs. 20.00 Crores
6	Tindivanam Pharma Park Association	Common Effluent Treatment Plant (CETP)	Rs. 39.51 Crores	Rs. 20.00 Crores
7	Welzo Research and Development Pvt. Ltd.	Research & Development and Testing Laboratory	Rs. 29.90 Crores	Rs. 19.53 Crores
8	Hyderabad Pharma City Ltd.	Centre of Excellence on Antimicrobial Resistance (AMRCoE)	Rs. 26.02 Crores	Rs. 18.87 Crores
9	Tirupati Research & Development Pvt. Ltd. (TREND)	Common Facility Centre for Research & Development and Testing & Training facility	Rs. 29.90 Crores	Rs. 20.00 Crores
10	Inducare Pharmaceuticals and Research Foundation (IPRF)	Upgradation of Common Testing Facility Quality Control Laboratory (GLP certified) Process	Rs 14.38 Crores	Rs. 7.18 Crores
11	**Total**		**242.40**	**158.33**

3.7.26. The table above highlights the financial achievements of the projects under the APICF scheme. It includes the information of approved project costs and corresponding grant-in aid sanctioned for ten different SPVs involved in improving their common facility. The Chennai Pharma Industrial Infrastructure Upgradation Company (CPIIUC) working on the Common Effluent Treatment Plant (CETP) project has an approved project cost Rs. 11.02 crores, and Rs. 7.71 crores sanctioned as Grant-in-aid, Inducare Pharmaceuticals and Research Foundation (IPRF) with the approval of the Rs. 31.44 crores as project cost and Rs. 20.00 crores as grant-in-aid, same for the other institutes Kala Amb Infrastructure Development Company (KIDC) with Rs. 7.20 Crores and Rs. 5.04 Crores amount in project Common Effluent Treatment Plant (CETP), Jeedimetla Effluent Treatment Ltd have Rs. 29.17 crores and Rs. 20.00 crores for working in project Common Effluent Treatment Plant (CETP), Rs. 23.68 crores Rs. 20.00

crores for Devbhumi Pharmaceutical Testing and Training Foundation under the project Testing Laboratory, and remaining institutions Tindivanam Pharma Park Association, Welzo Research and Development Pvt. Ltd., Hyderabad Pharma City Ltd., Tirupati Research & Development Pvt. Ltd. (TREND), Inducare Pharmaceuticals and Research Foundation (IPRF) are working on Common Effluent Treatment Plant (CETP), Research & Development and Testing Laboratory, Centre of Excellence on Antimicrobial Resistance (AMRCoE), Common Facility Centre for Research & Development and Testing & Training facility, and Upgradation of Common Testing Facility Quality Control Laboratory (GLP certified) Process with the allocated amount of Rs. 39.51 crores Rs. 20.00 crores, Rs. 29.90 crores Rs. 19.53 crores, Rs. 29.90 crores Rs. 20.00 crores, and Rs 14.38 crores Rs. 7.18 Crores respectively. The table systematically presents project-wise financial allocations, under the APICF scheme for each SPV.

3.7.27. The financial performance metrics reveal that the scheme has achieved operational maturity and institutional stability. This performance profile positions the APICF Scheme as a model for replication across similar development interventions, demonstrating that well-designed schemes with appropriate implementation frameworks can achieve both high approval rates and strong expenditure performance.

3.7.28. Furthermore, these utilization figures reflect the scheme's success in reaching its intended beneficiaries and generating meaningful developmental impact. The financial performance also indicates strong institutional learning and adaptive management within the scheme's implementation framework. The ability to maintain such high utilization rates suggests that implementing agencies have developed robust project management capabilities, and effective stakeholder coordination mechanisms.

3.8 Common facilities installed in the targeted SPVs

The common facility installed by SPVs have been informed to the study team. The information is populated in the table below:

TABLE 10: ACCESS TO ELIGIBLE ACTIVITIES ACROSS CLUSTERS COVERED UNDER THE SCHEME

Access to eligible activities					
Name of Cluster	**Research and Development labs**	**Testing Laboratory**	**Effluent Treatment Plant**	**Logistic Centre**	**Training Centres**

Welzo Research and Development PVT. Ltd, Baddi, Himachal Pradesh	Yes	No	No	No	No
Jeedimetla Effluent Treatment Limited, Hyderabad	No	No	Yes	No	No
Tindivanam Pharma Park Association, Villupuram, Tamil Nadu	No	No	Yes	No	No
Devbhoomi Pharmaceutical Analytical Testing and Training Foundation Roorkee, Uttarakhand	No	Yes	No	No	No
Tiruputi Research and development Pvt Ltd., Tirupati, Andhra Pradesh	Yes	No	No	No	Yes
Telangana Lifesciences Foundation (earlier Hyderabad Pharmacity Limited), Hyderabad, Telangana	No	No	Yes	No	No
Inducare Pharmaceuticals & Research Foundation, Pune, Maharashtra	Yes	Yes	No	No	No
Himachal Pradesh Testing Lab Limited, Baddi, Himachal Pradesh	No	No	Yes	No	No

3.8.29. (i)The table above illustrates that among the 8 pharma clusters covered under the scheme. A total of three SPVs have research and development labs, two of them have testing laboratories, four of them have effluent treatment plant, no one has logistic centre, one of them has training centre. Furthermore, the responses were gathered on five key infrastructure components: (i) Research and development labs, (ii) Testing laboratories, (iii) Effluent treatment plants, (iv) Logistics centers, and (v) Training centers. The responses

documented showed that out of 40 responses collected, the SPVs clusters achieved an average success rate of 25%. The 25% success rate represents a strong foundation, considering that pharma cluster development is a complex, multi-faceted initiative requiring substantial investment and coordination across multiple stakeholders. This success rate indicates that clusters have made meaningful progress across all five critical infrastructure areas rather than focusing on just one or two components, ensuring holistic development.

3.8.30. (i) Given the fact that pharma clusters are relatively new policy initiatives, achieving nearly 25% success rate demonstrates effective implementation and suggests strong potential for improvement. The 25% rate may reflect a focus on establishing high-quality, sustainable facilities rather than rushing to achieve higher numbers with substandard infrastructure. This success rate provides valuable insights for continuing with strategies, identifying best practices from successful clusters, and addressing challenges in underperforming areas. The high success rate suggests prudent resource allocation, ensuring that investments are made strategically rather than spreading resources too thin across too many initiatives. With nearly half the initiatives showing success, there's clear momentum that can be leveraged to accelerate progress in the remaining areas, creating a positive feedback loop for future development.

The bar diagram depicts the trend as plotted below:

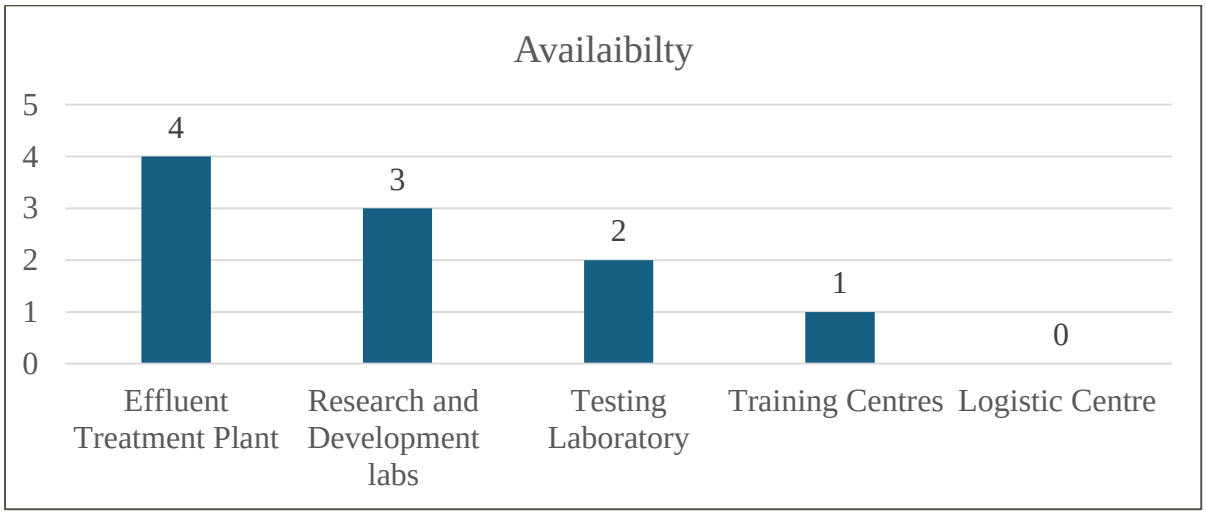

FIGURE 4: ELIGIBLE ACTIVITIES AND STATUS

3.8.31. The eligible activities plotted through bar diagram present the responses of pharma clusters. It shows that maximum response has been received on effluent treatment plant (4), research and development (3), testing laboratory (2), Training centre (1) and logistic centres (0). Their 'other needs' may be identified to catalyze the process of their infrastructure development. The access to common facilities is ensuring their sustained growth.

3.9 Demand of the scheme

3.9.32. A total of 118 SPVs have identified during survey of pharma clusters. The details of which are given in the table below:

TABLE 11: PHARMA CLUSTERS IN THE COUNTRY

Pharma Clusters in the Country							
Sl No.	**State/UT**	**Pharma Cluster**	**Micro**	**Small**	**Medium**	**Large**	**Total**
1	Andhra Pradesh	Achyutapuram, Visakhapatnam	0	4	3	1	8
2		JNPC, Parawada, Visakhapatnam	35	30	15	10	90
3		Naidupeta, Tirupati	0	0	0	5	5
4		NTR Krishna, Palnadu	12	23	0	0	35
5		Ongole	0	4	2	0	6
6		Pydiveemavaram, Srikakulam	5	18	2	0	25
7		Ramky SEZ, Nakapalli-Rambilli, Visakhapatnam	15	6	8	5	34
8		Vijayawada	5	16	20	5	46
9	Chhattisgarh	Raipur	8	11	12	25	56
10	Goa	Kundain	0	2	3	1	6
11		Margaon	2	3	4	2	11
12		Tivim	0	3	3	0	6
13		Tuem	0	2	0	1	3
14		Verna, Salcete	0	3	14	15	32
15	Gujarat	Ahmedabad	44	61	175	162	442
16		Ankleshwar, Bharuch	6	26	18	5	55
17		Dahej, Bharuch	0	20	10	1	31
18		Jhagadia, Bharuch	0	5	3	0	8
19		Lodhika, Rajkot	5	25	20	0	50
20		Makapura, Vadodara	2	8	8	0	18
21		Nandesari, Vadodara	2	5	6	3	16
22		Panoli, Bharuch	5	30	30	5	70

Pharma Clusters in the Country							
Sl No.	**State/UT**	**Pharma Cluster**	**Micro**	**Small**	**Medium**	**Large**	**Total**
23		Por-Ramangamdi, Vadodara	0	0	6	0	6
24		Savli, Vadodara	1	5	6	0	12
25		Vagodiya, Vadodara	2	6	3	0	11
26		Vapi-Valsad	0	15	10	0	25
27		Vatva, Ahmedabad	6	14	20	28	68
28	Haryana	Faridabad	0	4	20	28	68
29		Karnal	8	9	12	5	34
30		Panchkula	3	12	25	3	43
31	Himachal Pradesh	Baddi-Barotiwala Nalagarh, Solan	40	60	250	50	400
32		Kala Amb, Sirmour	3	12	25	15	55
33		Paonta Sahib, Sirmur	15	12	13	7	47
34		Parwanoo	0	4	15	2	21
35		Sansarpur, Kangra	0	8	12	7	27
36		Solan	4	17	15	5	41
37		Una	0	23	0	2	25
38	Karnataka	Bengaluru Rural & Urban	6	10	24	10	50
39		Bidar	0	3	17	5	25
40		Hassan	1	5	8	0	14
41		Nanjangud, Mysuru	3	13	27	7	50
42		Yadgir	0	2	8	0	10
43	Madhya Pradesh	Indore	50	80	50	5	185
44	Maharashtra	Ahmednagar	101	5	0	0	106
45		Akola	29	6	0	0	35
46		Ambar, Nashik	5	15	3	0	23
47		Ambernath, Thane	85	136	180	55	456
48		Amravati	60	3	0	0	63
49		Andheri, Mumbai	59	82	66	58	265
50		Baramati, Pune	19	34	20	7	80

Pharma Clusters in the Country							
Sl No.	**State/UT**	**Pharma Cluster**	**Micro**	**Small**	**Medium**	**Large**	**Total**
51		Beed	43	0	0	0	43
52		Bhosari, Pune	8	7	15	9	39
53		Boisar, Palgarh	16	41	37	12	106
54		Buldhana	34	1	0	0	35
55		Chikhalthana, Aurangabad	0	2	3	5	10
56		Chinchwad, Pune	12	16	16	4	48
57		Chiplun, Ratnagiri	4	3	8	3	18
58		Dhule	30	0	0	0	30
59		Dombivali, Mumbai	22	17	31	46	116
60		Hingna, Nagpur	86	18	12	14	130
61		Jalgaon	62	1	1	0	64
62		Jalna	34	0	0	0	34
63		Kalmeshwar, Nagpur	0	6	6	4	16
64		Khed, Ratnagiri	0	8	4	2	14
65		Kolhapur	140	8	0	4	152
66		Latur	27	1	0	0	28
68		Lote, Ratnagiri	2	15	9	4	30
69		Mahad, Raigad	0	15	7	3	25
70		Nanded	27	3	0	0	30
71		Navi Mumbai	54	67	81	50	252
72		Paithan, Aurangabad	0	2	7	1	10
73		Patalganga, Raigad	3	3	2	7	15
74		Pimpri, Pune	7	5	7	13	32
75		Roha, Raigad	2	4	4	2	12
76		Satara	25	35	30	6	96
77		Shendra, Aurangabad	0	2	2	2	6
78		Sinnar, Nashik	6	4	8	3	21
79		Solapur	79	7	2	0	88
80		Taloja, Raigad	200	460	345	75	1080
81		Tarapur, Palgarh	21	30	38	14	103
82		Waluj, Aurangabad	37	24	20	4	85

Pharma Clusters in the Country							
Sl No.	**State/UT**	**Pharma Cluster**	**Micro**	**Small**	**Medium**	**Large**	**Total**
83		Wardha	34	2	1	0	37
84	Odisha	Cuttack-Bhubaneswar	23	23	10	3	59
85	Puducherry	Puducherry	0	20	35	16	71
86	Punjab	Amritsar	5	15	20	2	42
87		Daerabassi, SAS Nagar	16	40	23	1	80
88	Rajasthan	Ajmer	2	4	2	0	8
89		Bhiwadi Industrial Area, Alwar	2	8	12	4	26
90		Jaipur Rural	1	2	1	0	4
91		Jaipur Urban	0	3	7	5	15
92		Jodhpur	5	8	2	0	15
93		RIICO Industrial Area, Alwar	0	7	0	0	7
94		Udaipur	76	28	3	0	107
95	Sikkim	East Sikkim	5	15	8	4	32
96	Tamil Nadu	Ambattur, Chennai	0	0	3	0	3
97		Guindy, Chennai	0	0	6	2	8
98		Kanchipuram	0	8	14	5	29
99		Thiruvallur	1	10	5	1	17
100		Tiruvannamalai	4	8	10	0	22
101	Telangana	Bontapally, Medak	4	7	6	4	21
102		Jeedimetla, Hyderabad	24	30	30	36	120
103		Kazipally, Medak	18	25	14	5	62
104		Nacharam, Secunderabad	6	14	5	5	30
105		Pashamylarm, Medak	0	35	25	0	60
106		Patancheru, Sangareddy	2	5	3	5	15
107		Turkapally, Shamirpet, Hyderabad	30	100	60	10	200
108		Agra	2	15	2	0	19
109		Kanpur	10	32	10	5	57

Pharma Clusters in the Country							
Sl No.	**State/UT**	**Pharma Cluster**	**Micro**	**Small**	**Medium**	**Large**	**Total**
110		Lucknow	20	60	35	7	122
111		Meerut	0	12	10	0	22
112		Noida, Gautam Budh Nagar	8	18	1	0	27
113		Sahibabad, Ghaziabad	0	51	6	0	57
114	Uttarakhand	Dehradun	17	36	39	6	98
115		Haridwar	20	22	20	8	70
116		Udham Singh Nagar	0	2	5	0	7
117	West Bengal	Behala, Kolkata	0	5	2	0	7
118	Jharkhand	Ranchi	30	14	7	4	55
Total			**1995**	**2393**	**2331**	**954**	**7673**

3.9.33. India has 118 pharmaceutical clusters distributed across various states. These clusters house a total of 7,673 MSMEs, comprising 1,995 micro units, 2,393 small units, 2,331 medium units, and 954 large units.

3.9.34. MSMEs within these pharma clusters serve as the backbone of the pharmaceutical sector, forming an essential part of the supply chain for large industries. Unlike large industries that focus heavily on exports, MSMEs primarily operate in domestic markets and manufacture fewer complex molecules.

3.9.35. During the study, it was found that Special Purpose Vehicles (SPVs) were developing advanced facilities including testing centers for pre-clinical testing, digital laboratories, awareness facilities, advanced research centers, and captive power facilities.

3.9.36. However, sustained growth of the pharma sector requires access to shared infrastructure. The study revealed that pharma clusters have established common facilities such as effluent treatment plants, testing centers, and logistics centers to support this growth.

The supply and demand matrix can be understood through the diagram below:

3.9.37. Against the total survey SPVs (118), the demand has been catered to only 10 SPVs. This needs to be increased. There are many SPVs and approximately 7673 MSMEs need attention of the DoP to increase its bandwidth and coverage. The same has been shown through the diagram below:

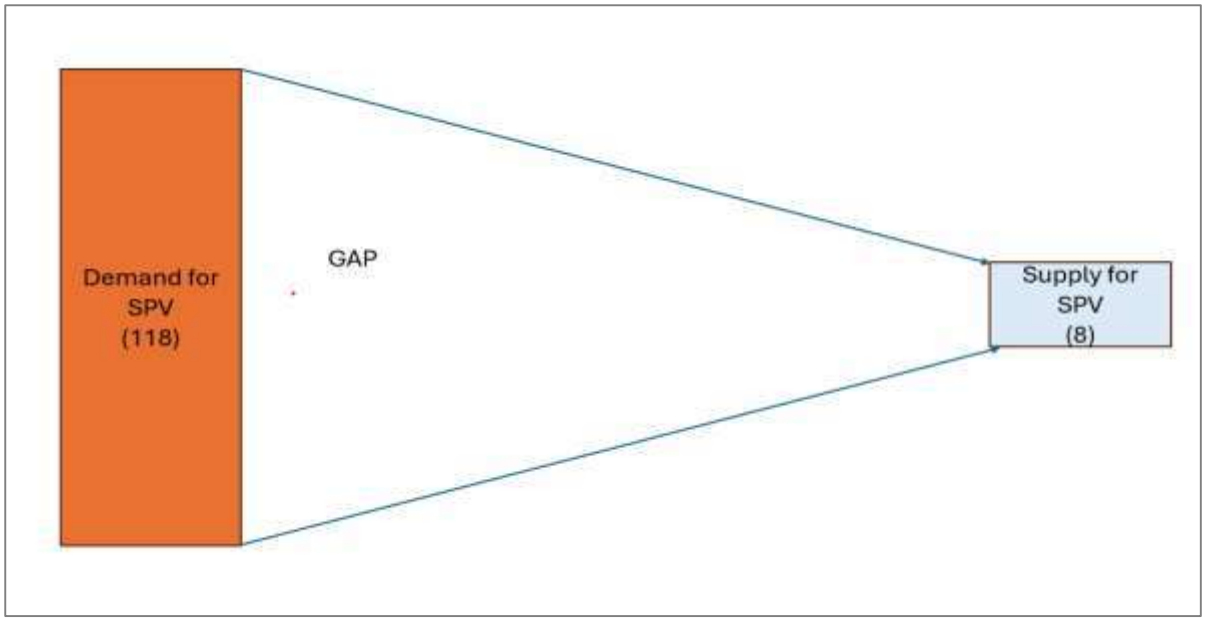

FIGURE 5: DEMAND AND SUPPLY FOR SPVS

3.9.38. The diagram drawn above shows that gap between demand and supply of the SPVs for pharma clusters. The supply of the scheme is 6.8% whereas the demand stands at 93.2%. The supply seems to be quite a bit as compared to the demand. As such, the supply needs to be catalyzed.

****

4. Performance of the scheme based on the output/outcome indicators

4.1.1. According to the Guidelines of the Department of pharmaceuticals, in the 2021-22, invitation and identification of 3 new proposals from Special Purpose Vehicles (SPVs) was to be done and released of I installment of three proposals sanctioned in 2020-21. In FY 2022-23, invitation and identification of 3 new proposals from Special Purpose Vehicles (SPVs) was to be done. Release of II instalment of the three proposals was to be sanctioned in 2020-21. Release of I installment of 3 proposals was to be sanctioned in 2021-22. In FY 2023-24, invitation and identification of 4 new proposals from Special Purpose Vehicles (SPVs) was to be done. Release of III instalment of 3 proposals was to be sanctioned in 2020-21. Release of 2nd instalment of 3 proposals was to be sanctioned in 2021-22. Release of I instalment of 4 proposals was to be sanctioned in 2022-23. In FY 2024-25, release of IV instalment of three proposals was to be sanctioned in 2021-22. Release of II instalment of four proposals was to be sanctioned in 2022-23. In FY 2025-26, release of IV instalment of 3 proposals were to be sanctioned in 2021-22 and release of 3rd and 4th installment of four proposals sanctioned in 2022-23. The information is also placed in the table given below:

TABLE 12:: PROPOSED COMMON FACILITY SUPPORT TO SPVS

Financial Year	Physical	Financial (Rs. In crore)
2021-22	• Invitation and identification of 3 new proposals from Special Purpose Vehicles (SPVs). • Release of 1st instalment of 3 proposals sanctioned in 2020-2021	18
2022-23	• Invitation and identification of 3 new proposals from Special Purpose Vehicles (SPVs) • Release of 2nd instalment of 3 proposals sanctioned in 2020-2021. • Release of 1st instalment of 3 proposals sanctioned in 2021-2022	36
2023-24	• Identification of 4 new proposal from Special Purpose Vehicles (SPVs). • Release of 3rd instalment of 3 proposals sanctioned in 2020-2021. • Release of 2nd instalment in 2021-2022. • Release of 1st instalment of 4 proposal sanctioned in 2022-2023.	60

2024-25	Release of 4th instalment of 3 proposals sanctioned in 2020-2021. Release of 3rd instalment of 3 proposals sanctioned in 2021-2022. Release of 2nd instalment of 4 proposal sanctioned in 2022-2023	48
2025-26	Release of 4th instalment of 3 proposals sanctioned in 2021-2022. Release of 3rd & 4th instalment of 4 proposals sanctioned in 2022-23.	38
Total		**200**

4.1.2. Keeping in view of the above conditionalities, the study team arrive at the conclusion that:

The common facility supported under the APICF scheme during the FY 2021-26 are as under:

1. A total of four installments were released against three SPVs in FY 2021-22, namely Inducare Pharmaceuticals and Research Foundation (IPRF), Kala Amb Infrastructure Development Company (KIDC) and Chennai Pharma Industrial Infrastructure Upgradation Company (CPIIUC). The Indu care was released II installment of ₹ 6.51 crore, Kelham's II and III instalment for ₹ 1.51 crore and 0.64 crore respectively and Chennai Pharmaceuticals' IV instalment of ₹ 1.04 crore were released.

2. A total of ₹ 17.83 crore was released for four SPVs in FY 2023-24. They were Welzo Research and Development, Devbhumi Pharmaceutical Analytical Testing and Training, Tirupati Research and Development, and Telangana Life Science Foundation. Ms. Welzo Research and Development PVT Limited was given ₹ 4.88 of ₹5.86 crore as II instalment, Devbhumi Pharmaceutical Analytical Testing and Training ₹3.24 crore of ₹ 8.24 crore as II installment, Tirupati Research and Development ₹ 5.00 crore as I instalment, and Telangana Life Science Foundation ₹ 4.71 crore as I instalment.

Table 13: Outcome/Output based details. No.

S. No.	Name of SPV	Project	Project Cost	Sanctioned Grant (A)	Released Grant till date (B)	Grant to be released (A - B)	No. of instalments released	Releases in F.Y.		
								2022-23	2023-24	2024-25
1	**Inducare Pharmaceuticals & Research Foundation**	Upgradation of Common Testing Facility Quality Control Laboratory (GLP certified) Process	14.37	7.18	6.47	0.71	3	0	0	6.47
2	**Welzo Research & Development Pvt. Ltd.**	Research & Development and Testing Laboratory	29.90	19.53	17.58	1.95	3	5.86	4.88	6.84
3	**Jeedimtla Effluent Treatment Limited**	Common Effluent Treatment Plant (CETP)	29.88	20.00	18.00	2.00	3	6	0	12.00
4	**Tindivanam Pharma Park Association**	Common Effluent Treatment Plant (CETP)	31.76	15.88	6.00	9.88	1	6	0	0
5	**Devbhumi Pharmaceutical Analytical Testing and Training Foundation**	Testing Laboratory	23.68	20.00	18.00	2.00	3	2.76	8.24	7

6	**Triupati Research & Development Pvt. Ltd. (TREND)**	Common Facility Centre for Research & Development and Testing & Training facility	29.00	20.00	5.00	15.00	1 (part)	0	5.00	0
7	**Telangana Lifesciences Foundation (Earlier Hyderabad Pharmacity Limited)**	Centre of Excellence on Antimicrobial Resistance (AMRCoE)	26.89	18.87	4.71	14.16	1 (part)	0	4.71	0
8	**Himachal Pradesh Testing Lab Limited (HPTLL)**	Common Facility Centre for Research & Development and centre of excellence for skill development	23.98	17.87	0	0	0	0	0	0

4.1 Better quality and affordability of medicines as a public health priority

4.1.3. The companies shared with the study team that they followed A.P. Pollution Control Board (APPCB), Central Pollution Control Board (CPCB) and the Ministry of Environment, Forests and Climate Change Guidelines and periodical monitoring to be environmentally friendly in a way that can save the ecosystem services of the planet.

4.1.4. The clusters suggested that to improve the competitiveness and quality of products from the clusters under the SPV, it is essential to strengthen R&D capabilities and build a skilled workforce by establishing a common R&D center and organizing regular training programs focused on GMP, regulatory compliance, and quality assurance. Promoting resource and infrastructure sharing such as high-cost analytical instruments, pilot-scale facilities, and

common procurement systems can significantly reduce operational costs and improve efficiency for all member units. Additionally, enhancing regulatory and market support through assistance in obtaining certifications (like WHO-GMP or USFDA) and facilitating access to domestic and international markets will help position the cluster on a path of sustainable growth and increased competitiveness.

4.1.5. The affordability component has a proportional connection with scaling up the business to bring down the per unit cost. The demand can exponentially be increased by accessing the international market through focusing more on quality. To gauge the view of stakeholders of the pharma clusters, a question was posed suggesting alternatives for affordability and quality of medicine products. The responses received are placed in the table below:

TABLE 13:QUALITY AND AFFORDABILITY COMPONENTS

Component	Responses			
	Scaling up	Certifications	No Response	Total
Affordability	7	0	1	8
Quality	2	8	0	10

4.1.6. The table above shows responses of respondents on improving the quality and affordability components. It has been found that certifications stand as a major instrument to improve upon with quality whereas scaling up the output has been endorsed by many. Based on the recent development of business after infrastructure development for the common facilities, the companies have expressed an increase in their turnover. The responses are given below:

TABLE 14 : CHANGE IN THE ANNUAL TURN OVER

Sr. No.	Name of the Cluster	Change in turnover Before Improvement in the common facilities (%)	Change in turnover After improvement in the common facilities (%)
1	Welzo Research and Development PVT. Ltd, Baddi, Himachal Pradesh	100	130
2	Jeedimetla Effluent Treatment Limited, Hyderabad	80	120
3	Tindivanam Pharma Park Association, Villupuram, Tamil Nadu	100	135

4	Devbhoomi Pharmaceutical Analytical Testing and Training Foundation Roorkee, Uttarakhand	100	160
5	Tiruputi Research and development Pvt Ltd., Tirupati, Andhra Pradesh	100	140
6	Telangana Lifesciences Foundation (earlier Hyderabad Pharmacity Limited), Hyderabad, Telangana	100	120
7	Inducare Pharmaceuticals & Research Foundation, Pune, Maharashtra	100	145
8	Himachal Pradesh Testing Lab Limited, Baddi, Himachal Pradesh	80	130

4.1.7. The table shows the approximate increase in their turnover due to installation of common facilities. On average, against the 95% turnover of their business before improving the common facilities, they scored 135% change in their business. It shows positive signs due to improvement in the common facilities. The same has also been processed through t-test, the details of which are placed in the table below:

TABLE 15: T-TEST: TWO-SAMPLE ASSUMING UNEQUAL VARIANCES

Sr. No.	***Items***	***Before Improvement in the common facilities (%)***	***After improvement in the common facilities (%)***
1	Mean	95	135
2	Variance	85.7	178.5
3	Observations	8	8
4	Hypothesized Mean Difference	0	
5	df	12	
6	t Stat	-6.9	
7	P(T<=t) one-tail	7.5	
8	t Critical one-tail	1.7	
9	P(T<=t) two-tail	1.5	
10	t Critical two-tail	2.2	

4.1.8. To assess the accurate change in the turnover of companies due to common facilities, before and after changes have been analyzed using a t-test for two samples assuming unequal

variances. The observed absolute value of t-statistics is 6.09, which is higher than the t-critical two-tail value of 1.5. This implies that we reject the null hypothesis. This indicates that there is a significant difference in turnover due to common facilities before and after coverage under the scheme. Thus, quality and affordability are embedded components influencing company turnover. Since turnover has increased, both quality and affordability have also improved.

4.2 Additional Parameters

Coverage of SC/ST beneficiaries

4.2.9. There is no specific system within which the coverage of SC/ST beneficiaries is ensured in the units and SPVs visited. However, based on the interaction with the staff members of two Pharma units, it was revealed that approximately 15-20% staff were from the SC and ST category. The fact that staff members were reluctant to disclose their social category during the focus group discussions. Since the quality and standards are to be maintained, they keep hiring experienced manpower irrespective of their social category.

Implementation mechanism

4.2.10. The implementation mechanism of the APICF scheme operates through a multi-tiered governance structure involving the Department of Pharmaceuticals as the nodal agency at the national level, state governments as implementing partners providing co-funding and regulatory support, and pharmaceutical cluster associations or Special Purpose Vehicles (SPVs) as operational entities at the ground level. The implementation of the scheme involves a systematic process beginning with cluster identification and assessment based on criteria such as existing pharmaceutical manufacturing concentration, growth potential, state government commitment, and industry participation, followed by detailed project preparation, stakeholder consultations, regulatory approvals, infrastructure development, and facility operationalization with appropriate training and capacity building programmes.

4.2.11. Under the scheme the PMC has to invite project proposals for assistance in the scheme by issuing open advertisements in newspapers and website, setting up a cut-off date for receiving applications. Applicants who may be an industry association/group of entrepreneurs/SPVs are to submit complete project proposal in prescribed formats, as per para 7.1.7 of the guidelines, to PMC. The PMC scrutinize the project proposals and submit it appraisal report with recommendations to SSC within one month of the last day of receipt of application for considering grant of in-principal approval. In principle approval is granted to those applicants who submit a complete project proposal with technical recommendation and have availability of land. Such in-principal approval is valid for a period of 6 months from the

date of approval. In case final approval is not accorded to the project within 6 months, in-principal approval is automatically lapsed, unless it is specifically extended by the SSC. The PMC has to guide the applicants who obtain the I stage approval to fulfill all necessary conditions in the guidelines within 6 months. The final approval is accro9ded by the SSC if the laid down criteria are met viz. establishment of project specific SPV, execution of shareholders agreement and other related agreements between the SPV and members, preparation of Project Proposal by SPV and its appraisal by PMC, Procurement of requisite land by the SPV, Establishment of project specific account with Scheduled Commercial banks by the SPV and Tying up of the sources of funds for the balance amount. In case of any deviation from the approved project proposal or timeline, approval of DoP must be sought for continuation of project. Projects are to be completed in 2 years. However, SSC can grant an extension of one year for delays due to reasons not in control of SPV.

4.2.12. The implementation process also includes where-in assistance is given to project proposals based on category of project like activity-wise time schedules, milestone for payments, expected date of commissioning, delay and expected risks and monitorable quantified targets for reporting on outcomes. Importantly, preference in assistance is given to those proposals which utilize and leverage for scaling up production and financing of common cluster facilities.

4.3 Training/capacity building of administrators/facilitators

4.3.13. Trained professionals are employed in the Pharma units. The subsequent training on requirements is provided in-house. Mostly, staff working at the Pharma units were found to have worked elsewhere previously. At the level of the Department, the administrators were found well-equipped and abreast of the micro details of the scheme. However, at the identified locations, the department may initiate a workshop where stakeholders may share their input.

4.4 Asset/Service creation and its maintenance plan

4.4.14. Under the scheme, the SPV is to be responsible for O&M of assets created under the scheme by way of collecting user charges from the members/users. SPV is to ensure that the services of the facilities created under the scheme are extended to the cluster in general, in addition to the member enterprises. The assets acquired by the SPV out of government assistance is to be disposed, encumbered or utilized for the purposes other than for which the funds have been released. A register of permanent and semi-permanent assets acquired wholly or mainly out of the funds provided by the Government should be maintained as per the GFR. If for any reason SPV is liquidated, Government of India has the first right to recover

the grant funds provided by it. The assets created with such grant funds and any unutilized funds has to be vested with the central Government. The Memorandum of Association & Articles of Association of the SPV with the Government incorporates this provision.

4.5 Benefits (Individual, Community)

4.5.15. The scheme has resulted in direct benefits to affordable medical products to our citizens. The scheme intends to provide affordability and medical items as public goods to Indian citizens. The targeted benefits from the scheme are: (i) standardization of manufactured APIs/Formulations, (ii) improvement in quality standards (iii) improvement in environmental regulatory compliance (iv) reduction in wastage of manufactured pharma products (v) increased availability of trained personnel for pharma clusters and (vi) increased competitiveness of pharma units in clusters.

4.6 Convergence with scheme of own Ministry/Department or of other Ministry/department

4.6.16. The APICF scheme does not have convergence with any other scheme either own or other Ministry/ Department. The sub-scheme 'Assistance to Pharmaceutical Industries for Common Facilities' (APICF) is a distinct scheme of the Department of Pharmaceuticals. The scheme implicitly boosts economic prosperity by manufacturing pharma products and also providing employment to the deserving candidates. Some of the key schemes of the central government that can be directly linked to the scheme of APICF include the following:

4.6.17. Pharmaceutical industry comes under the RED category of industries in terms of polluting nature of the activities undertaken in manufacturing processes of drugs and medicines. Many units do not find themselves competent to handle such pollutants. By supporting common facilities like CETP, the Department is indirectly helping in meeting the objectives of the MoEF &CC while expanding the share of the manufacturing base of the country.

4.6.18. The 'Make in India' scheme of the central government is flagship program which envisages development of higher end technology in the country. Support to Pharmaceutical industry in increasing the competitiveness of the sector would attract industries for manufacturing drugs and medicines that require higher technology and research and development. This would provide positive boost to 'Make in India' programme.

4.7 Gaps in achievement

4.7. 19. Since the APICF scheme has recently been implemented, there are no specific gaps to identify at this preliminary stage of evaluation. The scheme has covered a total of 8 industries for setting up the common facilities in pharmaceutical clusters. However, one unit has yet to receive the instalment. It is worth mentioning that substantial assistance provided to pharmaceutical laboratories for upgrading their technology and infrastructure to achieve were strategically designed with the expectation of producing significant results in terms of facilitating access to affordable pharma products. The underlying rationale for this investment was that successful entry into international markets would generate enhanced revenue streams for participating pharmaceutical units, which would have subsequently enabled them to scale up their production capacities substantially. This increased production scale would have naturally led to expansion of capital size, creating a positive economic cycle, coupled with generating improved employment opportunities across various skill levels within the pharmaceutical sector. The scheme's design anticipated that these upgraded facilities would not only meet stringent international quality standards but also position domestic pharmaceutical companies to compete effectively in the global marketplace, thereby transforming them from primarily domestic suppliers to internationally competitive manufacturers. The expected outcomes included diversification of market reach, increased foreign exchange earnings, and the establishment of a more robust pharmaceutical manufacturing ecosystem that could contribute significantly to the country's economic growth while simultaneously strengthening the domestic healthcare infrastructure through improved manufacturing capabilities and quality assurance systems. Side by side, the expected benefits of the scheme included: (i) standardization of manufactured APIs/Formulations, (ii) improvement in quality standards (iii) improvement in environmental regulatory compliance (iv) reduction in wastage of manufactured pharma products (v) increased availability of trained personnel for pharma clusters and (vi) increased competitiveness of pharma units in clusters.

The specific gaps identified during the field study visits were:

- First, the standardization of manufactured APIs requires more stringent mechanisms to evolve with. As such, more internationally practicing yardsticks need to be put in place.
- Second, the availability of trained pharma personnel was reported to have less in numbers, against desired. The pharma clusters were found to be not competing with each other.
- The coordination and cooperation to further develop was lacking.

4.8 Key Bottlenecks & Challenges

4.8.20. The pharmaceutical units are facing the challenges of trained manpower and also their retention. Along with standardization, quality manpower is a must. Side by side, the policy framework of tax exemption to select places also pressurizes entrepreneurs to set up their ventures in specific locations. It might have had a fathomless opportunity cost to be incurred by the entrepreneurs.

The access to the international market to enhance revenue appears to be one of the most daunting challenges that need to be sorted out and catalyzed.

4.8.21. The objective of the scheme, i.e., to strengthen the existing pharmaceuticals clusters capacity for their sustained growth by creating common facilities, is a one-liner objective.

The objective needs to be broken down into quantifiable sub-objectives so that its mapping can be done viably.

The suggested objectives for mapping are as under:

TABLE 16: MAPPING OF THE OBJECTIVES

Sr. No.	Items
1	To Establish Core Common Facility Infrastructure
2	To Achieve Optimal Facility Utilization
3	To Enhance Production Capacity and Market Reach

4.9 Input Use Efficiency

4.9.22. The projects are the fixed cost based on financial instruments; therefore, all the costs associated with inefficiency lie with the implementing agency. With proper management and monitoring the total cost can be kept under limit.

However, the table given above details the number of projects and amounts incurred over the years for covering 8 pharma clusters. The information is tabulated in the table given below:

TABLE 17: INPUT EFFICIENCY OF THE SCHEME

No of Projects	Amount incurred in Rs. Crore
10	158.33

4.9.23. The table above shows that out of 10 projects identified, the total amount disbursed is Rs. 153.33 crores. The input efficiency analysis of the APICF scheme reveals that 10 projects

have been sanctioned with a total financial commitment of ₹158.33 crores, indicating an average investment of approximately ₹15.33 crores per project. This distribution suggests the scheme targets substantial infrastructure development initiatives rather than small-scale interventions, with individual project allocations ranging from ₹7.18 crores to ₹20 crores across different types of pharmaceutical facilities including research laboratories, effluent treatment plants, and testing centers. The input efficiency metric demonstrates the government's significant financial commitment to creating shared pharmaceutical infrastructure, though the actual utilization and outcomes of this investment require further analysis to determine the scheme's overall effectiveness in achieving its stated objectives of improving medicine quality and affordability.

4.9.24. In fact, the amount has been released to only a total of 7 units and the 8th has received the sanction of the amount. Keeping in view the requirement of the scheme the amount is yet to be escalated. The status shows against the target of 10 units to be incorporated under the scheme, 7 have been found to be completed. As such the achievement of the scheme amounts to be the tune of 70%. The percentage appears at a considerable level. However, the same can also be increased. The pharma units are supposed to provide goods and services at affordable prices, as envisaged.

The same can be plotted through the graph given below:

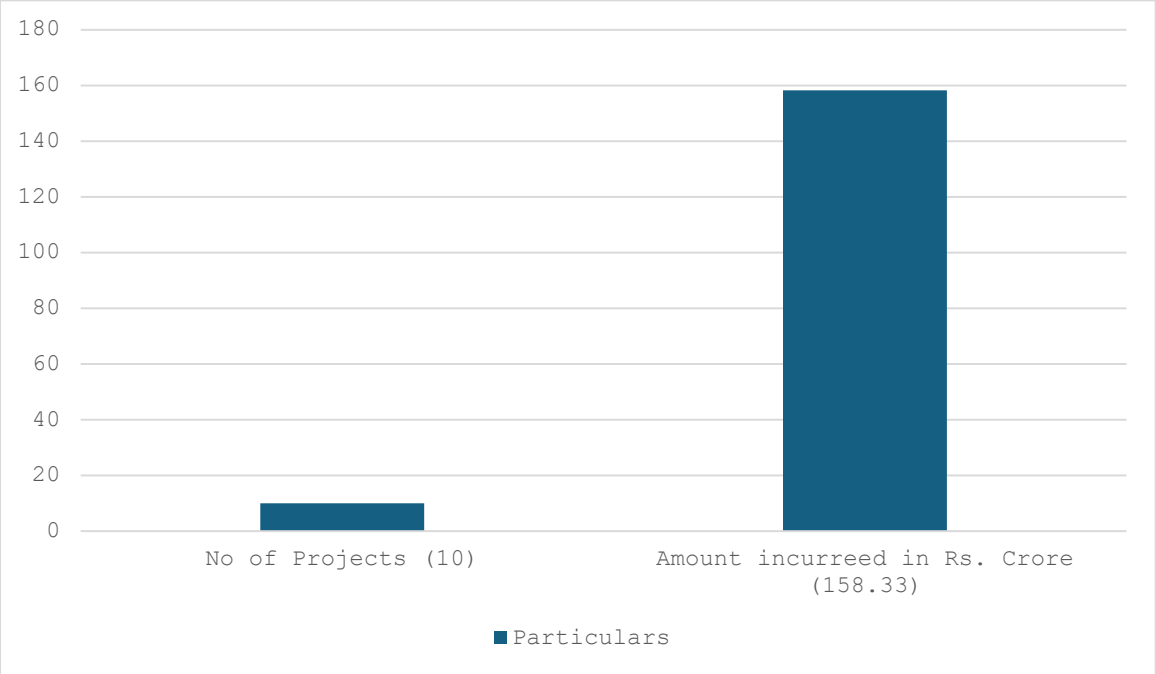

FIGURE 6: NO. OF PROJECTS AND UNITS UNDER APICF SCHEME

4.9.25. The bar diagram visualization of APICF scheme input data points display a single comparison between the number of projects (10) and the total financial investment (₹158.33 crores), creating a stark contrast that highlights the scheme's capital-intensive nature. The bar representing financial commitment would tower significantly above the project count bar, illustrating that while the scheme covers a relatively modest number of beneficiaries, each project represents substantial government investment averaging over ₹15 crores per facility. This visual representation effectively demonstrates the scheme's strategy of focusing on fewer, high-value infrastructure projects rather than spreading resources thinly across numerous smaller initiatives, emphasizing the government's commitment to creating robust, well-funded pharmaceutical facilities that can serve as regional hubs for research, testing, and environmental compliance across India's pharmaceutical sector.

4.10 Best Practices & Case study

4.10.26. M/s Welzo Research and Development, Pvt. Ltd., Solan was thoroughly visited by the study team of IIPA. The firm is located in Baddi, Himachal Pradesh. The pharma has found to have 200 employees. The SPV was found to be a rapidly expanding pharmaceutical and biotechnology company headquartered in Solan, Himachal Pradesh. It has emerged as a beacon of innovation and inclusive growth in the region. In just a few short years, the company has managed to **triple its business operations**, reflecting not only its strategic foresight and commitment to research excellence but also its dedication to regional development and youth empowerment.

4.10.27. At the core of Welzo's remarkable journey lies a bold and transformative vision—to grow by growing together with the local community. This vision has manifested through a unique and highly impactful **industry-academia partnership** with local universities and educational institutions. Recognizing the untapped potential of young minds in the region, Welzo has also initiated training and skill development programmes tailored specifically for university students, especially those pursuing careers in pharmaceuticals, biotechnology, and life sciences. The approach is to prepare human resources for its requirements and also the requirements of similar companies.

FIGURE 7: STUDY TEAM VISITED M/S WELZO RESEARCH AND DEVELOPMENT

4.10.28. Welzo Research & Development Private Limited is a Private Limited Company, governed by the Companies Act as a company limited by shares. It is classified as a non-government company; it is registered under the Registrar of Companies RoC-Himachal Pradesh. According to the Ministry of Corporate Affairs (MCA), this company was incorporated on 06-12-2022 and last updated on 06-12-2022.

FIGURE 8: STUDY TEAM IN BADDI, HIMACHAL PRADESH

4.10.29. The business model of the company has been found to be quite impressive. They have employed more than 200 employees. As Welzo continues to grow and innovate, its legacy is becoming increasingly clear. It is interesting to note that the company did not measure success in profits but in the opportunities, it created and transforming the lives of many. The labs were found testing the products and they have started providing information and skills to students about industrial pharmacy. They are supposed to grow and groom as an effective manpower. Welzo's achievements exemplify **corporate social responsibility (CSR) in action**. By investing in people and knowledge, the company has created a win-win model where business growth and societal benefit go hand in hand. Their efforts have strengthened the regional economy, fostered a skilled workforce, and revitalized the link between academic learning and industrial relevance.

4.11 Most Significant Changes

4.11.30. The Government of India's financial assistance to pharmaceutical companies has catalyzed transformative changes across the sector. These incentives have spurred innovation, strengthened research ecosystems, enhanced workforce capabilities, and promoted a more integrated approach to production and development, positioning India as a more competitive and self-reliant player in global pharmaceutical markets.

1. More Focus Has Been Given on Cluster Research

4.11.31. The financial assistance provided by the Government of India to pharmaceutical companies has led to a marked increase in cluster-based research activities. Companies are increasingly concentrating their research and development efforts within designated zones where shared infrastructure and common facilities can be leveraged. This approach fosters collaborative innovation, reduces operational costs, and promotes the exchange of knowledge and best practices among firms located in proximity. Cluster research has enhanced regional specialization and created focused ecosystems where pharmaceutical innovation can thrive.

2. Emphasis on Capacity Building

4.11.32. Government incentives have also contributed significantly to the strengthening of human and institutional capabilities in the pharmaceutical sector. There has been a clear emphasis on upgrading technical skills, regulatory understanding and manufacturing competencies among industry professionals. Pharmaceutical firms have responded by investing in training programmes, adopting advanced technologies, and aligning their practices with international quality and safety standards. This focus on capacity building has enhanced the sector's overall preparedness to meet global market demands and regulatory requirements.

3. Catalyzed Comprehensiveness

4.11.33. The approach adopted through financial incentives has ensured that developments in the pharmaceutical sector are not fragmented but holistic. The support has extended across the entire spectrum of the pharmaceutical value chain from raw material production to finished formulations and quality control. Companies have simultaneously focused on improving infrastructure, enhancing product standards and expanding market access. This integrated approach has allowed for the alignment of various elements of the production and innovation cycle, ensuring that growth is both sustainable and inclusive.

****

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 Observations

5.1.1. The APICF scheme has demonstrated notable effectiveness in supporting the development of pharmaceutical units, though the scope for expansion does exist. With approximately 30 units having submitted applications for inclusion under the scheme, there is clear industry demand that exceeds current capacity.

5.1.2. The scheme's selective approach is evident in its cluster-based implementation strategy, where only 10 clusters have been targeted from a total of 118 potential clusters nationwide, with funding approved for 8 Special Purpose Vehicles (SPVs) in 8 clusters and installment disbursed to 7 SPVs. This targeted methodology ensures quality over quantity, focusing resources on strategically important pharmaceutical hubs that can generate maximum impact. However, the significant gap between potential beneficiaries and actual coverage suggests the need for scheme expansion with additional funding tranches to address the growing pharmaceutical infrastructure requirements across India's diverse industrial landscape.

5.1.3. The financial dynamics of the scheme reflect evolving market realities, with project costs experiencing upward pressure over time, necessitating budget escalations aligned with Market Price Index fluctuations. This cost escalation trend underscores the importance of dynamic funding mechanisms that can adapt to changing economic conditions while maintaining project viability.

5.1.4. Beyond infrastructure development, the scheme has fostered a culture of long-term strategic thinking among beneficiary units, who are actively investing in human resource development through cohort-based training programmes. This approach demonstrates the scheme's broader impact on industry sustainability, as participating units recognize their social responsibility to create employment opportunities and build skilled workforce pipelines.

5.1.5. The emphasis on training and human resource development indicates that APICF scheme is not merely about physical infrastructure but is cultivating a comprehensive ecosystem that addresses both technological capabilities and human capital requirements essential for India's pharmaceutical sector growth.

5.2 Recommendations

5.2.6. The pharmaceutical industry is a key sector for achieving Nation's good health and well being. Clusters covered under the scheme have demonstrated significant improvements in their common facilities. Field visits to these clusters confirm that financial assistance has been effectively utilized, though the quantum remains insufficient. **Given the enhanced dedication of clusters' units in drug production and increasing industry demand for the scheme, continuation of the Scheme is recommended.** However, the following suggestions should be considered to improve the scheme's efficacy and effectiveness.

5.2.7. The following recommendations are made under different themes

- Awareness about the scheme must be enhanced across pharmaceutical clusters to expand participation. To address the issue, it is recommended that the DoP may organise more promotional outreach events across States/UTs periodically, not just once in a while, resort to media advertisements and publicity about the Scheme in pharma hubs through their Associations, create suitable Training modules, impart training, organise workshops from time to time to streamline the process to nudge a large number of pharma units. This will go a long way in building their capacity. In the process, it would go a long way to help the scheme achieve its objectives at an accelerated pace. Consequently, their competitiveness, both in domestic and international markets, would also augment.
- Increase of financial Assistance
    - The financial support to clusters needs to be enhanced to Rs 25 crores keeping in view rising prices.
- Need of comprehensive survey
    - A Pharmaceutical Census in India may be undertaken to deepen the insights and foresights into the structure, composition and spread of the Industry. This is a prerequisite for reducing, if not eliminating, dependence of India on China for its key APIs supplies. Besides, it will help expanding the scheme's ambit.
- Strengthen the Clusters
    - To improve the competitiveness of the clusters, it is essential to strengthen R&D capabilities and build a skilled workforce by establishing a common R&D center and organizing regular training programs focused on GMP, regulatory compliance, and quality assurance.
- Developing Smart and Innovative Pharma Hubs

- To transform India into a resilient and innovation-driven pharmaceutical manufacturing hub, the policy should encourage the subsequent integration of Industry 4.0 technologies into clusters' infrastructure. Eligible components/activities should cover AI (Artificial Intelligence), ML (Machine Learning), Digital Twin, Process Simulation, and cloud-based LIMS (Laboratory Information Management Systems), as well as data containers, to ensure regulatory compliance and readiness for audits.

- Need for additional facilities:
  - To catalyze the effectiveness of SPVs, three more facilities are proposed, to be covered under eligible activities, namely 1) Blockchain-enabled supply chain centre, 2) AI-oriented training and capacity building centre, and 3) Digital quality assurance center. Such facilities should enable end-to-end supply chain visibility through blockchain and AI for tracking drug provenance and detecting counterfeits, support real-time quality monitoring and predictive analytics using AI/ML in manufacturing, and offer specialized skill development programs in AI, data science, and digital regulatory compliance tailored for pharmaceutical professionals.
- Need for scaling up:
  - Since a total of 118 clusters have been identified and only a total of 10 clusters have been targeted under the scheme, the scheme needs to be expanded to cover more clusters. This could also be in line with the growing demand for pharmaceutical products and tapping skilled graduates into employment opportunities.

In addition, support for more pharmaceutical clusters should be extended by increasing the bandwidth of the scheme.

5.3 Thematic Assessment

5.3.8. The thematic assessment of the APICF scheme involves evaluating the programme across key thematic areas or dimensions to understand its comprehensive impact and effectiveness.

5.3.9. Infrastructure Development: This examines how effectively the scheme has created and upgraded pharmaceutical infrastructure including research laboratories, testing facilities, common effluent treatment plants, and centers of excellence. The assessment would evaluate whether these facilities meet technical standards, serve their intended purpose and contribute to overall industry capacity building.

5.3.10. Financial Efficiency: It involves analyzing fund utilization patterns, disbursement rates, cost-effectiveness, and value for money. Given that only 54% of sanctioned funds have been disbursed, it explores reasons for implementation delays and assess whether the financial allocation aligns with expected outcomes.

5.3.11. Geographic Coverage and Equity: It examines the distribution of projects across different states and regions, evaluating whether the scheme adequately addresses regional pharmaceutical development needs and ensures equitable access to common facilities.

5.3.12. Environmental and Sustainability: With multiple CETP projects included, it assesses the contribution to environmental compliance, sustainable manufacturing practices and pollution control in pharmaceutical clusters.

5.3.13. Human Resource Development: The scheme's impact on skill development, training programmes, employment generation, and capacity building initiatives within the pharmaceutical sector need prioritization.

5.3.14. Market Impact and Public Health: The scheme has also found contributing to its objectives by improving medicine quality, affordability and accessibility, ultimately supporting public health objectives through enhanced pharmaceutical infrastructure and capabilities.

5.4 Improving value for money

5.4.15. The APICF scheme has improved value for money through several strategic mechanisms that maximize return on public investment. The scheme has created common facilities that serve multiple pharmaceutical companies simultaneously, eliminating the need for individual firms to invest in expensive infrastructure like testing laboratories, R&D centers, and effluent treatment plants.

5.4.16. The shared approach embedded in the scheme reduces per-unit costs significantly - instead of 50 companies each spending ₹10 crores on individual testing labs, they collectively benefit from one ₹20 crore facility serving the entire cluster. These economies of scale approach ensures that government investment generates benefits far exceeding the initial outlay.

5.4.17. The multiplier effect and long term embedded in the scheme creates cascading economic benefits through enhanced pharmaceutical manufacturing capabilities, improved quality standards and environmental compliance that would be cost-prohibitive for individual companies.

5.4.18. By investing ₹139.33 crores in 8 strategic projects, the government enables hundreds of pharmaceutical units to access world-class facilities, potentially generating thousands of jobs and billions in additional industrial output. The focus on training and skill development further amplifies returns by creating a skilled workforce that benefits the entire sector.

5.4.19. Additionally, the scheme's emphasis on research and development capabilities positions India's pharmaceutical industry for future competitiveness in global markets, ensuring that today's infrastructure investment yields sustained economic returns over decades while simultaneously addressing public health priorities through improved medicine quality and affordability.

5.5 Assessing the continued relevance

5.5.20. The continued relevance of the APICF scheme remains highly significant in the evolving pharmaceutical landscape, particularly in given India's strategic imperative to strengthen its position as a global pharmaceutical manufacturing hub and reduce dependency on imports, especially in the wake of supply chain disruptions. The scheme sets the schematic intervention of the department for targeting better quality and affordability of medicines as a public health priority as well as improved competitiveness of the industry as an economic goal.

5.5.21. Keeping in view many potential pharma units to be integrated with SPV, the scheme is in intense demand. The financial assistance provided under the scheme can boost the pharma units for better outcomes and output. As such, the pharma industry has demand for the scheme. Based on our in-depth discussions with the Department of Pharmaceuticals, they have the capacity to execute the scheme.

5.5.22. The scheme's relevance is further reinforced by the government's broader policy objectives of achieving self-reliance in pharmaceuticals (Atmanirbhar Bharat) and establishing India as a preferred destination for pharmaceutical manufacturing, making continued investment in infrastructure development essential for maintaining competitive advantage in an increasingly globalized and regulated pharmaceutical industry.

5.6 Reduction in avoidable overhead expenditure on consultants, administration etc.

5.6.23. There is overhead that needs to be intact with the scheme. The overhead of the scheme cannot be reduced. It is required to keep in view the Market Price Index. The expenditure pattern shared with the study team did not reveal any gap in terms of items placed for the responses.

5.7 Externalities

5.7.24. The scheme comes across externalities in terms of investment for quality improvement. If the financial assistance is scaled up, the Pharma units may get more motivation to scale up their business. The coverage of the scheme requires further improvement so that more units can be benefitted. The present coverage looks abysmal looking at the demand of the scheme. In order to cater to the existing demand, the scheme needs continuation with more smart strategies. The fact that the increased bandwidth may have multiplier effects on income to the people and employment to the unemployed and willing workforce. Importantly, the pharma sector is synonymous with life expectancy too. The availability of pharma products can heal the health-related issues and improve life expectancy of the people. If such units are not promoted, there would be possibility that India would start importing medical products from outside. As such, this is to be taken to the extent that we become self-sufficient and also export our pharma products so that both the well-being of people and revenue can be catalyzed at the same time.

5.8 Issues & Challenges

5.8.25. The abysmal awareness about the APICF scheme is one of its critical challenges that abates its bandwidth. The first major challenge about the scheme is its unexpectedly lower coverage. The scheme is devoid of addressing the optimal financial assistance to the SPVs. It has also been found that that the limited expenditure made under the scheme due to less resource allocation and the lack of adequate manpower within the department itself keeping in view the requirements of the industry.

5.8.26. The limited budget and its dispensability have also been noticed as its challenges. It decelerates the process of common facility creation for the industries. The incentive under the scheme is 70% of the approved cost or Rs. 20 crore whichever is lower. This needs to be rationalized in such a way that incentives can be increased. The common facilities require investment of materials and human resources which have become costlier now. The Market Price Index (MPI) needs to be consulted in order to revise the financial assistance given to the pharma clusters. However, in Himalayan States and states in the northeast region, the grant-in-aid provided is Rs. 20 crore per cluster or 90% of the project cost of the common infrastructure facilities (CIF), whichever is less.

5.8.27. The second major challenge to the scheme is a total of 118 pharma clusters have been identified but only 7 have received disbursement in instalments. The 8th has also been sanctioned. Looking at the number of clusters, the scheme requires increased coverage.

5.8.28. The third significant challenge is the percentage of the incentive given is on total project cost which includes cost of land, building, internal infrastructure, administrative and management support expenses including salary of CEO, engineers, other experts and staff during the project implementation period, preliminary expenses, machinery & equipment, miscellaneous fixed assets and other support infrastructure. The fact that land is a scarce resource and its price goes with the change of year. The land cost appears very heavy, and part expenses may also be borne by the DoP. Ultimately, pharmaceutical products are public goods, and they must be promoted.

5.9 Vision for the future

5.9.29. The APICF is one of the instrumental schemes to strengthen the existing pharmaceutical clusters' capacity for their sustained growth by creating tangible assets as 'Common Facilities'. The DoP is targeting better quality and affordability of medicines as a public health priority as well as improved competitiveness of the industry as an economic goal through this scheme.

5.9.30 The future vision for the APICF scheme can be described using three timeframes: short-term, medium-term, and long-term; each aligned with developmental, technological, and institutional goals needed to build a globally competitive pharmaceutical manufacturing ecosystem in India. In the short term, the focus should now be on disbursing the approved ₹139.33 crores and fully operationalizing all eight approved projects. Completing the remaining infrastructure programs, such as quality testing laboratories, Common Effluent Treatment Plants (CETPs), and collaborative R&D facilities, remains an urgent priority. At the same time, establishing vetting procedures and monitoring systems to oversee project implementation, assess quality, and eliminate operational issues is essential. Additionally, early steps toward digital readiness should be taken. Relevant clusters could start testing cutting-edge technologies such as AI-based tools for quality checks, automated monitoring systems, and initial digital processes as part of their infrastructure development. Moreover, quick training modules on digital literacy, process automation, and the benefits of AI/ML (Artificial Intelligence / Machine Learning) in manufacturing can be integrated into existing skills development programs. These initial efforts will lay the groundwork for future technological growth.

5.9.31 In the medium term, the scheme must shift from merely completing infrastructure to strategically expanding it. Practically, this means adding 15-20 new operational clusters from the identified 118, with increased funding and performance-based mechanisms for releasing funds. It is also vital to formalize and embed a process for advancing frontier technologies,

enabling all clusters to systematically integrate these innovations. Building shared digital infrastructures such as Laboratory Information Management Systems (LIMS), AI-driven compliance monitoring platforms, and smart inventory systems will allow all pharma units, especially smaller and medium enterprises, to outpace technology adoption without proportional costs. Combining shared or individual digital infrastructures with inter-cluster networks and knowledge-sharing platforms could foster cross-learning and spread innovation. Clusters should also be encouraged to establish modular technology support units offering services based on AI, ML, or IoT, like predictive maintenance, process controls, and environmental monitoring. Revenue models could be developed to sell these essential services at prices supporting long-term sustainability while remaining affordable. Connected clusters, functioning as semi-autonomous entities with embedded digital capabilities, would gradually enable the government to transition into a facilitator, overseer, innovator, and policy developer.

5.9.32 The APICF scheme should ultimately aspire to make India a global pharmaceutical manufacturing and innovation centre differentiated not just at scale, but also in sophistication and digital maturity. This will require full-spectrum infrastructure coverage across all major and emerging clusters and the requisite ecosystem of research, innovation, and international collaboration. At this point, as it relates to frontier technology, the application of such capabilities should be fully formed and in a structured fashion. Artificial Intelligence (AI) and Machine Learning (ML) should serve as foundational tools for enhancing drug discovery, accelerating clinical trials, and strengthening pharmacovigilance systems. Blockchain technology should elevate the level of transparency and provenance in the supply chain, while robotics and digital twins will facilitate efficiency in manufacturing at scale and in complex, high-risk, or low-margin environments. The APICF scheme's establishment of AI Centres of Excellence and digital innovation sandboxes inside clusters will provide regulatory-compliant areas for technology experimentation, thereby effectively speeding the adoption of innovation. At this same stage, long-term sustainability goals should be incorporated with the cluster design, with digital technologies delivering maximum resource efficiency, complete waste diversion, and alignment with the circular economy. Once the potential frontier capabilities are achieved, APICF will be more than an infrastructure provisioning scheme that will create a transformative policy vehicle for solidifying India's status as a trusted, tech-enabled, and future-ready pharmaceutical powerhouse.

5.9.33. We need to achieve complete environmental sustainability in pharmaceutical manufacturing through advanced waste treatment and circular economy principles.

****