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DEPARTMENT OF
SCIENCE & TECHNOLOGY

REPORT

STUDY OF WOMEN TECHNOLOGY PARKS IN THE COUNTRY FOR INTEGRATED DEVELOPMENT OF RURAL WOMEN

2022

Catalyzed and Supported by

Science for Equity Empowerment and Development (SEED) Division

Department of Science & Technology
Government of India

Vigyan Prasar

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STUDY OF WOMEN TECHNOLOGY PARKS IN THE COUNTRY FOR INTEGRATED DEVELOPMENT OF RURAL WOMEN

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Foreword

In rural areas of India, women other than playing central role in family, play important role in various livelihood system for example in Agriculture-based Livelihood system, Women play important role mainly in Pre-sowing and post harvesting stages. While in fishery-based livelihood system, women mainly take part at post harvesting stage. Thus, intervention through Science & Technology plays a major role in improving the efficiency of the function of women in the livelihood, resulting in a significant Women Empowerment.

Science for Equity Empowerment and Development (SEED) Division of DST has taken several initiatives in this area through the programme "Science & Technology for women" since Nineteen Eighties. Women Technology Park (WTP), which acts as pivot in these initiatives, aim at capacity building of local women through training in appropriate technologies that utilize local available resources and bring about innovative indigenous products, having good marketing potential to improve their role in livelihood system.

The present report is a study of women technology parks in the country supported by SEED, DST. The study period is 2019-21 based on information inputs received from 30 WTPs supported across the nation for empowering rural women, out of 46 WTPs supported in recent years. The Department supported review study to Vigyan Prasar, to understand area specific challenges faced by women, impact of training, awareness generation and demonstration of various technologies offered in the WTPs, gap areas and steps taken towards self sustenance. The study covers various aspects of WTP ranging from the concept, work flow process of WTPs, similar initiatives, analysis of WTPs and sustainability after project duration is over.

I hope that the way forward recommended in the report will help in strengthening S&T empowerment of women relevant to their livelihood.

Debapriya Dutta

(Dr. Debapriya Dutta)
Head (SEED)

Disclaimer

The information contained in this 'Report' is to showcase the findings and outcomes of the study conducted on 'Women Technology Parks' (WTPs) and suggest recommendations for making these parks self-sustainable and meet the objectives as laid by the Science for Equity, Empowerment, and Development (SEED) Division, Department of Science & Technology (DST), Government of India. The content is solely based on the information provided by the respective WTPs and the reports submitted to DST. It is purely for reference purposes only.

Vigyan Prasar and DST don't owe the responsibility of accuracy or the correctness of its content.

Acknowledgement

The report on 'Study of Women Technology Parks in the Country for Integrated Development of Rural Women', 2022 is prepared under the overall guidance of Dr Debapriya Dutta, Head & Adviser, SEED, SSTP, Department of Science and Technology, and Dr Indu Bala Puri, Scientist F, SEED, Department of Science and Technology.

All the PIs of 46 WTPs, the concerned institutions and organizations, and individual women trainees have contributed towards the successful completion of the project sanctioned under the SEED Division, DST for all the hard work and dedication in executing their activities on the ground, working with communities and other stakeholders in rural and remote areas.

Vigan Prasar takes this opportunity to thank all experts – Dr Laxman P Gite, Retd. Emeritus Scientist, ICAR-Central Institute of Agriculture Engineering (CIAE), Bhopal, as Scientist (Agricultural Engineering); Dr Ketki Bapat, Scientist-F, Office of Principal Scientific Adviser (PSA), Government of India (GoI); Prof Gauri Srivastava, Department of Women Studies, National Council of Educational Research and Training (NCERT), as Expert (Women & Gender Studies); Dr Madhav Govind, Head of Department, Centre for Studies in Science Policy, School of Social Sciences, Jawaharlal Nehru University (JNU), Delhi, as Policy Research; Dr Prerna Gaur, Professor & Head, Instrumentation and Control Engineering, Netaji Subhash University of Technology, Delhi, as Data Scientist. The Expert Committee provided valuable suggestions and guidance throughout the duration of the study through participating in effective meetings in terms of study appropriation and customising impactful and need-based deliverables.

An equal share of thanks goes to all experts, guests and participants invited during National meet for expressing substantive comments and suggestions about the study which strengthened the report. A special mention to Dr Shashi Bala Singh, Director, National Institute of Pharmaceutical Education & Research, (NIPER), Hyderabad; Mrs Pragati Gokhle, Deputy Director, Management & Systems, Mahatma Gandhi Institute for Rural Industrialisation (Ministry of MSME), Wardha, for guidance and inputs for developing a sustainable WTP.

A very sincere gratitude to Dr Nakul Parashar, Director, Vigyan Prasar, for continuously guiding and endorsing the strategy to deliver on expectations. Special thanks goes to Dr Anuradha Pughat, Scientist C, SEED, DST, in continuously guiding in coordinating with respective WTPs and mentoring the report writing throughout.

ICT assisted products at sale in WTP in UPES, Dehradun

Women of WTP, Idukki, Kerala with Vetiver boxes

Sanitary Napkin Unit at WTP, Chikiti, Ganjam

Training on fisheries at WTP, South 24 Parganas

Women of WTP, Deoli Village displaing value-added products

Training of Coir pit composting at WTP, Annur, Tamil Nadu

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Executive Summary

Science for Equity, Empowerment and Development (SEED) Division of the Department of Science & Technology (DST) has been implementing a programme – Science & Technology for Women – to empower women through Science and Technology. The broad objectives of this programme are to promote the development and adaptation of appropriate technologies, transfer of proven technologies and demonstration of live technology models based on locally defined needs for the benefit of women. Besides individual projects related to women's health, nutrition, safety, livelihood generation, drudgery reduction, etc., the programme also focuses on establishing Women Technology Parks (WTPs) that are envisaged as technology delivery platforms and act as a nodal point where all necessary support is made available to women from a single platform.

WTPs have been pivotal in bringing positive changes in the lives of women by bringing them into the mainstream of the economy from the margins and inculcating in them a sense of worth and confidence. WTPs are based on simple technologies, either newly introduced or modulation of an existing one, that use locally available raw materials as inputs and come up with indigenous products that are consumed locally and are also marketed. It is noteworthy that technology introduction or modulation is need-based and often comes as a solution to an existing problem or as a livelihood generation opportunity.

The abundance of raw materials, their easy procurement and their cost-effectiveness are some of the defining things that mark the operation of any WTP besides the technology that is easy to learn and train at. Further, the use of raw materials and resources in an optimal manner and their tapping in a sustainable way ensures that the entire WTP functioning remains environment-friendly.

It leads to improvement in the living condition of women through livelihood generation and strives for the development of micro-enterprises for women. Besides, it promotes on-field trials for Research and Development activities and modulation of the existing technology to address location-specific needs. Upgradation of technology and value-addition to the products are essential components that help a WTP move towards sustainability.

It reduces drudgery, helps improve health and the environment, and provides opportunities for income generation. These parks aim to strengthen the weakest link of the predominant livelihood system of women in an area and promote social entrepreneurship and women's employment based on the strongest link of the livelihood system.

The WTPs have emerged as a vehicle of change for the communities. These technology-centric parks have been instrumental in providing the skill set to women and bringing them to the mainstream of the socio-economic realm. These women are no longer dependent on the male members of their families instead they have been the breadwinners for their clan. Being part of WTPs has instilled confidence among the women folks and also helped many of them become entrepreneurs.

WTPs have shown their sustainability even in remote areas of the country and have acted as a cross-bridge between the S&T institutions and the community members. Hence,

a study has been undertaken by Vigyan Prasar, an autonomous organisation of DST, to document and capture the current status of WTPs, and their success saga and thus create awareness that the programme WTP model can be replicated on a large-scale and exchange of knowledge can occur. More and more women can benefit from the programme leading to women's empowerment. The study also suggests interventions for making WTPs sustainable through Standard Operating Procedures (SOP), recommendations and framework. The study period spans from 2019-2021, where out of a total of 46 WTPs, 30 WTPs have been studied. Further, out of these, twenty WTPs had completed the projects, and ten were ongoing. The study includes the WTPs established during 2010-19.

This report sought to summarize and document the essence of the WTPs as a programme and as a "linkage" between rural women and the innovators, researchers, scientists and S&T organizations. The report ponders on the various aspects and components of the WTP programme, including the concepts and the scope of work and tries to identify the opportunities and the gap areas to find a solution to do away with the bottlenecks.

The report has been built up from the data collected through various sources like Annual Reports and Project Completion Reports about the WTPs, Questionnaire for Principal Investigators (PIs), Regional Workshops, and various other studies that have been established. The analysis was thoroughly churned to reach the findings which formed the plinth on which recommendations for the sustainability of WTPs have been made.

Mapping the WTPs and thoroughly studying their functioning not only from a technical and marketing viewpoint but a comprehensive approach that includes holistic and overall development of women, helps identify the existing loopholes and gap areas. In the recommendation section, ways have been suggested to plug these loopholes and do away with the bottlenecks.

The findings and recommendations would help improve the performance of WTPs and pave the way for their sustainability. Mitigating the bottlenecks and plugging the loopholes would help enhance the efficacy of WTPs and create a conducive environment where these units can sustain and operate independently and would come up with indigenously manufactured products. Since WTPs promote indigenous products it is a push to "Vocal for Local" as professed by Honourable Prime Minister Narendra Modi and is also a boon for "Make in India", and "Atmanirbhar Bharat."

The WTPs objectives are aligned with the national goals and objectives and its potential can be best realized when it works in tandem with other ministries and departments. The WTPs would continue to facilitate the economic and other empowerment of rural women by imparting training to them on proven technologies and demonstrating live technology models in priority areas, supporting rural women in setting up micro-enterprises for sustainable livelihood. On the occassion of 75 glorious years of India's Independence in form of "Azadi Ka Amrit Mahotsav" and thanks to science and technology that has played a major role in reaching the point where we are today. When India would reach 100 years of its independence, WTPs should be a benchmark of how engagement with simple technologies can be the pivot of change in the lives of millions of women by generating livelihood opportunities and empowering them immensely. A nation's progress is incomplete without the progress of women and the same cannot be realized without S&T being part of their lives.

Chapter 1

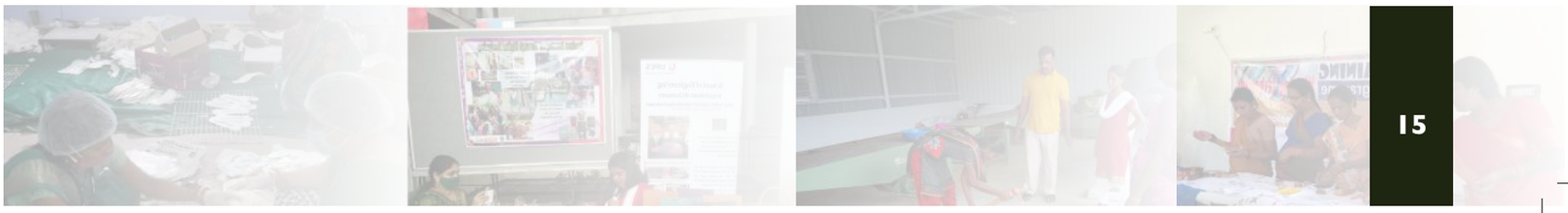
About Women Technology Parks

1.1 Background

India is a growing economy with an increasing say of Science and Technology (S&T) in almost all fields and walks of life. The S&T intervention has brought significant changes in the lives and livelihood of people for good. It has also empowered women as never before.

The challenges faced by women range from social to cultural, economic to political, etc. The numerous challenges that rural and peri-urban women face in their day-to-day lives are different from those encountered by women in metropolitans and big cities. The myriad challenges rural women face are managing the household chores and struggling for their daily bread.

Against this backdrop, women's empowerment is the need of the hour, and no community or country can afford to take it for granted. A noble step in this direction is the establishment of Women Technology Parks (WTPs) across the nation that act as centres for empowering rural women by training them on the use of appropriate technologies that use locally available raw materials for the production of indigenous products. The WTPs have emerged as potent centres for the livelihood generation of rural women, thus bringing them to the fold of the economy from the fringes.



WTPs help create an enabling environment so that the S&T interventions can be extended for micro-enterprise development by women. These parks strive to provide a competitive market for the indigenous products manufactured by women and thus are a real boost to the 'Vocal for Local.' Capacity building, value-addition of products, and technology up-gradation lie at the core of making these parks sustainable.

The WTPs act as nodal points, assisting rural women by providing an environment that trains and promotes them to be self-reliant and float their enterprises in the technologies they have been trained to operate. WTPs have broadly implemented technologies related to agriculture and allied activities, health care, clean energy, water and sanitation, and traditional technology, etc. The idea of WTPs has been envisaged as technology delivery platform.

1.2 Significance of WTPs

The WTPs across the country have been instrumental in realising the empowerment of rural women by imparting and honing their skills in various livelihood activities. It provides women with a suitable platform where the efforts toward income generation through micro-enterprises based on local resources can be aggrandized, optimized, channelized, and curated.

Although the empowerment of rural women by income generation through livelihood ventures is a long and bumpy road, WTPs have certainly gone miles in making the womenfolk financially independent. They have inculcated confidence and a notion of self-worth among them. Women at WTPs are confident that they can shape their destinies.

The WTPs have been provided much-needed support by the Science for Equity Empowerment SEED Division of the Department of Science & Technology (DST) regarding funding and other support to make WTPs move towards sustainability.

The key drivers for identifying the technological interventions are the natural resources available in a region, the local problem that needs to be addressed, and the weak and strong links of the livelihood system in the area. The final products are screened and monitored through a scientific validation process, strengthening their position in the Quality Assessment and Quality Control parameters per the market demand. WTPs have evolved as potent centres for improving the lives and livelihood of rural women and have helped them realize their worth. Simple technologies that optimally tap local production resources lie at the helm of WTPs.

The WTPs immensely empower tribal women through livelihood generation using the locally available raw materials from the forest to come up with finished products through technology. This would invariably lead to the socio-economic empowerment of tribal women. Hence, the WTPs in these areas would play a crucial role in the optimum utilisation of forest-based resources for livelihood generation for rural women.

The technologies used by WTPs are often simple improvisations over the existing ones that incorporate some Science, Technology, and Innovation (STI) components in their design. The prowess of such technologies – they are not cutting-edge or avant-garde technologies— lies in the simplicity of their design and operation and their capacity to generate livelihood for rural women.

When the nation is surging ahead with technological improvements and Startup ventures that have left their mark globally, it's the right time to remember and cherish the ideas of WTPs and the ideology that lies at its core — empowerment of women via livelihood generation through simple technologies by optimally utilizing the local resources. It also augurs well with the philosophy of "Vocal for Local" and would help make India "self-reliant" or "Aatmanirbhar".

1.3 Objectives of WTPs

The objectives of the WTPs have continuously evolved over the years since its inception, suited to the needs of the time and in tune with the advancements in the S&T and society. Initially, the concept of these parks, as conceived in the late 1980s, was welfare-based and focused on empowering women through training, capacity building and other related activities for livelihood generation.

The following are the earlier objectives for establishing the WTPs:

1.3.1 Earlier Objectives of WTPs

- To support research, development and knowledge generation concerning various stages of the life cycle of women.
- To empower women through inputs of S&T.
- To reduce the drudgery of women through the application of science & technology
- To improve the quality of life, look into the health and nutrition of women through the application of S & T.

Over the time, a need was felt to revisit the defined objectives and modify them to tailor made the needs of the initiative at large and women in particular. In the process, 2020 saw some modulations and additions in the objectives of WTPs that are now conceived as the nodal point for providing overall scientific and technical solutions to persisting and emerging problems faced by society at large and women in particular. This includes improvement in parameters determining health, education, hygiene, sanitation, drudgery reduction, nutrition, safety and other aspects affecting women's quality of life, besides promoting financial security through capacity development, skill enhancement, livelihood generation, micro-enterprise establishment, etc.

1.3.2 The Modified Objectives of WTPs

- To develop technologies that utilise locally available raw materials and resources for coming up with Indigenous products and to make rural women adapt the technology for livelihood generation, transfer proven technologies to women for enterprise development and live demonstration of technology models.
- To Identify the predominant livelihood system of the area for women that strengthen the weakest link through S&T and utilise the strongest link for social entrepreneurship.
- To generate employment opportunities for women through their skill development and capacity building.
- To address issues related to health & nutrition, drudgery reduction, education, safety, social security, communication and addressing the occupational hazards faced by women in a particular area.

The study of WTPs was entrusted to Vigyan Prasar in 2019. In the course of the study, when the modified objectives were declared, those were taken into the consideration for the study, and incorporated into the methodology. As the study was initiated in 2019, it was focused on and built on the earlier objectives of establishing the WTPs. However, evolved objectives were also considered during the course of the study.

1.4 Scope of WTPs

WTPs aim to improve the quality of women's life with major emphasis on technology upgradation, skill enhancement, earnings, accessibility to healthcare and education, etc.

The following functional areas lie in the scope of WTPs.

- Technology Development
- Technology Promotion and Demonstration
- Technology Improvisations

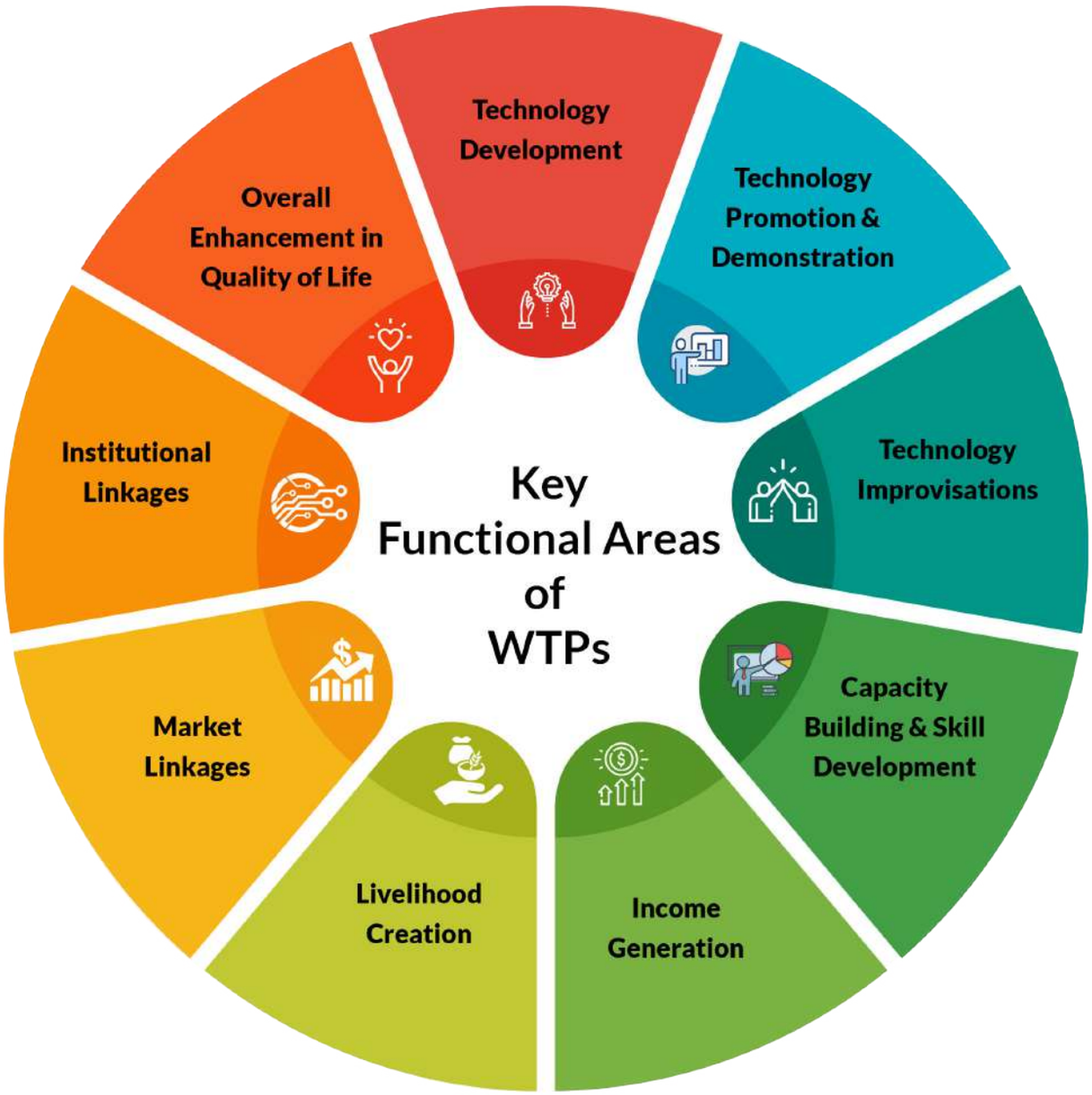


Fig.1: Key Functional Areas of WTPs

- Capacity Building and Skill Development
- Income Generation
- Livelihood Creation
- Market Linkages
- Institutional Linkages
- Overall Enhancement in Quality of Life

1.5 Stakeholders of WTPs

Women Technology Parks are established to create awareness among rural women communities and provide training on proven technology to obtain maximum benefits from their existing resources. The direct target groups of these WTPs are the rural women and other women in unorganized or semi-skilled sectors in the region of establishing these WTPs. WTPs work on the ground to mainstream the rural women into the livelihood system of the region. Hence, these cater to a variety of stakeholders ranging from grassroots level to administrative levels. The varied stakeholders of the WTPs can be broadly divided into four categories:

Funding Agency: The organisations that provide financial support to the WTPs have a considerable stake in their establishment, operation and sustenance. In this case, Science for Equity, Empowerment and Development Division of Department of Science and Technology is the primary stakeholder. These may also include funding other primary funding agency, like industrial support under Corporate Social Responsibilities (CSR), Scientific Social Responsibilities (SSR) and other funding agencies, like NABARD, Rural Banks, state funding agencies, etc.

S&T Knowledge Organisations: All knowledge organisations across the scientific ecosystem at regional, state and national levels can provide the scientific knowledge and technical support to establish WTPs. The technology development or adaptation supplied by these organisations gives local solutions to the local problems of the region. These include premier educational and research organizations like State S&T Councils, IITs, NITs, IISERs, AIIMSs, NISERs, etc. Besides these scientific institutions, focused institutions and departments like Animal Husbandry Department (AHD), Department of Fisheries (DoF), and National Health Mission (NHM) may also help in providing specific scientific and technical solutions. Hundreds of Technology Business Incubators (TBIs) set up and supported by various central science ministries across the country may also provide incubation facilities to the WTPs to develop their business models and establish them in the market.

Linkages: These include all those regional, state or national departments that provide support and handholding for the raw materials, local level procurement and marketing of the products and services produced at the WTPs. Ministries such as Ministry of Micro, Small and Medium Enterprises (MoMSME) need to be included for better outreach and to help entrepreneurs in establishing their enterprises. Industry associates such as Federation of Indian Chambers of Commerce & Industry, Accelerating Growth of New India's Innovations (AGNIi), Startup India etc. are the forward linkages for effective results.

Community Groups: Rural communities which are likely to receive the maximum benefits and hence hold a greater stake in establishing the WTPs. These include Self-Help Groups (SHGs), Community-based Organizations (CBOs), etc. to be included in the

operation and outreach of the WTPs. National community players like Ministry of Panchayati Raj (MoPR), Ministry of Rural Development (MoRD), Ministry of Tribal Affairs (MoTA), etc. are the apex bodies of related community groups.

1.6 DST Support Mechanism

Department of Science & Technology announces calls for proposals regularly focusing on the holistic empowerment of women using S&T intervention. Following are the general requirements that an organisation needs to fulfill to be considered for establishing a WTP. The funding support by DST is provided for three consecutive years. These have been laid out by DST and are considered before funding and approval:

1. Academic, R&D Institutions, Central and State Government organisations with a proven track record in executing S&T based projects.
2. Private Universities/Colleges/Autonomous Institutes recognised by AICTE/MHRD/UGC as having experience in executing S&T projects.
3. Community Based Organisations (CBOs)/Potential Voluntary Organisations/Non-Governmental Organisations (NGOs) with at least ten (10) years of experience and have implemented at least five major projects with support from S&T Departments/other credible funding agencies.
4. Community Based Organizations (Voluntary organizations & NGOs) should have mandatory ties with S&T Institutions for technology transfer.
5. Should have a physical presence in the location specified for intervention to include an office and required space/land.

Central and State Government Organisations, Potential Voluntary Organisations, NGOs, fulfilling the above conditions, may submit project proposals in the prescribed format. The format and guidelines for submitting the project proposal are available on the DST website (www.dst.gov.in).

Besides considering the essential eligibility for an institution to fulfill for establishing a WTP, the following are the necessary prerequisites to be considered by the funding organizations while considering a proposal:

1. The proposal should aim to improve women's livelihood opportunities and focus on field demonstration/capacity building and training-oriented activities.
2. Technology packages should be selected based on local resources available, are innovative and cover potential areas of S&T. Where technologies have been developed in/by S&T institutions and have proven records of livelihood enhancement or

drudgery reduction but have not percolated to the grassroots can also be considered for inclusion.

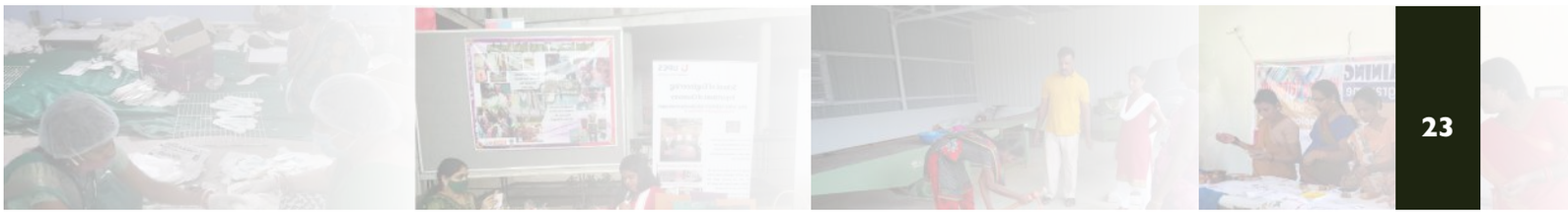
3. R&D aspects specifically focused on problems relating to women may also be incorporated (for example, health, nutrition, and age-related issues).
4. The technological interventions and the benefit to the target population should be clearly expressed in terms of quantifiable goals, targets, a list of verifiable progress indicators, etc.
5. Pre-planned marketing linkages (backward and forward) emphasising micro-enterprise development need to be clearly indicated.
6. The sustainability of the project, after DST support, should be ensured.
7. The local presence of the institutes/organisations/investigators in a particular region is ensured.

The project proposals received under the call are initially screened by departmental screening committee. The shortlisted proposals are called for evaluation before the Expert Committee on Women Technology Parks constituted by Secretary, DST. The recommendations of the Expert Committee are placed before Secretary DST for final funding decisions. The selected proposals for establishing WTPs are awarded to the proposers. The WTPs are periodically reviewed on their functioning and for further release of funds. The total time period for establishing the WTP and receiving the support from DST is three years.

Chapter 2
About the Study

2.1 The Rationale of the Study

Rural women are the forerunner of change in the social, economic, and environmental spheres. In India, nearly 80% of rural women work in agriculture. Rural women workers' empowerment and mainstreaming in agriculture can lead to a paradigm change favouring economic growth. In addition to reducing hunger and poverty, it will improve food and nutrition security. Achieving the Sustainable Development Goals by 2030 will benefit everyone involved. They must be reviewed periodically to ensure the optimum efficiency and utilization of the various government policies and programmes. The review process not only assesses the success or failure of the policy or programmes but also helps implement these policies. The study of WTPs has been undertaken to assess the impact of WTPs as a technology delivery platform for improving rural women's quality of life and livelihood. The study also analyses the status of WTPs across the country and compiles the best practices, key learnings and outcomes. It would help create general awareness about the WTPs as a vehicle for women's empowerment and functioning. It would help in scaling and replicating the successes in the other areas, thus benefiting more and more women. It will have a multiplier effect in empowering women at the grassroots level.



Keeping the wheel of WTPs rolling is as vital as floating these parks. The WTPs focus on inducing scientific interventions for solutions to the local problems and inculcating acceptability of the technological interventions in the community for physical, mental, environmental, social, and economic benefits. Sustained inputs in the form of support from local, state-level and national S&T Organizations in the area, infrastructural support, scientific and technical information, and awareness generation are crucial for the survival of these entities. The key drivers of the interventions are the natural resources available in the region, the local problem that needs to be addressed, and the weakest and strongest links of the predominant livelihood system in the area. The interventions are developed, adapted or adopted as per the local needs and natural resources available in the regions. The training, skill enhancement programmes and final products are screened and monitored through a scientific validation process, strengthening its position in the Quality Assessment and Control factors per the market demand. The underlying basic philosophy is that rural women should be drawn toward entrepreneurship based on optimum utilization of local resources and thus pave the way for community empowerment.

Since evaluation is a continual process that entails learning and improvement, continuous assessment of WTPs is essential. This also helps identify loopholes and bottlenecks and devise a strategy to do away with these. There cannot be and shouldn't be ideally any single strategy for improving the performance of WTPs as each of them require specific or tailor-made interventions depending upon the parameters on which they are lagging. There cannot be "one-size-fits-all" types of solutions in the context of improving the performance of WTPs and plugging the loopholes. Each needs to be specifically addressed.

WTPs have shown their sustainability even in remote areas of the country and have acted as a cross-bridge between the S&T institutions and the community members. Hence, a study has been undertaken by Vigyan Prasar, an autonomous organization of DST, to document and capture the current status of WTPs. Their success saga and thus create awareness about the programme so that the WTP model can be replicated on a large-scale exchange of knowledge can occur. More and more women can benefit from the programme leading to women empowerment. The study also suggests interventions for making WTPs sustainable through Standard Operating Procedures (SOP), recommendations and framework. The study period spans from 2019-2021, where out of a total of 46 WTPs, 30 WTPs have been studied. Further, out of these, 20 had completed projects, and ten were ongoing during the study period.

It will also help develop the WTPs as the focal point for replication of STI intervention to make more and more women skilled and self-reliant. The study focuses on adopting standard practices for WTPs and doing an impact assessment for the projects. It aims to synchronize the workings of the WTPs with the achievement of SDGs in India. The study proposes a set of standard operating procedures to be followed by WTPs for their sustainability and a way forward for becoming a nodal point for technology dissemination and capacity building.

Out of 46 WTPs, 33 WTPs have completed their financial- tenure, and 13 are ongoing till 2022. Annexure I lists the complete list of WTPs accross the country. Since the study was undertaken during 2019-2021, the data of 30 WTPs were used for the study, of which 20 were completed projects and 10 were ongoing. Hence, the study covered a sample of 30 WTPs supported by the SEED Division of Department of Science and Technology across the country.

Among the 46 WTPs supported by SEED-DST, some have indeed outperformed others and emerged as a glaring example of how these entities should ideally function and operate to derive the optimum output in terms of resource utilization and productivity, besides being a treasure trove of locally manufactured indigenous products and a centre for enhancing the standard of living and livelihood of women members. Some of the broad parameters on which the performance of these WTPs has been analyzed through the study are Training and Capacity Building, Innovative Solutions, Standardization and Validation of Products, Establishing Market Linkages, Product Development and Branding, and Local Enterprise Development, Natural Resource Management among others.

Some WTPs have performed excellently on at least one of these parameters and have set a benchmark of a sort, being an ideal example for other WTPs on that particular parameter. Such WTPs have been classified as "Best Practices". On the other hand, some have an overall performance above the average and are the ones that have been able to excel on most of these parameters. The tale of their success is narrated under the "Success Stories."

The report compiles the key findings of the study. It is a comprehensive analysis of various aspects of WTPs, such as duration and components of the training, training methods employed, benefits derived by the trainees from the programme, and its impact on enhancing the quality of life and livelihood opportunities for rural women.

The concept of these parks, as conceived in the late 1980s, was welfare-based and focused on empowering women through training, capacity building and other related activities for livelihood generation. The SEED Division of DST is in the process of evolving the objectives of the WTPs as per the needs of the times. Hence, the year 2020 has seen notable changes in the objectives of the establishment of these parks, which were conceived as a nodal point for providing overall scientific and technical solutions to emerging problems for the women community at different stages of her life due to the prevalent pandemic. This included health, education, hygiene, sanitation, drudgery reduction, nutrition, safety and other aspects affecting their quality of life, besides promoting financial security through capacity development, skill enhancement, livelihood generation, etc. through the micro-enterprise establishment.

Since the study was initiated in 2019, it has been focused and built on the previous objectives of establishing the WTPs. However, Vigyan Prasar has also considered the evolved objectives while completing the study.

2.2 Focus of the Study

1. Assessing the impact of WTPs
2. Identifying the opportunity and gap areas
3. Documenting best practices and showcasing success stories
4. Promoting WTPs among women at the grassroots level
5. Proposing the Model of WTPs as the focal point of dissemination of technologies for empowering rural women
6. Suggesting the way forward for sustainability of WTPs

2.3 Objectives of the Study

Following are the objectives of the study:

1. Identifying the parameters for the sustainability of Women Technology Parks and performing impact assessment of WTPs
2. Suggesting interventions for sustaining WTPs (DST, WTPs, Host Organisation/Institute) through SOP, recommendations, and framework for the sustainability of the WTP project
3. Documenting best practices, ground stories and also the lessons learned
4. Collating all the knowledge inputs obtained from the different WTPs on a single dedicated website for the WTPs
5. Promoting WTPs at the grass-root level and highlighting the needs of target groups that require special attention by showcasing their stories
6. Developing WTPs as a Resource point for empowering rural women.

2.4 Work-Flow Process of WTPs

Based on the processes followed by WTPs and the Funding Agency, a workflow of WTPs has been developed for depicting the representation of an expected relationship between the characteristics or properties of the WTPs and the steps that need to be taken for its sustenance. This workflow has helped define conceptual terms that need focus for sustaining WTPs at multiple levels. This has been designed to complement the existing workflow process of the WTPs.

Following are the elements of the work-flow process of WTPs:

Fig. 2: Work-Flow Process of WTPs

2.4.1 Need Assessment

An initial baseline study is essential to help understand the socio-economic, socio-cultural conditions and local resources available in the area, which helps in having an idea of what technological intervention is called for. An exhaustive and in-depth baseline study followed by brainstorming is required to gauge the needs at the grassroots level, at macro level during the time of conceptualisation of establishing a WTP.

The following are the key outputs of the need assessment study of a WTP initiative:

- Identifying the weakest links in the predominant livelihood system of the area and issues specific to rural women
- Understanding the present capacities of the target group
- Helping in understanding socio-economic profiling
- Providing an idea of how rural women are dealing with the current situation and what needs to be done
- Knowing women's expectations and aspirations
- Understanding the specific intervention points to enhance the capacities of the women
- Identifying and developing appropriate technology and its implementation

Following are the main parameters that need to be analysed for building an in-depth baseline study, at the time of starting the establishment of a WTP and before applying for a funding assistance or call for proposal:

- Potential geographical areas
- Predominant livelihood system
- Profiling of socio-economic factors
- Identifying more than one village
- Local innovations
- Local needs
- Regional issues
- Available natural resources
- Environmental viability

Following the need assessment, it becomes imperative to develop or identify the appropriate technology that not only helps resolve the present issues through the S&T component but also generates employment and income opportunities for rural women.

A review of the need assessment, at micro level, based on baseline survey needs to be conducted after receiving the confirmation of funding support from a funding organisation to assess the technological interventions to be implemented on predominant livelihood generation. The appropriate technology or technological intervention can be identified or adopted by engaging scientific or knowledge organisations or upgrading existing technology or its manoeuvre to suit local requirements. The technology developed or technological intervention can also be from the bottom, i.e., grassroot. Following are the main factors that need to be considered for the identification and implementation of appropriate technology:

- Involving the women and the community in the designing of the proposal
- Drawing out an action plan and business plan

2.4.2 Resource and Community Mobilisation

After the appropriate technological intervention, the mobilisation of resources and community follows. It includes sensitisation and awareness for socio-cultural acceptability, aligning the community members, here rural women, to make them understand that science and technology (S&T) can help resolve their problems while simultaneously generating income opportunities by value-addition of the local products. The raw materials used for production are often derived from natural resources found locally in abundance. This helps in preparing the community for the technology intervention.

For community mobilisation, several strategies were applied to reach out to broader target audience and beneficiaries. Focussed Group Discussions (FGD) were held virtually at multiple places that are widely distributed geographically to gauge the basic needs, available predominant resources, interests and capabilities of women in that area, and so on. A basic eligibility assess may be performed for reaching out to the dedicated, enthusiastic and committed target audience.

The most important aspect that has emerged through the individual discussions with S&T partners and focused group discussions, is that community mobilisation is a significant component to establish a successful WTP and make them utilised optimally.

2.4.3 Training and Capacity Building

Training rural women on using technologies and their know-how is an integral part of WTPs. Hand-holding of rural women is essential to train them on the intricacies and nuances of using the technology and its use in manufacturing value-added marketable products.

Skill development of rural women helps them in livelihood generation. Capacity building is a continuous process having regular training and certification as an integral component. It can be aligned with the National Skill Qualification Framework of the Government of India for enabling trained women to enter the mainstream livelihood system.

The focus has also been on orienting the participating women to learn new skills professionally with comprehensive training manuals and capacity building packages to help them. The capacity building of women by enhancing their skills would bring about a socio-economic change as it enhances their income and elevates their standard of living. This calls for time-bound technology implementation. At this point, standardization and certification of the value-added products must be done through S&T organisations and related experts.

2.4.4 Enterprise Development

WTPs promote rural women to be self-reliant and provide all possible support for the same. The basic idea is that women should be self-reliant, and the technology developed/used for livelihood and employment generation should be sustainable. There is also a need to replicate and upscale the technology. Financial support is also needed for business development, and WTPs help facilitate financial support from the government and other agencies. This is ensured by building tie-ups with district administration. Ensuring economic viability is an essential component. This is done by identifying the linkages for raw materials, equipment, machinery and providing access to credits and loans for setting up enterprises. This helps in livelihood improvement through SHG formation.

2.4.5 Monitoring and Evaluation

Regular monitoring and evaluation are essential for ensuring sustainability and developing WTPs as knowledge resource points. It helps identify the bottlenecks and thus find ways to get rid of them. Evaluation helps identify the parameters or the weak areas that need to be reworked. This also monitors the technical viability and S&T absorption capacity of the women. Sustainability plans can also be explored at this stage by implementing QA/QC, networking and collaboration, and continuous handholding and support. Various WTPs have shown sustainability through multiple techniques and processes. WTPs can also explore the industry's CSR initiatives to bring financial stability. The SSR policies of various S&T institutes can also be roped in for knowledge and technical support. Some of them have been detailed in this report.

Evaluation is a continuous process. It needs to be performed during the functioning of respective WTPs to gauge and ensure the optimum utilisation of available resources and funding supports. WTPs also need to be evaluated after the funding support exhausts for their suatainability.

2.4.6 Sustainability

Ensuring the technical viability of the enterprises, establishing the linkages with markets and other essential linkages, and support to and from the rural women are vital for the successful operation of WTPs.

A participatory approach to design and implementation is needed to make the WTPs a regional nodal point for empowering women. It starts with the project's proposal and the site selection process. It continues through preparedness of the target women, creating an enabling environment for training and skill development, creation of women groups in the form of SHGs, follow-up and monitoring.

To encourage more women into livelihood activities and strengthen the community's social capital, tailor-made interventions keeping in view the interests and capacities of the women are also essential. The approach to enterprise development becomes more effective through Group led or community-led training programmes and could bring a significant change in the women through extensive scale participation and seamless adoption of appropriate technologies, thereby making the WTPs an effective platform for technology delivery. This is where standardization and validation of the products and training programmes must be ensured.

The linkages for raw materials, equipment, machineries, finances and product marketing are done at this stage. The manufactures products are standardized under a brand name for better marketability and reach. After the complete formation and establishment of WTPs, the sustainability of WTPs is ensured. This helps in mainstreaming WTPs to the local demand and supply chain of the area and establishing it as a nodal point for the holistic development of rural women. This also helps in moving towards achieving the Sustainable Development Goals.

2.5 Expected Outputs of the Study

The report comprises the expected outcomes of the study of WTPs which include abridged study report, recommendations, SOPs for various stakeholders, compendium of technologies developed by WTPs, compilation of best practices and success stories, video films, national level stakeholders' meet and brainstorming session, and the dedicated website.

2.5.1 Study Reports

The study and its findings have been presented in the form of two reports - an abridged report and a detailed comprehensive document. The abridged report on the concept of Women Technology Parks (WTPs) and study highlights was released by Hon'ble Minister of Science & Technology, Dr Jitendra Singh, during the celebration of International Women's Day on 8th March 2022.

The detailed comprehensive report is the present report which details in the study and analysis with comprehensive graphs and recommendations for the sustainability of the WTPs. This report summarizes and documents the essence of the WTP programme as a "linkage" between rural women and the innovators, researchers, scientists and S&T organizations. The report tries to identify the opportunities and the gap areas to find a solution to do away with the bottlenecks. The data collected through various sources was analyzed to conclude recommendations for the sustainability of WTPs.

2.5.2 Compilation of Study Outcomes

To better understand the functioning and know-hows of WTPs, a methodology of the study was designed, brainstormed and finalised. The final comprehensive report of the study includes the highlights of the study, analysis and conclusions, recommendations, Standard Operating Procedures (SOPs), a website, compendium, a compilation of success stories and best practices, video films, way forward, and so on.

2.5.3 Recommendations

Comprehensive recommendations for sustainability have been documented separately, specifying the elements of sustainability for a WTP. These elements help draft an independent framework for each WTP to operate independently. This will also help WTPs complete all the parameters for a self-sustaining WTP. These recommendations have been derived from an analysis of various frameworks implemented and designed by considerable research, science and technology parks reviewed under the literature review.

2.5.4 Standard Operating Procedures for Various Stakeholders

The Standard Operating Procedures (SOPs) have been laid down for the smooth and proper functioning of WTPs; these entities may work optimally and meet the objectives. Based on the analysis and findings from this study, the experts suggest specific modulations and procedures, which are compiled in the form of SOP. The SOPs are like guiding principles that improve efficiency and pave the way for the sustainability of WTPs. These must be strictly complied with by the WTPs and all other stakeholders. SOP was framed keeping in view the identified gap areas and are a sort of corrective course that, when adhered to, can help WTPs overcome the hurdles, plug the loopholes and do away with the bottlenecks that stand tall in the way of its operation, maintenance and sustainability. These are step-by-step instructions to guide the Principal Investigators of the WTPs to operate the WTPs can be implemented with the existing or the proposed methodology and operational strategy for the WTPs to work efficiently to provide high-quality outputs. This SOP will help PIs to cater to the goals of the SEED Division of DST to run the WTP successfully. The SOPs have been attached as Annexure II.

Initially, the received recommendations were segregated for operating WTPs at various stages. After a thorough study and mapping between formats of proposals, annual reports, and project completion reports submitted by PIs of WTPs, it was observed

that the formats were not strictly adhered to. The recommendations for operating WTPs at various stages have been described in detail.

2.5.5 Compendium of Technologies of WTPs

The compendium has been prepared to framework the technologies developed/adapted by 'Women Technology Parks' to enhance the knowledge for developing and implementing technologies established in rural regions, especially for women. The aim was to prepare a base document on some of the technologies developed or adapted by the WTP, practised and transferred efficiently to rural women. The compendium will serve as a basis to promote the knowledge of technologies concerning the use of local resources available in abundance in the region. It will also showcase the prototype or development or adaptation made in the technology with the help of S&T components suggested by experts and institutions.

This compendium will be valuable for existing and future WTPs for selection of technology, application of S&T components, developing marketing strategy and planning for increasing the impact factor in terms of social and economic status related to local standards. The purpose behind publishing this compendium is to highlight the efforts and learning from former/previous WTPs to build technology parks so that the upcoming parks will to develop and implement more effective and efficient technologies for rural women.

2.5.6 Compilation of Best Practices and Success Stories

The Compilation of Best Practices and Success Stories of Women Technology Parks provides a collection of the best and the most promising examples which have been chosen to be successful WTP in improving the social status of rural women across India. It showcases the success stories of the WTPs and the best practices of the WTPs based on the assessment parameters.

It details about stories of those WTPs that have performed excellently on at least one of these parameters and have set a benchmark of a sort, being an ideal example for other WTPs on that particular parameter. Such WTPs have been classified as "Best Practices". On the other hand, there are some having an overall performance above the average and are the ones that have been able to excel on most of these parameters. The tale of their success is narrated under the "Success Stories". The lessons learnt in the process have been detailed in the section 'Lesson Learnt'. Also, an outstanding section on 'Sustainability Models' has been added to detail about the sustainability models of some WTPs that depict how these entities should ideally function and operate so as to derive

the optimum output, self-sustain themselves in the long run and act as a center for enhancing the standard of living and livelihood of women members.

2.5.7 Video Films

Two video films on Women Technology Parks have been produced to portray the working of WTP, real-life stories and feedback from the community members trained under WTPs. The entire process of establishing WTP has been captured to understand better the importance of WTP and how WTP acts as a nodal point for technology delivery at the grassroot level. Besides this, WTPs are also encouraged to make short films related to the project. A few of them are also uploaded to the website.

2.5.8 Website

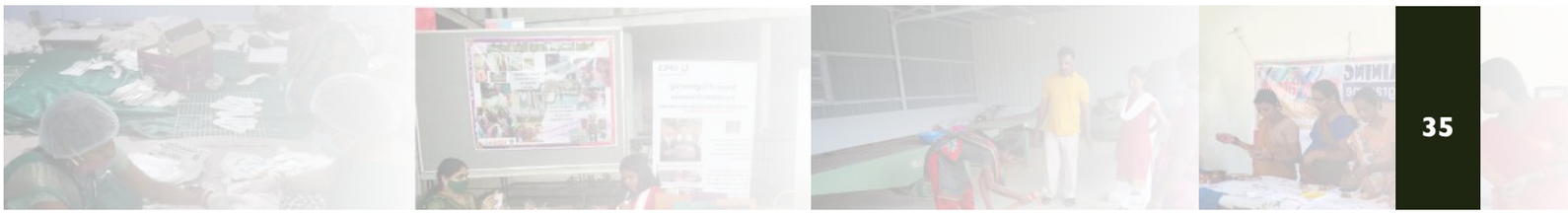
An online platform to showcase the Women Technology Parks established across the country. The website's main objective is to bring the activities and achievements of the WTPs to the notice of various research and developmental organizations, social organizations, Government departments and people. The website would benefit the stakeholders and beneficiaries by planning and highlighting the technology that is adapted, developed, or modified by them. It also acts as a platform to showcase the products manufactured and services provided by WTPs and to make these products available commercially. It facilitates replication and exchange of knowledge and backs the efforts of WTPs to penetrate at the grassroot level leading to the empowerment of rural women. The website is designed and developed comprehensively, acting as an information clearinghouse for showcasing best practices and successful models, conducting discussion forums, information about success stories, building the knowledge network, etc. The website URL is https://dst-wtp.in/.

Chapter 3
Literature Review

The concept of the S&T Park emerged about 63 years ago, in 1959. Internationally, the first knowledge park called 'Research Triangle Park' evolved in North Carolina State of USA [1]. Globally, the maximum number of S&T parks were established during the 1980s due to the drop in industrial research and development (R&D) spending and a growing need for university-industry collaboration [2]. Science and Technology Parks are among the most prominent components of the national innovation system in various countries worldwide [3].

Globally, the Technology Parks are built around the following ten basic principles: favourable business rules; knowledge intensity; a high-quality and mobile workforce; result-oriented meritocracy; a climate that rewards risk-taking and tolerates failure; an open business environment; universities and research institutes that interact with industry; collaborations among business, government, and non-profit organisations; high quality of life; and a specialised business infrastructure equipped with venture capital, lawyers, headhunters, accounting firms, and consultants [4].

Most popularly, research parks are being established across the globe at mushrooming rates to accelerate economic growth and global competitiveness. These parks are widely considered a means to boost dynamic, innovative clusters of advanced science and technology-based companies. They are also an effective means to generate employment and increase competitiveness among firms in a particular location [5]. Besides, these parks are considered an essential mechanism for the technology transfer from university research to industrial production and knowledge spillovers [2].



In India, the concept of Science and Technology Parks, Biotechnology Parks, IT Parks, Rural Technology Parks, have emerged since 1980s for catering to the various needs and demands; and disseminating the S&T development in the country, enticing the youth on fundamental science and reach the target groups on thematic areas.

3.1 Biotechnology Parks in India

After the success of software technology parks in the 1990s, the biotechnology industry became the next major player in India's economic growth. Both the central and state governments have played significant roles in developing Biotech Parks in India. Initially, these kinds of parks, including Information Technology (IT) parks, were under the control of the central government, however, later norms were relaxed, and now many parks are even operated as fully private parks. However, compared to the developed Western countries, Indian technology parks are still in their infancy, with few operating parks [6].

Among biotechnology parks, 'Genome Valley' is India's first and perhaps the most successful biotech cluster. Besides this, Andhra Pradesh has about five other successful biotech parks. With all these biotech parks, Andhra Pradesh is considered the leader in the biotech industry. The success of Hyderabad cluster is because of the strategic location of "Genome Valley". Hyderabad has a number of world class educational institutes and research laboratories. For example, the Indian Institute of Chemical Technology, National Institute for Nutrition, Center for DNA Fingerprinting and Diagnostics, Center for Cellular and Molecular Biology, L. V. Prasad Eye Institute, University of Hyderabad and so on are located nearby.

At the central level, Department of Biotechnology (DBT) is the central nodal agency responsible for developing biotechnology related infrastructure in India. DBT has extended its support to set up biotechnology parks in different parts of the country. Besides the central government's initiatives, many state governments have supported several biotech parks in India. Several state governments have formulated various policy measures for developing biotechnology parks. Among the state governments, Karnataka, considered the leader in the IT sector, was also the first to announce a state biotechnology policy in 2001.

Karnataka government's decision was followed by Andhra Pradesh, Maharashtra, and other states. Biotech policies aim to establish Knowledge Production by Indian Biotechnology Parks and support biotech parks to bring together universities, research institutes and firms in one place. Although Karnataka was the first state to have a biotechnology policy, Andhra Pradesh was the first state to have a fully operational biotech park. These parks are mainly started to promote small and medium biotech entrepreneurs. In terms of facilities, parks offer various facilities on a basis like incubation, pilot plant, tax incentives, venture funding and so on to attract entrepreneurs [6][7].

3.2 Science Park at Rajiv Gandhi University, Arunachal Pradesh

An independent Women Technology Park is being operated by Rajiv Gandhi University, Arunachal Pradesh [8] which was established in 2011 under the UGC XI Plan. The cell provides and extends support to the students in developing soft skills and communication abilities to challenge the rigours of competitive tests and on-job-training in add-on or vocational courses. The cell is in collaboration with Securities and Exchange Board of India (SEBI) and National Stock Exchange of India Ltd (NSEIL), Kolkata.

Along with Jhuming cultivation as a significant occupation, they practice hunting, fishing, and collection of major and minor forest items like wild vegetables, fruits, nuts, medicinal herbs, honey, and materials for ritual performance and construction of their traditional houses, fence, ropeways and bridges, hunting and fishing equipment, etc. The main activities of the park include mushroom cultivation, sericulture and modified loin loom, cultivation of wild local vegetables, medicinal plants, bio and vermicomposting, rearing of ornamental fish, bamboo propagation and spinning on silk yarn, etc.

3.3 Rural Technology Parks – National Institute of Rural Development and Panchayati Raj

The Rural Technology Park (RTP) of National Institute of Rural Development and Panchayati Raj (NIRDPR), Hyderabad [9] has been established to uplift the rural people in all aspects of life, such as capacity building, rural employment generation, livelihood, etc. It is established with a scope to envisage technology transfer through live demonstrations. The development of RTP has been divided into various categories to cater to the needs of rural people.

RTP-NIRDPR is a place where various models of rural technologies are showcased with practical demonstration, in other words, Training cum Production Centre. RTP is an instrument for disseminating appropriate and affordable rural technologies to villages through a dynamic approach. RTP is run on a Partnership basis with the active participation of individual entrepreneurs, NGOs and government agencies. The guiding principles of RTP include using local resources, cost-effectiveness, eco-friendly and blending tradition with modern technologies. Technologies in the sectors like, rural housing, renewable energy, natural resource management and skill development & promotion of entrepreneurship are the key focus areas of RTP-NIRDPR.

The RTP organises various training programmes of varying duration of 3-15 days. In addition to these training programmes, various Exposure visits, Skill and Entrepreneurship Development Programmes, Technology demonstrations, and Technical support services & Guidelines are also organized.

The objectives of the park includes live demonstration/dissemination of cost-effective, local resource based and environment-friendly technologies of different sectors of rural development. It also provides functional exposure to replicable models to meet location-specific, season-specific and social contextual needs and promote participative-cum-partnership collaboration between frontline/forward demonstration teams, other official and NGO institutions of NIRDPR. It also facilitates transfer of technologies to users and help improve the operational skills to produce high quality products and links users and institutions (PRIs, NGOs, CBOs) with technology developers/suppliers.

The park has established technology units under various sectors like cost effective rural housing technologies, rural sanitation, solar energy, vermi composting, botanical Pesticides, beekeeping & honey processing, etc. These parks are focused on adoption of technologies, employment generation, enhancement of economic status, sustainable development, etc.

3.4 Centre for Popularisation of Science at NCERT

For popularisation of Science, National Council of Educational Research and Training (NCERT) has developed Science Park [10], Herbal Garden and Activity Room under an ongoing programme 'Centre for popularisation of Science'. Science Park is an open-air park in which working models provide a hands-on experience to students, teachers, teacher-educators, and other educational functionaries to understand certain selected principles of science. Herbal Garden has been developed with the aim to make general public appreciate the concerns related with the herbal plants about their medicinal uses, eco-consciousness, etc.

Presently it has nearly seventy-five medicinal plants. Activity Room is used to explain and demonstrate how low-cost activities can be performed in class rooms in order to learn concepts of science and mathematics in a fun way and easy manner. It is envisaged that these centres would motivate educational planners, administrators and principals of schools to develop similar centres in their respective organisations for which NCERT is always willing to provide necessary guidance and expertise. Under the programme "Centre for popularisation of Science", talks on popular science, screening of video-programmes and celebration of events such as Science Day, Environment Day, Mathematics Day are also organised.

3.5 Aligning with National Missions

WTP has a scope to be aligned with majority of National Missions for achieving greater impact and bringing about the holistic development of rural women. One of the most essential and crucial mission that WTP can align to is Deendayal Antyodaya Yojana, which is launched under the Ministry of Housing and Urban Poverty Alleviation (HUPA), Government of India with an aim to uplift the quality of life of the rural women by enhancing sustainable livelihood opportunities through skill development. The scheme is integration of the National Urban Livelihoods Mission (NULM) and National Rural Livelihoods Mission (NRLM). The Make in India initiative launched by Prime Minister in September 2014 as part of a wider set of nation-building initiatives, can also be aligned to for targeting the local and national markets. Another similar mission is the National Rurban Mission (NRuM) implemented by Ministry of Rural Development, Govt. of India, which aims to develop rural areas by provisioning of economic, social and physical infrastructure i.e. stimulating local economic development, enhancing basic services, and creating well planned 'Rurban clusters'.

Another important national mission for WTPs to align and work with is National Mission for Empowerment of Women (NMEW). Its objective is to strengthen the processes that promote holistic development of women, gender equality and gender justice through inter-sectoral convergence of programmes impacting women, forging synergy amongst various stakeholders and creating an enabling environment conducive to social change. It will help WTPs to integrate gender concerns into the training curriculum as well as prepare training modules for functionaries at various levels.

WTPs can also be aligned with the short-term training imparted at PMKVY Training Centres (TCs). Apart from providing training according to the National Skills Qualification Framework (NSQF), TCs also impart training in Soft Skills, Entrepreneurship, Financial and Digital Literacy. This can help WTPs to link the aptitude, aspiration, and knowledge of the skilled workforce it creates with employment opportunities and demands in the market.

The Vocal for Local initiative of the Government of India can also be harnessed for bringing in recognition, convenience, marketing, transparency, and partnerships in the WTPs. It gives an opportunity for local entrepreneurs to have their talents and brands reach a larger audience. It creates an ecosystem that benefits every small and local entrepreneur, and makes them accessible to a wider audience – bypassing the heavy costs of marketing. The values of community-building, being part of Vocal for Local, WTPs can have access to a mutually beneficial community that grows together.

The WTPs can also work towards the successful implementation and execution of Science, Technology and Innovation Policy 2020 with its various elements of capacity development, innovation, entrepreneurship, technology development and indigenization, equity and inclusion and various monitoring and feedback mechanism.

3.5.1 Aatmanirbhar Bharat Abhiyan

In the 1980s, Department of Science & Technology (DST) initiated the Women Technology Park (WTP) Scheme for the overall development of society through science. The scheme can be viewed through the lens of policy research for liberating rural women from the shackles of poverty and dependency. It explores the role of local leadership of scientific institutes and organizations in catalyzing rural women communities in generating new livelihoods opportunities and leading to the development of Technology-driven systems, infrastructure, and a more proactive community for full utilization of technological developments. These WTPs promote the development and adaptation of appropriate technologies, transfer of proven technologies, and demonstration of live technology models to promote women's employment. These centers also create awareness and provide training on appropriate technologies leading to skill upgradation.

The case studies of the WTPs, provide examples of the constructive potential of the scheme in generating entrepreneurship, employability livelihoods while providing scientific solutions to local problems. These WTPs act as regional resilience centers for making rural women liberated and atmanirbhar through Science & Technology.

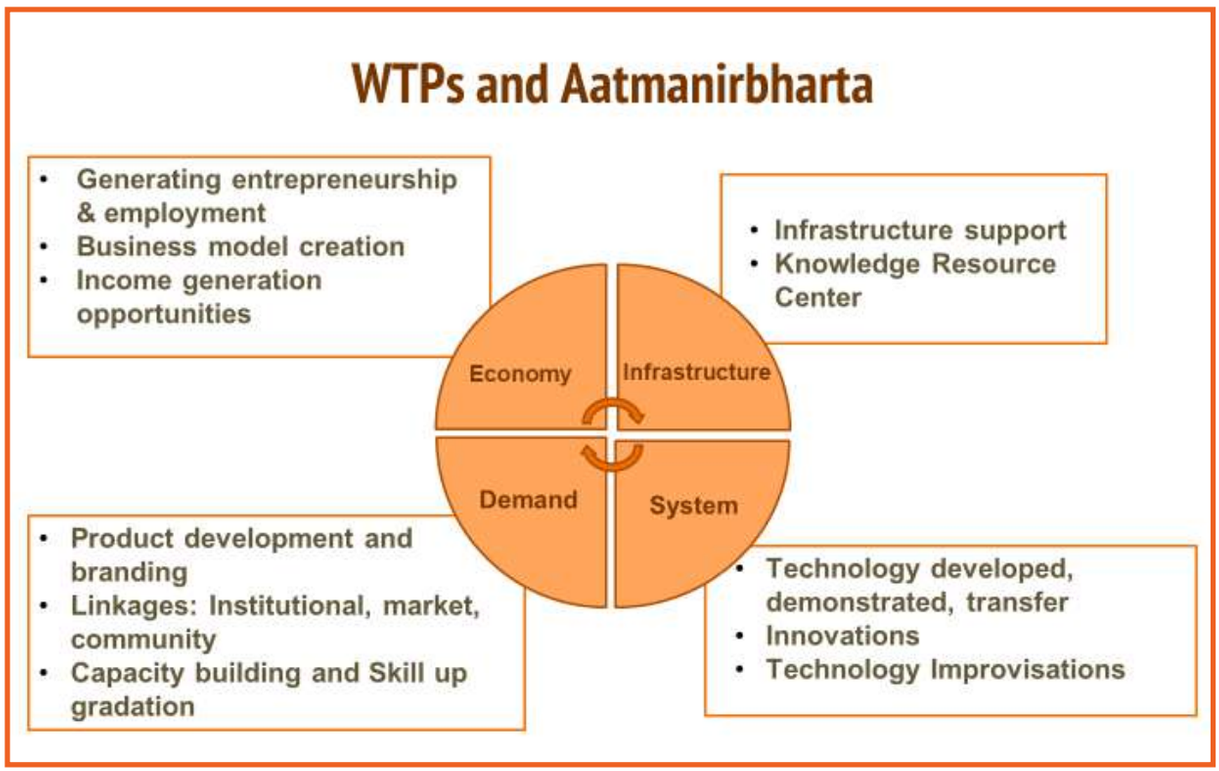


Fig. 3: WTPs in Consonance with Aatmanirbhar Bharat

This scheme successfully focuses on the five elements of Atmanirbharta, i.e. Economy, Infrastructure, System, Demography and Demand. These parks provide skill enhancement training with suitable technology to the rural women to improve their economic status and provide economy liberation to strengthen the Economy Pillar. By providing infrastructural facility, WTPs establish the equipment to provide infrastructural liberation. Along with this, the new technologies developed or adapted old technology provides a system for liberation from physical drudgery.

3.5.2 Global Missions

The UN Sustainable Development Goals (SDGs) were created to achieve a prosperous, inclusive, and sustainable society for all by 2030. Adopted by 193 countries since September 2015, the 17 goals include initiatives such as the elimination of poverty and hunger, fighting climate change, supporting decent work conditions, and creating sustainable cities and communities. The WTPs have been designed and conceptualized in such a way that they naturally align themselves with the SDGs, and hence they have enabled the communities to solve their local problems and challenges by turning them into business and innovation opportunities while contributing to a better world.

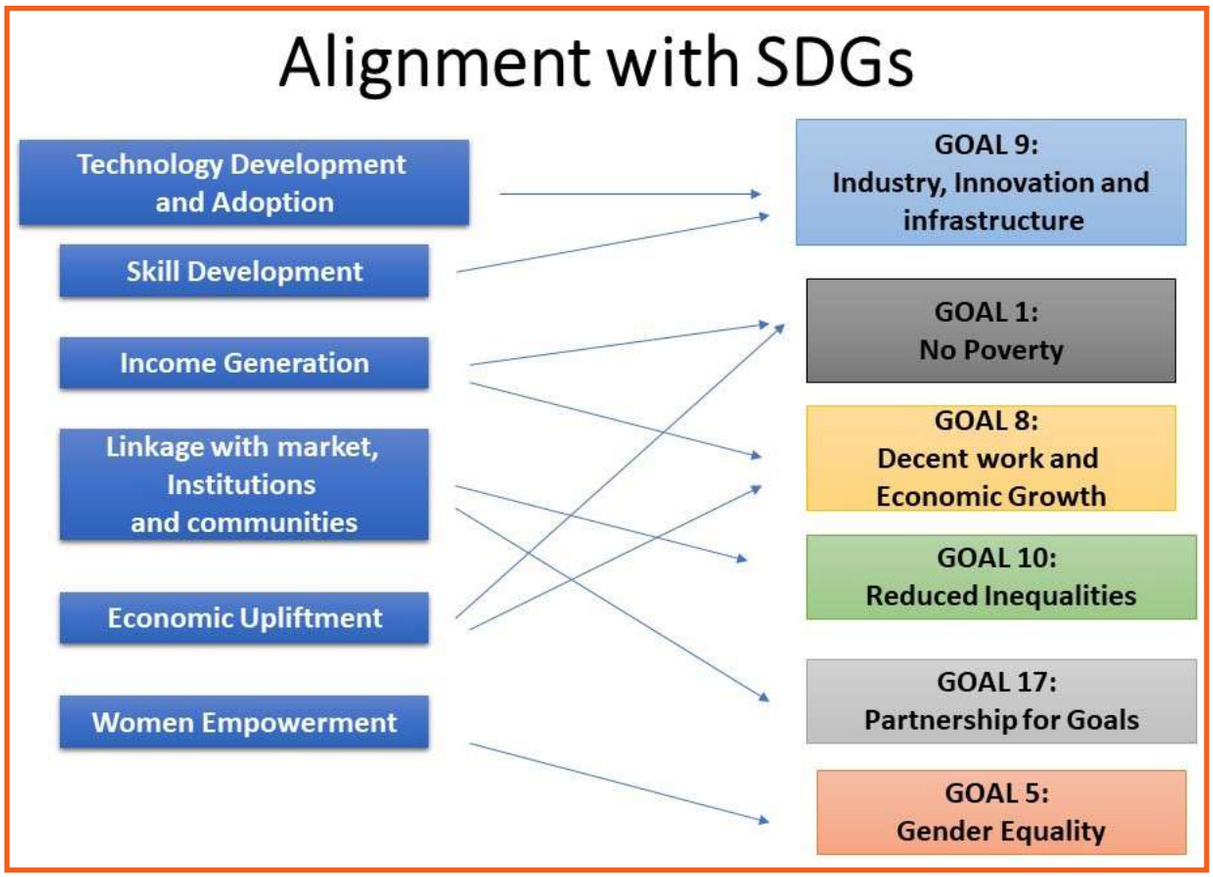


Fig. 4: Alignment with Sustainable Development Goals

For recognizing the nature of alignment of the objectives of the WTPs with the SDG goals, the first step was by identifying which of the 17 SDGs had KPIs similar or relevant to the objectives of the WTPs. Assessing which SDGs are directly or indirectly related to the goals of the WTPs and using key performance indicators (KPIs) to understand how the goals integrate with the WTPs activities is critical. Then then local threats such as resource scarcity, inequality, and outdated technologies, were considered and they were translated into opportunities for businesses to manage. This helped in finding strategies, and products that intersect with these trends to understand where additional efforts of WTPs to be self-sustainable need to be focused. It was then finalized that the objectives of the WTPs can be aligned in the following manner with the SDG goals for them to be self-sustaining.

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Chapter 4

Framework and Methodology

The study of WTPs has been accomplished in a stepwise manner with a particular strategy for each stage. Hence, a research methodology was followed to include all the stakes of the diverse stakeholders of the WTPs. The methodology is categorised into four steps – **Data Collection, Data Analysis, Evaluation** and **Study Outputs** – to achieve the study's objectives. Conceptual methodology has been developed based on the present working practices of WTPs.

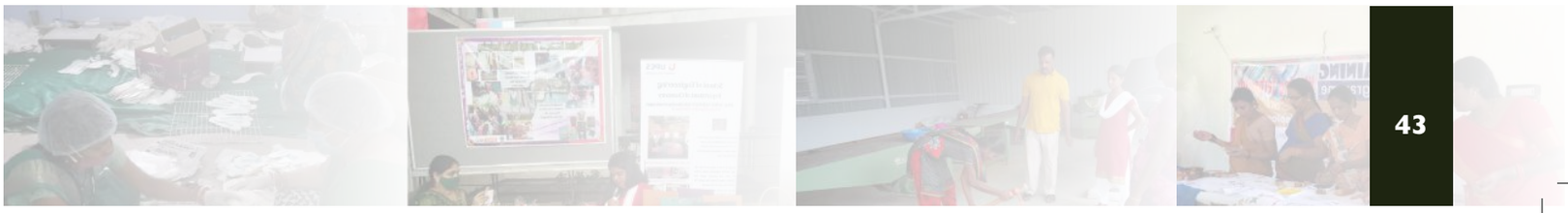
4.1 Data Collection

The collection and documentation of contextual data and information were required to form the concept of the WTP programme, its implementation process, execution procedure, problems faced, etc. The collected data has supported framing the sustainability parameters and performing the impact assessments of WTPs. The methods adopted for data collection can be categorized into two categories:

4.1.1 Primary Data

4.1.1.1 Brainstorming Sessions

A Local Programme Advisory Committee was constituted, and experts from various related fields were brought on board to give time-to-time suggestions and guidance. The



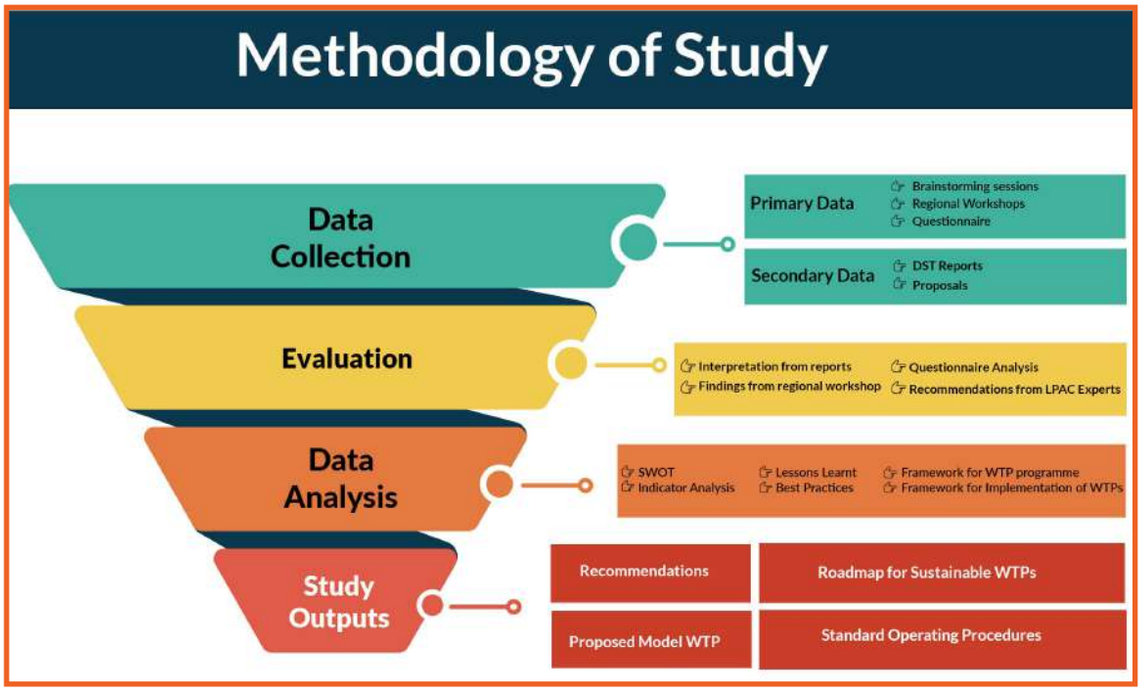


Fig. 5: Methodology of the Study

committee helped finalise the study's parameters and perform the impact assessment. Four brainstorming sessions were organized to receive input from the members. The brief detail of the meetings is as follows:

a. Method to frame the assessment of WTPs: First online Local Programme Advisory Committee (LPAC) Meeting was organized on 12th June 2020, with experts and other committee members on board. The sole agenda of the meeting was to frame a methodology for assessing WTPs and devise the parameters to identify the gap areas.

b. Fine-tuning of the methodology and framing of SOP: Second online Local Programme Advisory Committee (LPAC) Meeting was organised on 23rd March 2021. The committee mull on fine-tuning based on feedback from the Regional Workshop of WTPs and the questionnaire analysis. It also pondered on finalization of Parameters and format of SOP.

c. Review the design and sitemap of WTP Website: Fourth online Local Programme Advisory Committee Meeting was held on 22nd June 2021 to gather inputs and suggestions from experts for the WTP Website.

4.1.1.2 Interaction with Principal Investigators (PIs) of WTPs

Third online interactions meeting was organized on 19th May 2021 with PI of WTPs and Local Programme Advisory Committee members. The PIs of successful WTPs shared

their experiences on the operation and sustainability of WTP. Their ideas and experiences were incorporated.

4.1.1.3 Interaction with Trainees and On-Site Visit

A day's field visit was made to the Rural Women Technology Park (RWTP) at Krishi Vigyan Kendra-II, Sitapur, Uttar Pradesh, to interact with trainees, trainers and other experts. Besides, a Local Programme Advisory Committee Meeting was held to review and monitor the programme's progress. Inputs from central and state government organizations working in the same fields, community leaders and other stakeholders were discussed thoroughly.

Technologies appropriate to the women farmers were demonstrated during the Vigyan Prasar officials' field visits to some villages where women were involved in the occupation of backyard poultry, and Azolla cultivation units were made. The women expressed their satisfaction having trained by the WTP has helped them in livelihood generation. Other interactions and focused group discussions with trainees were held at the venue.

4.1.1.4 Regional Workshops

Regional workshops were conducted to understand the working of WTPs and to identify the gap areas. As a part of the project, several visits to the WTPs across the country were planned to study the working of WTPs and direct interaction with trainees. But due to the pandemic, a series of regional workshops were held online wherein individual WTPs presented their work and shared their feedback. These workshops help understand the workings of the WTPs and help identify the gap areas. Following were the objective of the regional workshops:

- To understand the workings of the WTPs
- To identify the gap areas for the sustainability of the WTPs.
- To present the status-quo and plans of WTPs
- To highlight the best practices and success stories
- To share their experiences
- To understand their constraints and challenges

The Regional workshops covered the country's Southern, North-eastern, Western, Eastern and Northern regions, wherein approximately 26 WTPs have actively demonstrated their work and methodology. The agenda of these workshops was to discuss the technology, the method followed, baseline study, linkages formed, training programs conducted, challenges faced, etc. Recommendations and significant observations that emerged from these Regional Workshops were documented.

4.1.1.5 Questionnaire

A questionnaire was developed to aggregate data from WTPs. Separate questionnaires for ongoing WTPs were developed, having the following sections: General Information, Technology, Training & Awareness, Livelihood, and Employment. The exhaustive questionnaire analysed the WTPs on the parameters of Sustainability Plans, Pre- and Post-intervention surveys, Training Modules, and establishment of forward/backward linkages. Data collected from these questionnaires was later on analysed and evaluated in detail.

4.1.2 Secondary Data

4.1.2.1 DST Reports and Proposals

The consolidated data and documents containing existing knowledge and information were collected from DST-SEED Division, like the WTP programme, list of projects sanctioned, documentation related to WTPs like proposals received, annual reports and project completion reports, manuals developed, videos, etc.

The status reports were prepared based on the documents collected/received from DST. The collected data was organized in the format where the number of WTPs was represented region-wise, reflecting their status. Based on the data, 46 WTPs were catalysed and supported across the country from time to time in project mode after the selection and sanctioning of the invited proposals. Of 46 WTPs, 33 WTPs have completed their financial tenure, and 13 are ongoing as of July 2022. During the study period i.e. 2019-21, 40 WTPs were established during the study, however, the information inputs from 30 WTPs were used for the study as the remaining 10 WTPs did not responded to the email invitation, neither the reports were present for analysis. Out of 30 WTPs, 20 WTPs' data is based on the Project Completion Reports and while 10 WTPs' data is based on the Annual Reports provided during the study period.

Total WTPs	**46**
Sample Size	**30**
Newly Added (during 2022)	**6**
WTPs not responded	**10**

4.2 Data Analysis

After data collection, the data was utilized for extensive analysis and diagnostic parts from which the parameters were derived. During analysis, a comprehensive study of consolidated data was conducted to identify the parameters to study the impact assessment of the WTPs and to find the gap areas to run the WTPs in self-sustainable mode. The finding that emerged was utilized to frame the parameters for mapping and evaluation of impact assessment of WTPs. Region-wise database along with parameters was prepared from the collected reports.

4.2.1 Interpretation from Reports

The invited proposal documents, annual reports, and project completion reports (PCR) were used for the study had some key issues such as:

- Several reports, especially annual and project completion reports received from PIs, were not in the prescribed format, due to which database was not available for study.
- In the report, many parameters were not filled by the PIs, due to which the data was unavailable for reference purposes.

Further parameters-wise mapping was conducted to identify the gap areas from the report.

4.2.2 Findings from Regional Workshops

The recommendations received from every workshop and the findings were accounted for. The observations collected were utilised as base documents for framing SOP, identifying the gap areas and developing a framework for implementing and sustaining WTPs. The points were categorised into three sections: regarding the functioning of the WTPs, the establishment of forwarding and backward linkages and the sustainability of these parks.

4.2.3 Findings from the Questionnaire

The data collected from the questionnaires was analysed and represented through graphs for better understanding. Moreover, the recommended points based on the questionnaire were prepared separately.

4.2.4 Recommendations of LPAC Experts

Four LPAC meetings were conducted during the study to receive suggestions and guidance from the experts and other committee members. The experts shared their suggestions and inputs helped in framing the recommendations for developing Standard Operating Procedure, a framework for implementation, a model WTP, and other communication materials.

4.3 Evaluation

After completing the diagnostic analysis, the database was used to evaluate the programme and working of WTPs. SWOT, Parameter analysis, and questionnaire analysis were done during the evaluation.

4.4 Study Outputs

Based on the SWOT analysis and evaluation of the questionnaire, strategic implementations to overcome the limitations, the framework for implementation of WTPs, a model WTPs, a dedicated website for WTPs, and recommendations for sustainability and operation have been suggested.

4.4.1 Framework for Implementation of WTPs

A framework for implementing WTPs has been developed to overcome the gap areas. It was developed based on a SWOT analysis. The framework has been developed by identifying the parameters required for the sustenance and growth of WTPs. This framework would help meet the specific objectives of the WTP programme of DST.

4.4.2 Proposed Model WTP

As a part of the study, a model for an ideal WTP has been proposed that could impart science and technology based training to rural women utilising the local resources, enabling them to adopt appropriate technologies, coming up with value-added products that can be a source of income and livelihood generation for rural women. Facilitating women by providing training on the selected technologies, encouraging them to become self-reliant or form enterprises by giving all possible support from financial institutions, banks, and government agencies, and strengthening market linkages to market their products are integral to model WTP. It should be a focal point for increasing community resilience through S&T components. Further, it should be developed as a park that demonstrates and incubates need based technologies and strives for sustainability.

Chapter 5

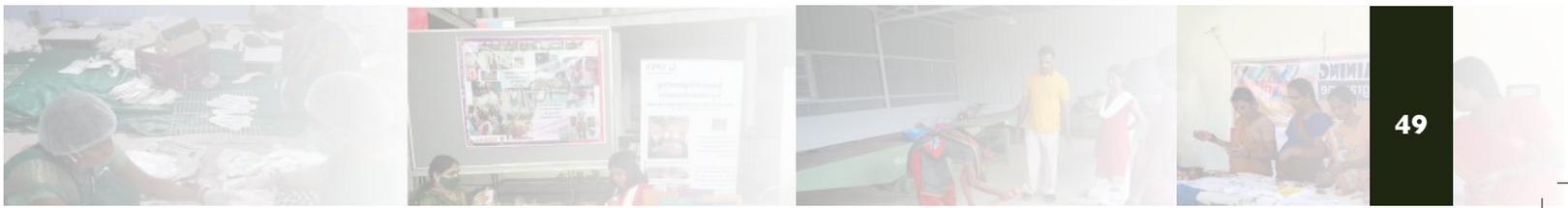
Analysis of WTPs

The data collected to study WTPs are from primary sources like Regional Workshops, Questionnaires, various interactions and secondary sources like Project Completion reports. It was categorized, analyzed and interpreted to give recommendations for making WTPs sustainable.

Out of the total 46 WTPs catalyzed and supported by the SEED Division of DST from time to time in project mode, 30 WTPs have been evaluated under this study. At the same time, the rest were either newly set up or too old to be included for measuring their performance on most of the parameters identified for the study. The list of the WTPs considered for evaluation has been provided in Annexure III.

5.1 Indicator Identification

The performance of WTPs has been analysed based on several indicators that are key in determining the sustainability of WTPs. These indicators are identified based on the old and evolved objectives laid down by SEED division of DST for establishing WTPs. These indicators are also referred to in the draft Science Technology and Innovation Policy 2020. The analysis of WTPs on each of these indicators helped form a comprehensive picture of the status of WTPs across the country.



5.1.1 S&T-based Livelihood Generation

1. Natural Resource Management
2. Support from S&T Organisations
3. Information and Awareness Generation
4. Training and Capacity Building
5. Technology Demonstration and Delivery
6. Innovative Solutions

5.1.2 Sustainability

1. Product Development and Branding
2. Standardisation and Validation
3. Establishing Linkages
4. Livelihood Generation and Alignment
5. Holistic Development of Rural Women

The indicators were categorised broadly into the following two frames:

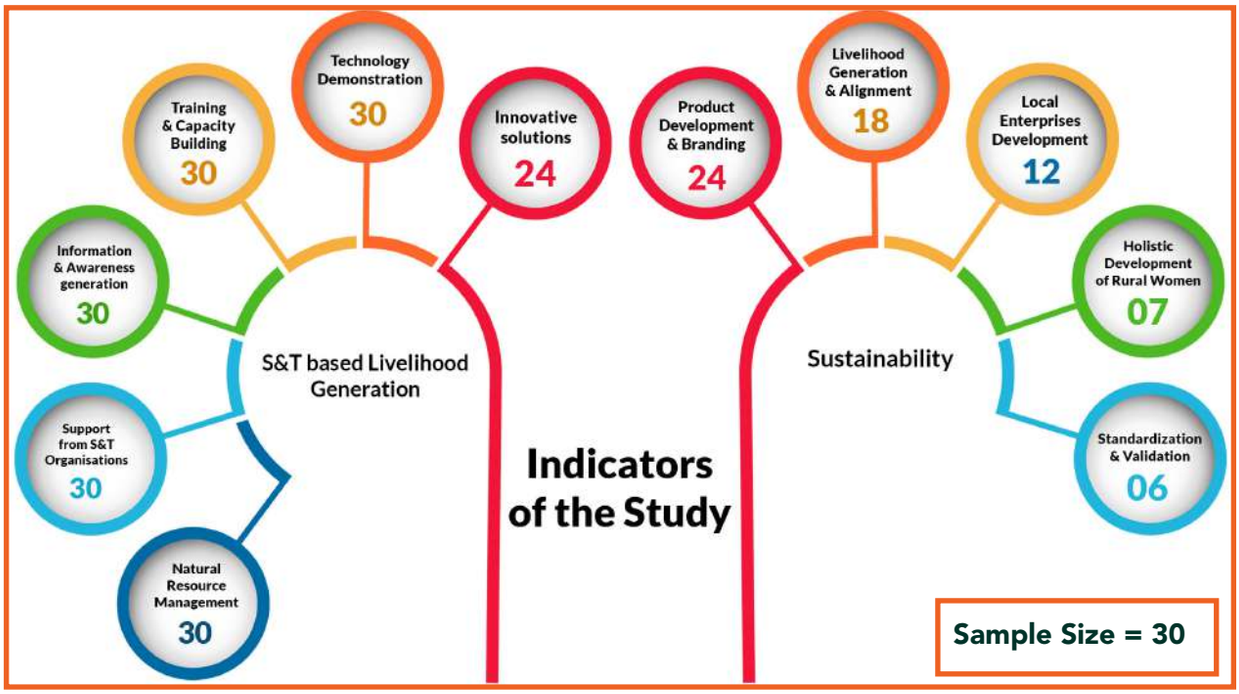


Fig. 6: Indicators of the Study

*Number indicates numbers of WTPs complying to the indicators

5.2 Evaluation of WTPs Based on Various Measurable Indicators

5.2.1 S&T-based Livelihood Generation

5.2.1.1 Natural Resource Management

TThe raw material used were locally available in abundance. An eco-friendly approach has also been adopted by the WTPs while selecting local resources. However, a detailed baseline survey is required when choosing the technology which uses the available natural resources. WTPs emphasised the optimum utilisation of natural resources so that there is no dearth of raw materials which can be obtained sustainably.

As many as 18 WTPs have basic infrastructure facilities and incubation facilities, where the trainees use the facilities to manufacture indigenous products. Few WTPs are taking nominal processing charges from the trainees for using the facilities to sustain WTPs. The few WTPs providing infrastructure or incubation facilities successfully run in self-sustaining mode.

5.2.1.2 Support from S&T Organisations

Support and collaboration from scientific and technical organisations while setting up WTP is essential. Almost all WTPs have taken support from an S&T organisation working in the selected technical domain and are located in the nearby region. Such organisations also provide expert support for training and extension purposes.

5.2.1.3 Information & Awareness Generation

Nearly all WTPs have successfully conducted information & awareness programmes in different sectors such as the role of S&T in development, health issues, women hygiene, environment protection, COVID-19, homestead herbal products to increase immunity, gender equality, women empowerment, etc.

These programmes also act as a collective intelligence platform where every aspect of technology, its usefulness, and its potential market is discussed. Although a bottom-to-up approach is a much-needed solution to this problem, the need for any particular technological intervention must arise within the community; nevertheless.

5.2.1.4 Training and Capacity Building

All the WTPs have efficiently provided training & capacity building programmes on the selected technologies after conducting a baseline survey to identify the need and interests of the trainees. Based on the reasonable concern of the trainees for the selected technology,

the training programmes were conducted and further, the WTPs also organized the capacity building programmes to improve their overall skills like knowledge about developing linkages, market analysis, product branding, banking, standardization and validation etc.

These training programmes are supervised by a scientific or technical expert from an S&T organization or a master resource person in the related field or domain. In some cases, additional related information like maintenance of the technologies, market prospects for the technology, etc. are also included in the training programmes

5.2.1.5 Technology Demonstration and Delivery

The selected technologies are proficiently demonstrated with the help of experts from collaborating scientific and technical institutions or a master resource person in the specific domain. In some cases, hand-holding programmes with the respective S&T organizations are also organized by some WTPs for the trainees to understand the technologies in a better way.

The experts also develop training manuals and associated reference materials in vernacular languages, which are standardized for each technology and hence help the trainees with reference material to refer to when the training is over. In most cases, the training programmes are standardized and certified through the National Skill Qualification Framework (NSQF) level or equivalent certification process.

5.2.1.6 Innovative Solutions

In some cases, WTPs have identified a local problem and provided innovative solutions to the problems. The study revealed that around six WTPs worked for the local issues of women and offered innovative solutions for resolving them. As many as 24 WTPs have either adapted the already-developed technologies or adapted and customized the available technologies with few technical adaptations in the old ones with the help of S&T organizations and experts.

5.2.2 Sustainability

5.2.2.1 Product Development and Branding

After developing products and processes at WTP or individual level, some of the WTPs have tried to register them under a brand name to establish an identity in local and global markets. As many as 24 WTPs had developed products. Out of them, only six have branded the products.

Still, lack of branding is one of the most significant gap areas identified in marketing the products. Without branding, they didn't receive good local or global market value. This is one of the reasons branding should be considered one of the crucial factors in increasing the income or livelihood generating opportunities for the WTPs.

5.2.2.2 Standardisation and Validation

After successfully developing and manufacturing indigenous technologies or products and processes, as many as 6 WTPs have standardized their products from the local or governmental bodies/organizations. The kinds of products are varied, and thus their standardization process; therefore, the related organizations have been approached for standardization and certification of each product. The enterprises established are generating good income after selling the products that have standardized and certified.

5.2.2.3 Establishment of Linkages

The establishment of linkages is crucial for the sustainability of the WTPs. Most of the WTPs have established linkages with community groups, local governing bodies like panchayats or other active groups, markets and S&T organizations working in that region. This has also helped in the identification of interested trainees. Linkages were developed with the Science & Technology organisations to develop the selected technology, train and demonstrate the trainees with the help of experts. The linkages developed with market agencies to sell the products produced by the trainees to generate income and livelihood sources.

5.2.2.4 Livelihood Generation and Alignment

Livelihood generation and alignment is the parameter that results from all the aforementioned indicators. It has been observed that if all the parameters are achieved appropriately, the trainees can earn a considerable income with the improvement in livelihood. As per the data collected from the reports, 18 WTPs successfully established livelihood options for the trainees; after training, they have also been provided a platform to sell their products and guidance for marketing linkages.

As many as 12 WTPs were influential in establishing local enterprises to sell and market the products. In some cases, WTPs have supported SHGs in developing their enterprises. The WTPs provided all the support and guidance on the formation of enterprises during the training programs. Some of the WTPs have transformed themselves as enterprises are growing sustainably. A list of WTPs based on Livelihood Generation and Enterprise Development has been placed at Annexure IV.

5.2.2.5 Holistic Development of Rural Women

To improve rural women's socio-economic development, it is pertinent to consider the aspects related to health, education, nutrition, etc., besides economic development and growth. Out of a total, 30 WTPs were considered for analysis, and only seven have worked to improve the target group's health, hygiene and sanitation. None of them had worked directly for the education sector besides providing certification of the training programmes conducted by these WTPs. Hence, WTPs should be encouraged to work in these areas. This would fulfill the objectives of the WTPs toward the holistic development of rural women. This would also cater to every aspect of the lifecycle of a rural woman.

5.3 Questionnaire Analysis

For collecting the primary information from the PIs, a questionnaire was framed to capture the working of each WTP and feedback from trainees. The goal behind the framing questionnaire was to develop a database from feedback directly received from the PIs. Separate Questionnaires were designed and developed for completed and ongoing WTPs and divided into three parts: 1) General Information, 2) Technology, Training & Awareness, and 3) Trainees' Livelihood and Employment. Exhaustive questions on sustainability plans, Pre- and Post-intervention surveys, Training Modules, the establishment of forward/backward linkages, etc. have been placed in the Questionnaire. Sample questionnaires for completed and ongoing WTPs have been placed at Annexure V and VI respectively.

Most of the WTPs are found to be concentrated in the Southern part of the country. Some states, like Gujarat, Bihar, Madhya Pradesh, Union Territories, etc., have no WTPs. The questionnaires were sent to the PIs in May 2020, and the process was completed in February 2021. The process for filling in the left-out details following the study indicators was also coordinated simultaneously. Later, the data collected was aggregated and evaluated for drawing out conclusions.

The gap areas that emerged from the Questionnaire Analysis are as follows:

1. **Reduced emphasis on Technology Development:** Most of the amount sanctioned by DST was used for training, purchasing machinery, and infrastructure development. In a lesser number of cases, it was used for technology or product development. A maximum number of WTPs focused on working on ready-to-use Technology/ Products, with minor adaptations.
2. **Poor quality of Capacity Development:** Some of the WTPs did not come up with Training Modules. In most training modules, no information was given about making business proposals.
3. **Poor retention of skilled women:** After completing the training, the women's involvement was up to 30% only, and that too in a few cases.
4. **Poor selection mechanism of target women groups:** Trainees were selected based on personal interest. However, those who preferred occupational background and related skills were less in number.
5. **Sustained handholding required:** Three years in project mode are not enough for women's skill enhancement; hence, support should be extended for another tenure for lagging WTPs however, success stories and best practices of successful WTPs should be showcased on various promotional platforms.
6. **Linkage with Technology Business Incubators (TBIs):** WTP establishment should be collaborated with TBIs or with organizations that help startup companies and individual entrepreneurs which use modern technologies as the primary means of innovation to develop their businesses by providing a range of services, including training, and financing. All kinds of support, from logistical to financial, can be explored to facilitate rural women to become self-reliant.

7. **Continuous training programme:** Handholding and facilitating the trainees with various training modules could optimally tap the linkages that enhance the prospects of livelihood generation.

5.3.1 Interpretations from Questionnaire

5.3.1.1 Region-wise Distribution of WTPs

The regional distribution of WTPs was not equitable or uniform. It is seen from this map that most of the WTPs are currently located in the southern part of the country. There is a dominance of WTPs at southern states. Some states that do not have WTPs are Gujarat, Goa, Haryana, Madhya Pradesh, Union Territories, etc. Hence, it is suggested that equitable distribution of WTPs need to take place and the WTPs should be established at least in the aspirational districts and also in the states that don't have them. Also, the regions which don't have access to them can be chosen.

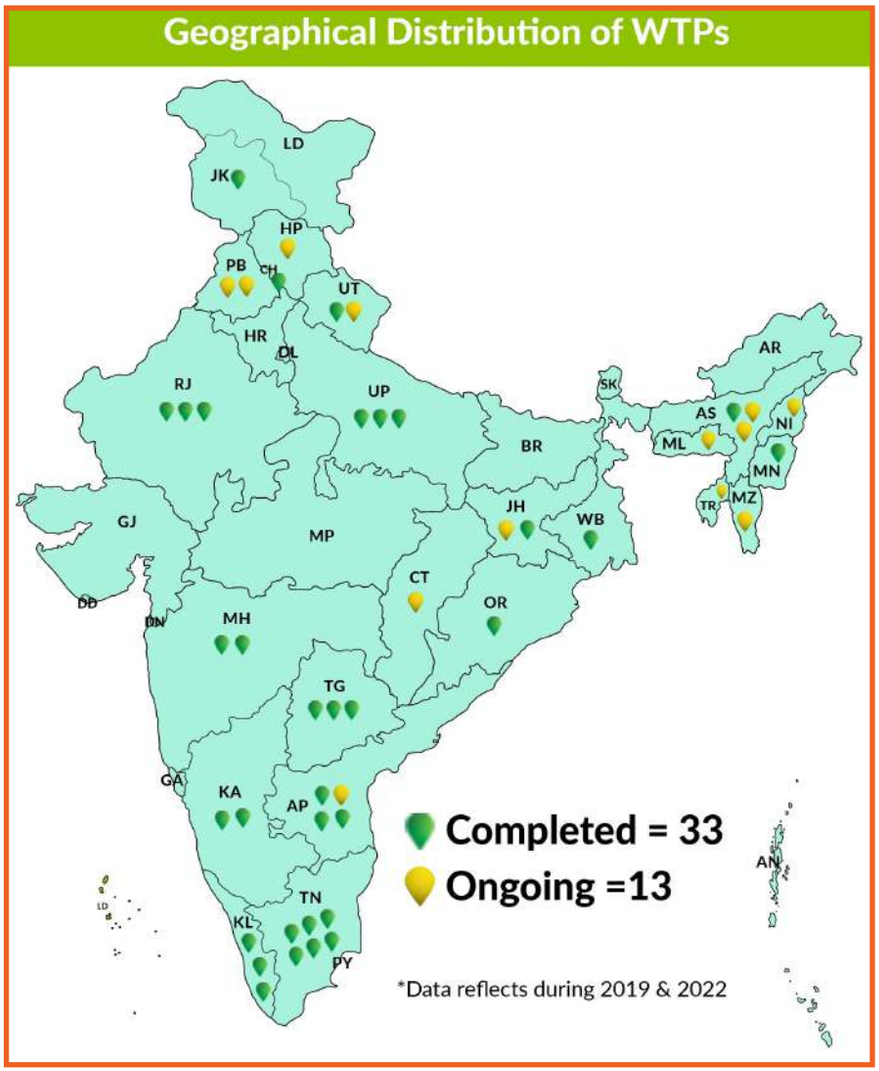


Fig. 7: Map Showing the Locations of WTPs in the Country

5.3.1.2 Organisational Distribution of WTPs

The WTPs have been analyzed based on the organization that supports and administers them. Academic institutions like colleges and universities have implemented around 50% of them. The next majority was from the S&T organisations. However, the study reveals that the WTPs implemented by the Non-Governmental Organizations (NGOs) performed better than others. This finding is attributed to and might indicate the gap in the systemic setup that provides added freedom to the NGOs to connect with the community and perform better.

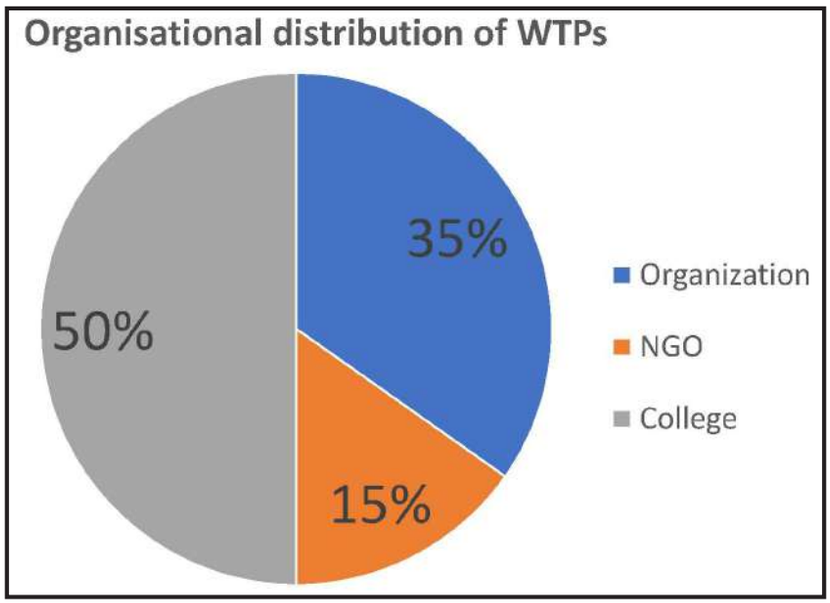


Fig. 8: Organisational Distribution of WTPs

5.3.1.3 Sectors of Technologies Implemented by WTPs

The area-wise distribution of the technologies in the respective WTPs has been analysed, and it was found that technologies related to agricultural and allied sectors are the most commonly used technologies either being developed, adapted, or transferred by the respective WTPs, as shown in the Table 1.

The Table 2 depicts geographical distribution of the sectoral technologies implemented by the WTPs. India being the agriculture-dominant country and hence it can also be seen from the table that agriculture and allied technologies are implemented by the WTPs in most of the states.

As the study suggests, the majority of the technologies are in the area of agriculture, horticulture and allied activities and also in the value-addition and food processing sectors. This is directly related to the country's predominant livelihood system, i.e. agriculture. The next highest majority is of the traditional technologies, which justifies the local resource management module of the WTPs. The complete list of technologies implemenetd by respective WTPs have been placed at Annexure VII.

Table 1: Sectoral Distribution of Technologies	
Sectors	**States**
Agriculture and Allied	Andhra Pradesh, Assam, Chhattisgarh, Himachal Pradesh, Jammu, Jharkhand, Karnataka, Kerala, Maharashtra, Meghalaya, Mizoram, Odisha, Punjab, Rajasthan, Tamil Nadu, Tripura, Telangana, Uttarakhand, Uttar Pradesh, West Bengal
Traditional Technology	Andhra Pradesh, Assam, Kerala, Maharashtra, Nagaland, Punjab, Rajasthan, Tamil Nadu, Telangana, Uttar Pradesh
Energy	Andhra Pradesh, Assam, Chandigarh, Jharkhand, Karnataka, Maharashtra, Meghalaya, Nagaland, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, Uttarakhand
Forest based Products	Andhra Pradesh, Karnataka, Maharashtra, Meghalaya, Odisha, Punjab, Tamil Nadu, Telangana, Tripura, Uttar Pradesh
Health Care	Andhra Pradesh, Assam, Jharkhand, Maharashtra, Odisha, Punjab, Rajasthan, Tripura, Tamil Nadu, Uttar Pradesh
Information Technology	Andhra Pradesh, Tamil Nadu, Uttarakhand, Uttar Pradesh
Waste to Wealth	Rajasthan, Uttarakhand, Assam, Tamil Nadu, Karnataka, Telangana

Table 2: Geographical Distribution of Sectoral Technologies	
States	**Sectors**
Andhra Pradesh	Agriculture and Allied, Traditional Technology, Energy, Forest based Products, Health Care, Information Technology
Assam	Agriculture and Allied, Traditional Technology, Energy, Health Care, Waste to Wealth
Chandigarh	Energy
Chhattisgarh	Agriculture and Allied
Himachal Pradesh	Agriculture and Allied
Jammu	Agriculture and Allied
Jharkhand	Agriculture and Allied, Energy, Health Care
Karnataka	Agriculture and Allied, Energy, Forest based Products, Waste to Wealth
Kerala	Agriculture and Allied, Traditional Technology
Maharashtra	Agriculture and Allied, Traditional Technology, Energy, Forest based Products, Health Care
Meghalaya	Agriculture and Allied, Energy, Forest based Products
Mizoram	Agriculture and Allied
Nagaland	Traditional Technology, Energy
Odisha	Agriculture and Allied, Health Care, Forest based Products

Contd...

States	Sectors
Punjab	Agriculture and Allied, Traditional Technology, Energy, Forest based Products, Health Care
Rajasthan	Agriculture and Allied, Traditional Technology, Energy, Health Care, Waste to Wealth
Tamil Nadu	Agriculture and Allied, Traditional Technology, Energy, Forest based Products, Information Technology, Health Care, Waste to Wealth
Tripura	Agriculture and Allied, Forest based Products, Health Care
Telangana	Agriculture and Allied, Traditional Technology, Forest based Products
Uttarakhand	Agriculture and Allied, Information Technology, Energy, Waste to Wealth
Uttar Pradesh	Agriculture and Allied, Traditional Technology, Energy, Forest based Products, Information Technology, Health Care
West Bengal	Agriculture and Allied

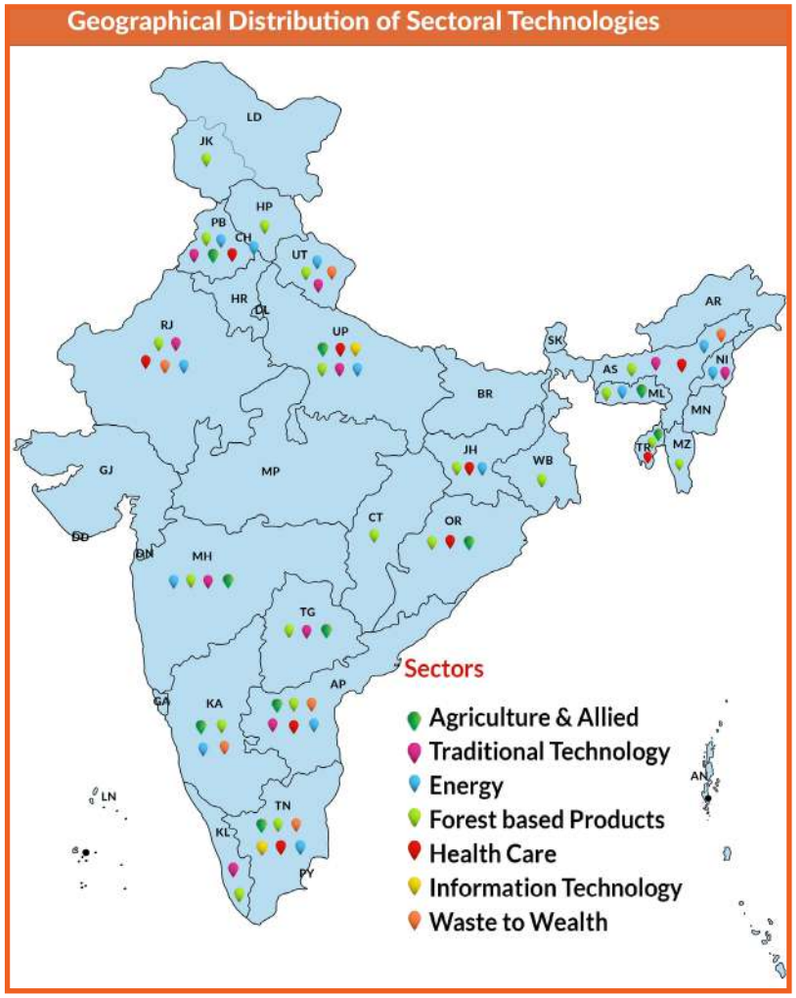


Fig. 9: Technology Distribution Map of the WTPs

5.3.1.4 Demographic Profile of Trainees

The demographic profiles of the trainees of WTPs were measured on the parameters of age, education and occupation for the study, which is depicted in the figure:

5.3.1.4.1 Age

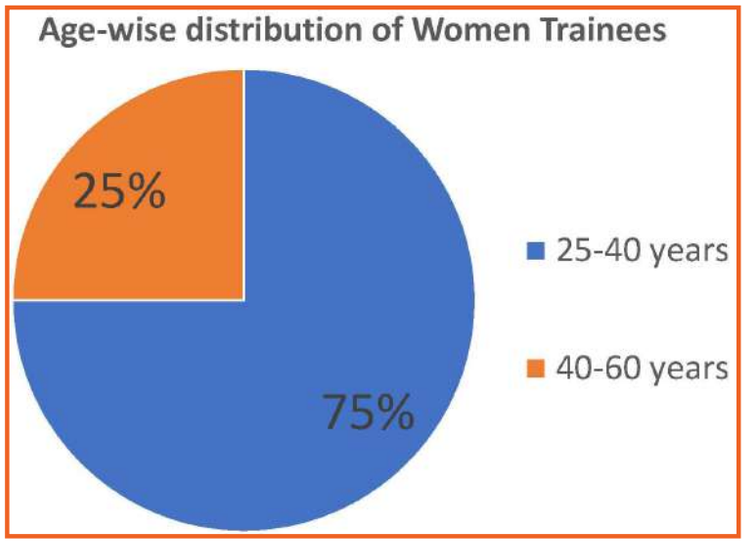


Fig. 10: Age-wise Distribution of Women Trainees

The survey reveals that the average age group of the women trainees falls within the age group 25-40 years. It indicates the interest generated in the youth to be associated with a community level livelihood generation system. These young ideas and the technology awareness of the community can be utilised and converged with the wisdom of the elderly members of the community for improved and sustainable livelihood generation.

5.3.1.4.2 Educational Level

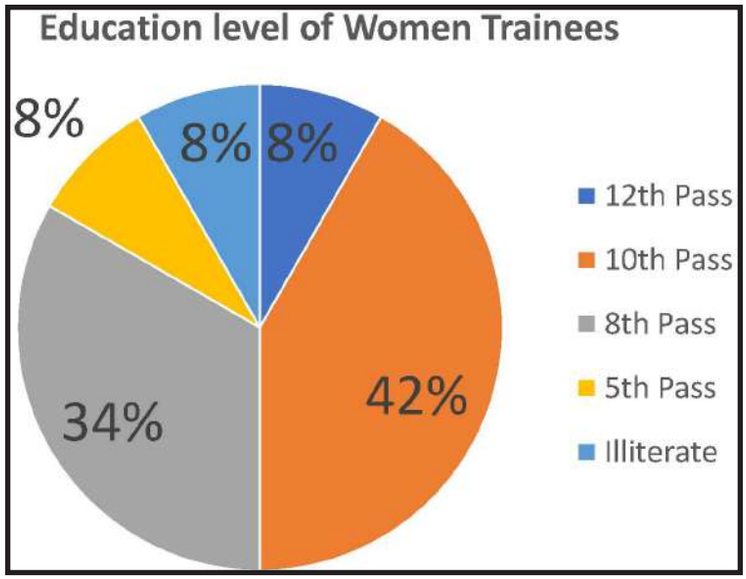


Fig. 11: Education Level of Women Trainees

The study suggested that most women trainees have studied till matriculation. These groups can be channelised to contribute intellectually to the human resources contributing to building up STI ecosystem by skilling them professionally.

5.3.1.4.3 Occupation

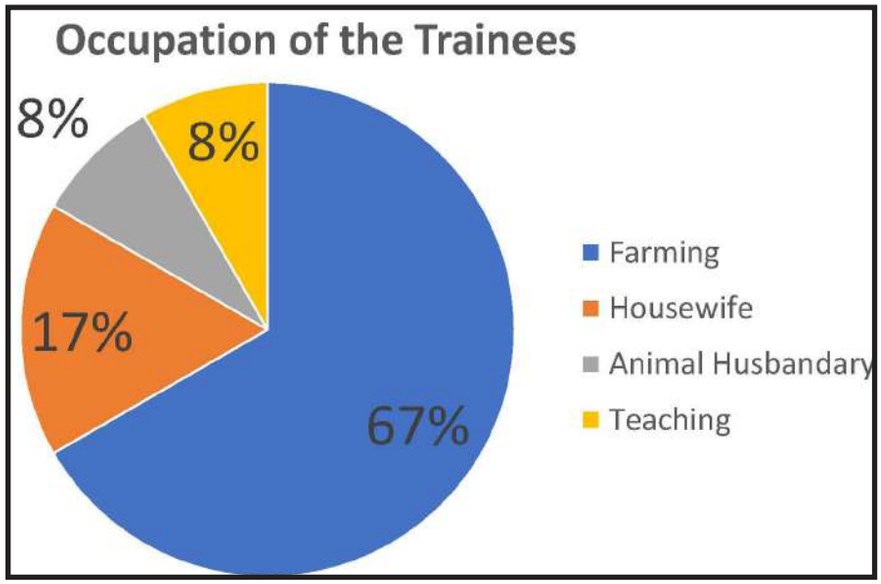


Fig. 12: Occupation-wise Distribution of Women Trainees as per Baseline Study

In the analysis of the data received through the questionnaires, farming was observed as the most typical occupation of women across the regions and identified as the topmost predominant sector of livelihood generation. In the 66.7% of the total responses received, farming was the most common occupation undertaken by the women of the region, followed by those who manage households (17%). As most of the women workforce is related to agriculture, animal husbandry and related sectors, most of the ICT interventions implemented by the WTPs are also in the same sectors. This also helps strengthen and mainstream the region's local livelihood system.

5.3.2 Detailed Analyses of the Responses Received from Regional WTPs on the Questionnaire Survey

5.3.2.1 Nature of the Consumption of Support Provided to Individual WTPs by DST

As the study analysed, the major portion of the fund provided to the WTPs was utilised for scientific infrastructure development (like buying machineries & equipment)and capacity building. The data reflects the systemic gap in funding support for dedicated sustainable livelihood system generations and indicates that it flows more towards infrastructure development.

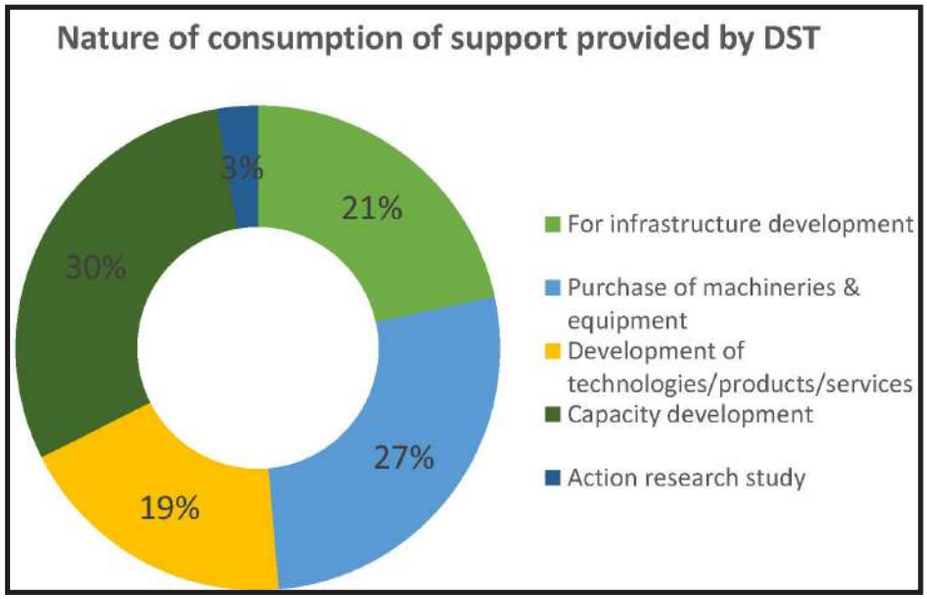


Fig. 13: Nature of Consumption of Support Provided by DST

5.3.2.2 Deliverables of WTP Initiative

The study observed that WTPs focus on product adaptation, value addition and development, and capacity building of women trainees in the selected technology. However, it indicates gaps in developing technologies, services and products.

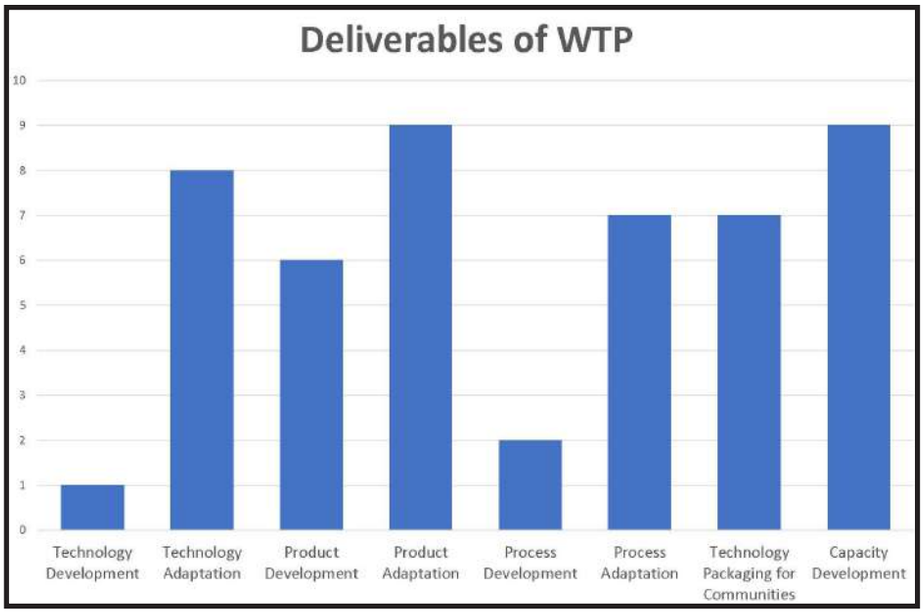


Fig. 14: Deliverables of Project

5.3.2.3 Estimated Benefits through WTP

The study observed that the WTPs aimed at employment generation and imparting societal benefits to communities as their significant deliverables. However, it depicts the

systemic gaps towards inculcating temperament of entrepreneurship development and sustainability, which may be focused on devising mechanisms for future financial support.

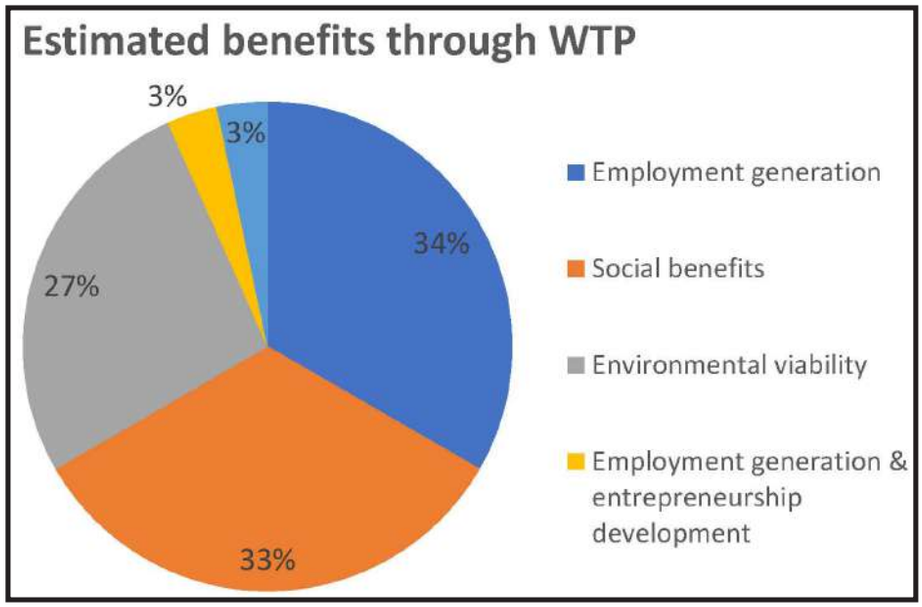


Fig. 15: Estimated Benefits through WTPs

5.3.2.4 Indicators to Assess the Effectiveness of the WTPs

The indicators to assess the effectiveness of the interventions implemented by the WTPs are the number of women adopting the technology, increase in livelihood generation/ employment, the number of trainees trained, the number of new technological interven-

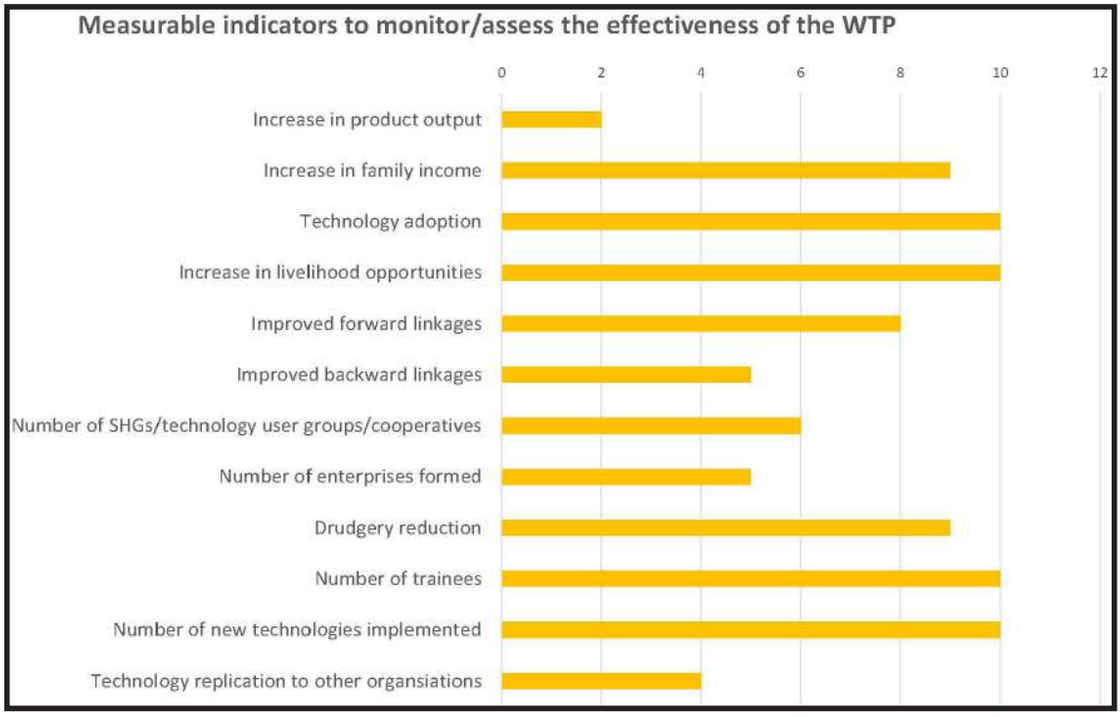


Fig. 16: Measurable Indicators to Monitor/Assess the Effectiveness of the WTPs

tions, and increase in family income. The study reveals that the strengths of WTPs are technology adoption, implementation, and capacity building of human resources. However, WTPs score poor on factors such as product outputs linkages of WTPs, developing enterprises and technology replication, which need attention and are identified as the gap areas to work upon.

5.3.2.5 Technologies Designed and Developed by WTPs

The questionnaire survey reveals that the selected technologies for implementation were either acquired from knowledge partners, collaboration with S&T organization, and subsequently adding value based on customized needs.

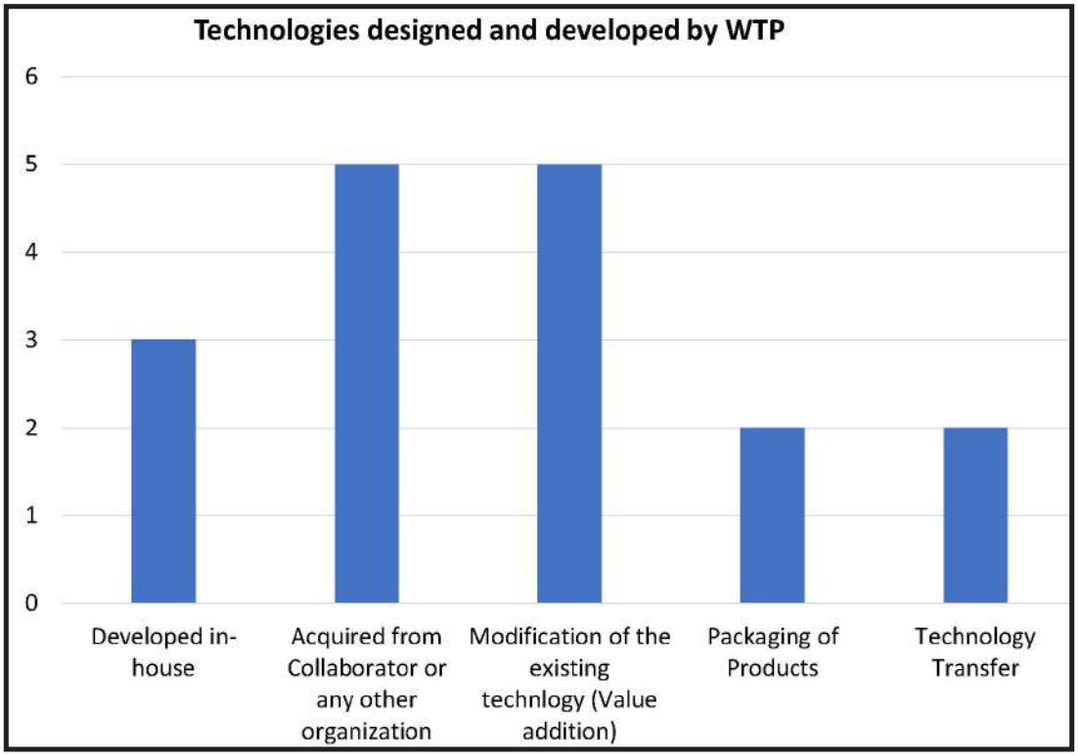


Fig. 17: Technologies Designed and Developed by WTPs

5.3.2.6 Types of Information Provided in the Training Modules

Through the questionnaire survey, information was sought on components of resource materials of the training modules developed by WTPs. It was observed that most of the resource materials were enriched with information on the process of product development and technology usage instructions. The information provided regarding availability of technology, technology development process, market analysis, and so on were comprehensive. The other domains, like preparation of project proposal, establishing backwards and forward market linkages, and additional supplementary information support related to environmental, ethical, legal and other regulatory permissions, were lacking in most cases.

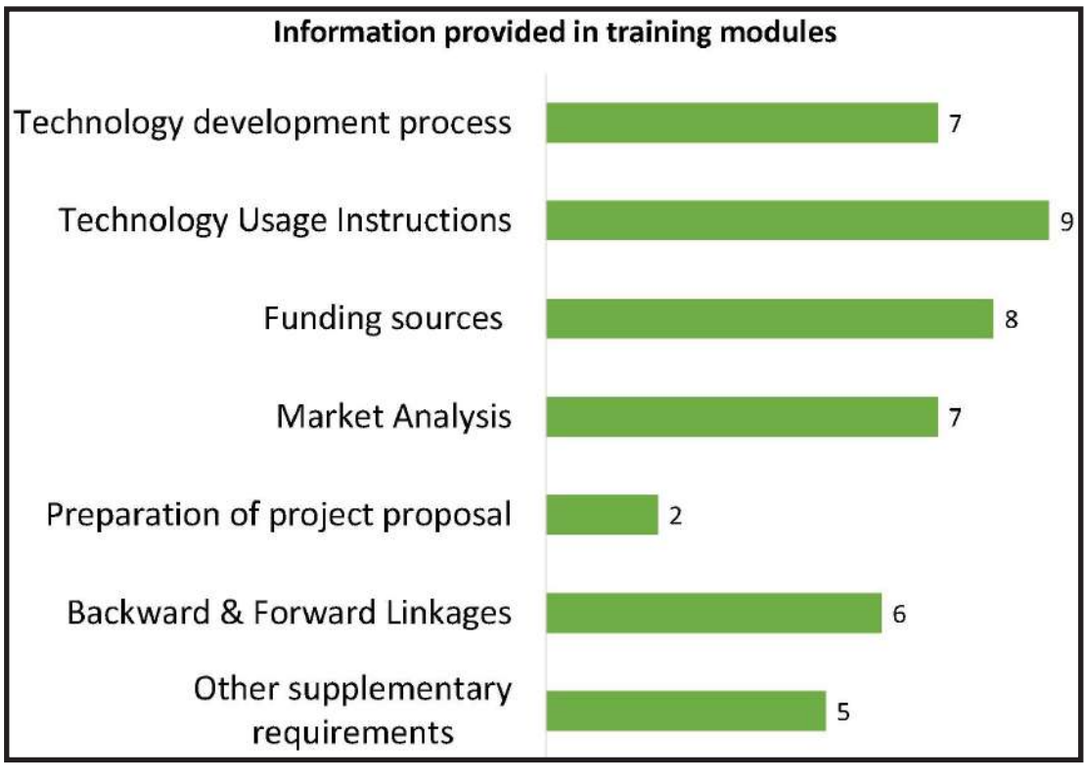


Fig. 18: Information Provided in Training Modules

5.3.2.7 Contents of Training Modules Developed by WTPs

The training modules developed by the WTPs for training and knowledge generation purposes were developed under various domains. The study reveals that most training modules were based on product development and related processes. Some of the WTPs also provided information on SHG creation and budget or business model making

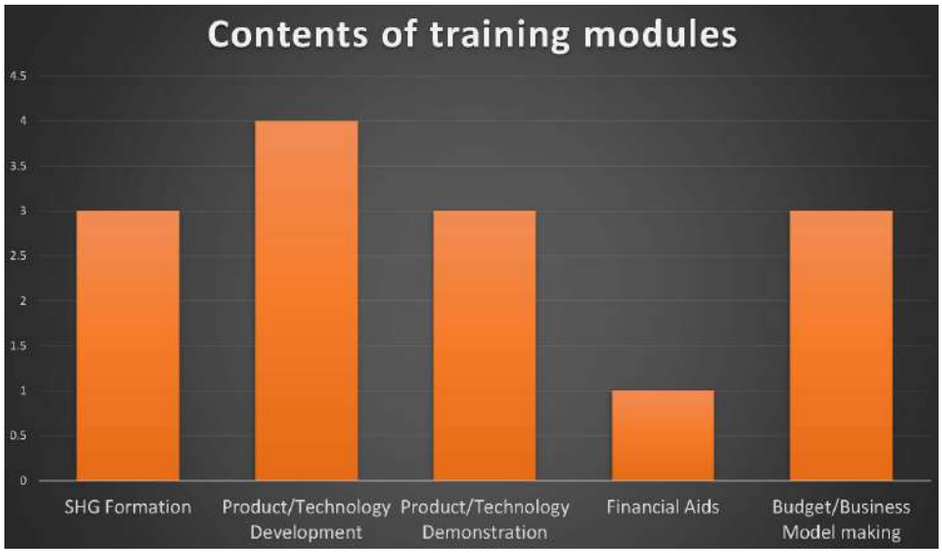


Fig. 19: Training Modules Developed by WTPs

activities. A few of WTPs also provided information on financial aids required for establishing enterprises with the selected technologies. A repository of available financial schemes might be supplemented with these information resources.

5.3.2.8 Marketing Linkages of WTPs

The questionnaire survey on WTPs reveals that only one third of WTPs prefer E-Mahila Haat for marketing the developed products however the responses were not uniform. This may be construed as a significant gap area for which immediate steps must be initiated to bridge the gap in selecting forward marketing linkages to the future WTPs based on local market conditions and developed products.

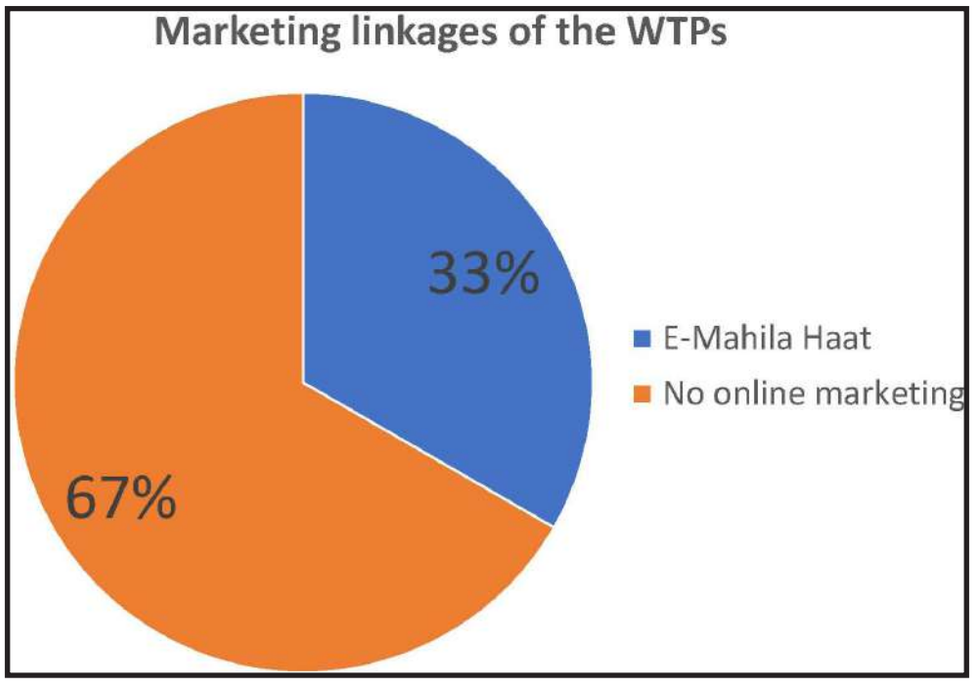


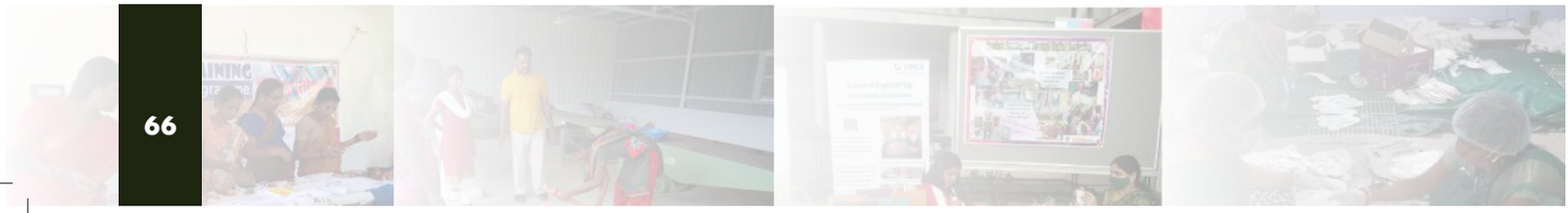
Fig. 20: Preference for Marketing Product through Online Portal

Chapter 6

Impact Assessment

WTPs play an important role in strengthening and promoting empowerment of women of the region. Besides economic empowerment, it also empowers them socially, culturally and mentally. By expanding women's economic opportunities through more and better jobs across wider range of sectors; and building their management and entrepreneurial skills. The financial upliftment through commercial banks and microfinance institutions provide women with effective access to a range of financial services and products tailored to their needs, including especially credit and savings instruments; and, in times of high food and fuel prices, greater livelihood security for women, especially in rural areas and vulnerable environments. This also strengthens their legal status and rights; and ensure their voice, inclusion and participation in economic decision-making. Financial and social independence gives women a sense of self-worth; a right to have and determine choices, to have access to opportunities and resources, power to control their own lives, both within and outside the home; and ability to influence the direction of social change to create a more just social and economic order, nationally and internationally.

Impact assessment is necessary for gauging the functioning and operations of WTPs and what effect it brings on the lives and livelihood of trainees. Impact assessment is a complex process involving interacting with various factors and conditions that directly or indirectly affect the WTPs and their members. The assessment data forms the basis of the interactions, regional workshops, visits, and other committee meetings.



6.1 SWOT Analysis

The SWOT analysis helps evaluate strengths, weaknesses (limitations), opportunities and threats (hurdles, bottlenecks, loopholes, gap areas) that are faced in the running and operation of WTPs. It helps to devise a future roadmap and frame comprehensive recommendations for the sustainability of WTPs. This analysis is based on both qualitative and quantitative assessment that has been done to gauge the state of women empowerment that the reasonable and optimal use of the technology brings into its fold. The sustainability of WTPs is a crucial aspect that needs much attention, and SWOT assessment help in forming a clear perspective of what needs to be done to do away with the bottlenecks and loopholes that stand in the way of WTPs realizing their full potential and becoming sustainable.

6.1.1 Strengths

The strengths of a WTP help it sail through all hurdles that stand in the way of its sustainability and provide it with the necessary push to fulfill the objectives that lie at the core of WTP philosophy. Strengths lie in optimal utilization of local resources, generating livelihood, upgrading the existing technology and value addition to the products etc. The strengths help develop resilience essential for the existence of WTPs and their survival in the competition driven markets.

1. **Increased S&T Knowledge and Information Amongst Rural Women:** The technological intervention, apart from the technology that the WTPs have utilised for product generation using the local raw materials, can add to the knowledge base of its trainees and enhance their skills. It would help them reach the markets online with their products, endorsing them and further comparing similar products in the market. It would help increase the viability of the local indigenous products manufactured by the WTPs and hone the skills of its members. This also helps in establishing connect between women and S&T organizations.

   Like basic computer knowledge provided to the trainees can be used to analyse the market requirement and produce products as per the market demand and competition. A WTP set up at Vivekanand Institute of Biotechnology, South 24 Pargana, West Bengal, not only scaled up its production but also modulated its products to cater to the market's requirements. This they achieved through the use of Computers.

2. **Providing Appropriate Technology Intervention for Livelihood Generation:** WTPs have been instrumental in generating livelihood for the women members and have increased their income by a reasonable amount. This helps enhance the living standard and bring in rural women's socio-economic development. In some cases, women of the SHG who were engaged in some income activities could increase their income by Rs 6000-Rs7000 per month. Here the use of technology has aided women in earning over and above what they have been earning sans the application of technology in their occupations. Further, it has employed those women who have not been earning anything. The WTPs positively impact the socio-economic condition of

communities and thus elevate their standard of living and livelihood. The WTPs often facilitate the formation of SHGs so that both human and material potential can be enhanced and utilised optimally.)

3. **Promoting Enterprise Development:** The WTPs should ideally develop into small and medium-scale enterprises with sustainability at their core. Most of the WTPs have been successful enterprises and have been upgrading their technology and value-addition to their products, developed by WTPs such as WTPs set up by Pushpa Gujral Science City, Punjab; Magan Sangrahalaya Samiti, Wardha, Maharashtra; and SKUAST, Jammu.
4. **Increased Technical Human Power through Skill Development:** WTPs have been able to impart training on the use of technology to the women members and thus help develop the skills necessary for the operation and maintenance of WTPs and also train women for prospects and employment opportunities elsewhere. A technically versed woman is in a position to prepare and make other women learn.
5. **Improvement in Health and Nutrition:** Along with imparting skill-based trainings, WTPs also produce health and nutrition-based products like sanitary napkins and sold locally. Such endeavours have generated employment opportunities for rural women, besides creating health and hygiene awareness. As part of the campaign to create awareness around health and hygiene, attempts like health camps, free distribution of medicines, free health check-ups, etc. have been undertaken by various WTPs such as WTPs set up by UPES, Dehradun; Desh Bhagat University, Punjab; and TBI KIIT, Odisha. This has brought about a great deal of awareness and improvement in health and nutrition status of the rural women of the WTP region.
6. **Optimum Utilization of Local and Natural Resources through Value Addition of Local Products:** Value-addition to the products helps improve their quality and meet the market's requirements. Value-addition is essential for the sustained running of the WTPs as these enterprises need to keep pace with the emerging trends and demands. Value added products derived from low cost and high nutrition-value crops like chia and quinoa had been manufactured by WTP setup by Vardhaman College of Engineering, Hyderabad, Telangana). Another glaring example is the WTP set up by Santhigram Chappathat, Kerala, where as many as 33 value-added products from a single resource like Jackfruit have been produced.
7. **Strengthening Traditional Knowledge System with S&T:** Some of the WTPs have been a boost to the traditional knowledge system as they have been crucial in propagating the indigenous knowledge and manufacturing the products (adding value to it), the products that locals have traditionally manufactured for ages. The use of technology has only refined and upscaled the quality of products. An example is using S&T components to improve and add new designs to traditional phulkari work by WTP set up by Pushpa Gujral Science City, Punjab. Other examples are fish farming by WTP set up by Vivekanand Institute of Biotechnology, South-24 Parganas, West Bengal. Value addition to Virgin Coconut Oil (VCO) by WTP set up by Dr Mahalingam College of Engineering and Technology, Pollachi, Tamil Nadu.

6.1.2 Weaknesses

Limitations are the factors that prevent WTPs from realizing their full potential and achieving their objectives. Some of the limitations that WTP encounter during their operations are:

1. **Poor Forward & Backward Linkages:** Adequate network and linkages for marketing the manufactured products need to be adopted. This would also provide a suitable platform for selling the products developed by WTPs. Linkages can be established with entrepreneurship clubs to get more comprehensive access and broader reach to the markets and improve the quality of products. An example can be cited of WTP set up by SKUAST, Jammu, under which more than 70 entrepreneurs in the area have been supported.
2. **High cost of Raw Materials:** Since WTPs run on locally found raw materials, they should be abundantly and cheaply available. Without it, sustaining the WTP's operations would not be easy. It was found that the raw material was costly in some cases, as observed in mushroom cultivation at WTP set up by Pushpa Gujral Science City, Punjab.
3. **Limited Production:** Owing to several factors ranging from the shortage of some raw materials to limited production capacities to a lack of skilled workforce due to lack of adequate information and trainings, the production at WTPs falls much below the demand. Not catering to the market's needs might drive a product out of the competition. An example of a reported issue is from the WTP set up by Vardhaman College of Engineering, Hyderabad, Telangana, where the farmers are facing problems in selling their products as they are limited produce by individual farmers and they are not technically versed to connect to the markets.
4. **Lack of Market Linkages:** Even after manufacturing the products in adequate quantity, besides maintaining the quality, some WTPs fail to sell their products in markets due to weak linkages. All possible market linkages should be tapped, including the online marketing linkages.
5. **Inadequate Cost-Benefit Analysis:** The WTPs cannot perform an adequate cost-benefit analysis for the technologies implemented and their innovative solutions through various interventions. The profit margin through selling the products manufactured by some of the WTPs was too low to retain trainees, who often opt out of it and look for other or supplementary sources of income.
6. **Lack of Adaptability to Meet the Global Standards and Market Requirements:** Due to a lack of literacy regarding finances, markets and the latest technologies, WTPs products cannot keep pace with the emerging trends and market demands. It has also been observed that the local products' health and other benefits were still unknown by most consumers due to the low level of marketing penetration. WTP has reported this issue set up in Santhigram Chappath, Kerala.
7. **Lack of Support and Handholding by S&T Organizations:** It has been found that once a WTP has been established, what is needed is proper hand holding by

S&T organizations in the form of training and technology upgradation for making WTPs sustainable, without which the WTPs would not be able to operate to its full potential.

8. **Standardization of Products and Brand Creation:** There is a need for standardization of products and brand creation as branding and certification of WTP Products increase their credibility and market outreach. This also helps them stand in the competitive market and gain buyers' confidence. Examples include WTP set up by Santhigram Chappath, Kerala has developed 33 Jackfruit products, out of which seven have been standardized through FSSAI, and branding has also been done. Similarly, WTP, set up by Shri Padmavati Mahila Vishvidhalyam, Andhra Pradesh, has created a brand name SPURTHe, under which many products are sold.
9. **Inadequate baseline survey:** Most of the WTPs have selected and implemented the technologies which are popular on a global level and hence they have acceptance discrimination at the ground level. One of the major reasons for this is inadequate and poor baseline surveys done before selecting the technologies. Other factors like natural resource distribution in the region etc. can also be planed while establishing the WTPs.
10. **Lack of subsidiary support post-completion of funding:** Most of the WTPs cannot plan in advance the finances and money-flow of the WTPs for their maintenance and support post-completion of the funding provided by DST. This leads to their natural death. The sustainability plan should also be inquired about during the proposal and initial stages of the establishment of the WTPs.

6.1.3 Opportunities

For the sustainability of WTPs, more and more opportunities need to be created and explored in terms of improved market linkages, linkages with banks and financial institutes, product endorsements, standardization and validation, besides upgradation of the product and value addition to it. Apart from it, opportunities for enhancing the profit margin and increasing the income of women trainees need to be worked upon. WTPs can gain a competitive advantage by making use of these opportunities.

1. **Synergy with S&T Organizations and Other Programmes of Ministries and Departments:** WTPs should tap all opportunities for collaborating with other government agencies and organizations to expand their product manufacturing capacity, learn from best practices, mutually benefit from other organisations, and explore the market linkages, are to name a few.
2. **Increased acceptance of Traditional Knowledge System:** WTPs should integrate traditional knowledge systems prevalent in the area with the technologies deployed for coming up with indigenous products besides saving and promoting the TKS. One of the examples is that of Indigenously-made Virgin Coconut Oil (VCO), which has the potential to penetrate the emerging and lucrative global market. It will help increase

the acceptance of VCO as a value-added product and increase its demand for medicinal and nutraceutical applications in developed countries. For instance, monolaurin in VCO finds application in baby food preparations. WTP has reported this set up by Dr Mahalingam College of Engineering and Technology, Pollachi, Tamil Nadu.

3. **Improved Linkages with Local Self-government, Administration and Banks:** WTPs can explore strengthening linkages with local administration, local self-government, state government and Gramin banks and other financial institutions of the area for smooth functioning. They should explore all possible means of collaborating with public/ private entities working in the marketing of the products. An example is WTP set up by TIDE, Karnataka and Peermade Development Society, Kerela.
4. **Livelihood Generation Using Waste to Wealth Approach:** The WTPs should look for opportunities and work on all possibilities to explore more and more utilization of local raw materials and materials derived from waste. It would help produce low-cost, durable indigenous products sold in local markets. It was observed that WTP was set up by BVRIT, Telangana, which utilized non-Timber Forest produce as raw material.
5. **Move towards more and more Eco-friendliness and Cost-effectiveness:** The sustainability component of the WTPs includes using eco-friendly technologies to sustain environmental resources. For example, recycling waste paper by WTP at UPES, Dehradun and Sona College, Tamil Nadu, is beneficial to the environment and a good source of income for its trainees.
6. **Nodal point for Technology Delivery and Enterprise Development:** WTPs should strive to become the nodal centres where models of successful techno-enterprises should be replicated. Trainees can be provided assistance in project formulation and mobilization of funds for the establishment of the new enterprises. They can also act as facilitation cum marketing points for providing common facilities and help properly market the products. More and more women can be trained at these centres to become master trainers who, in turn, can provide training to other women in the area. The WTPs can act as facilitation points for technical, logistical and marketing support. Such examples include WTPs set up by PDS, Kerala, TIDE-Karnataka, and KIIT-Orissa.

6.1.4 Threats

Threats are those gap areas, bottlenecks, and loopholes that can jeopardize the functioning of WTP and can make these fall way short of their optimum. The study has identified the following threats to the functioning of WTPs.

1. Obsolation of technologies
2. Non-upgradation of technologies
3. Competition from similar technologies
4. Inflation and free market forces

5. Limited interaction with trainees and subsequent follow-ups
6. Fewer profit margins discourage trainees
7. Inadequate training
8. Manufacturing of low-quality products and low shelf-life of the product
9. Lack of access to markets
10. Cut-throat competition from similar market products
11. Dearth of Raw materials
12. Lesser emphasis on Quality Control and Certification
13. Lack of value addition to the products
14. Lack of testing, validation and standardization of products
15. Bringing real value to women empowerment and livelihood
16. Failed to sync with other ministries
17. Lack of motivation by the PIs to continue or guide once project duration is over

6.1.5 Challenges Faced by WTPs

- Identification of women for training
- Lack of willingness to participate in training programmes
- Sensitizing the Women for the adoption of technologies and technology upgradation
- Understanding the perception of women towards the use of technology
- Lack of adequate support from the knowledge organisations
- Lack of positive responses from the district administration and local authorities
- Lack of time for continual training programmes
- Projects are faced with time constraints

6.1.6 Challenges Faced by Rural Women

- Low literacy
- Language as a barrier
- Mobility constraints
- Timing of training programs not suitable
- Lack of family support and patriarchal society
- Lack of financial independence and credit opportunities
- Maintaining family, work and attending training programmes.

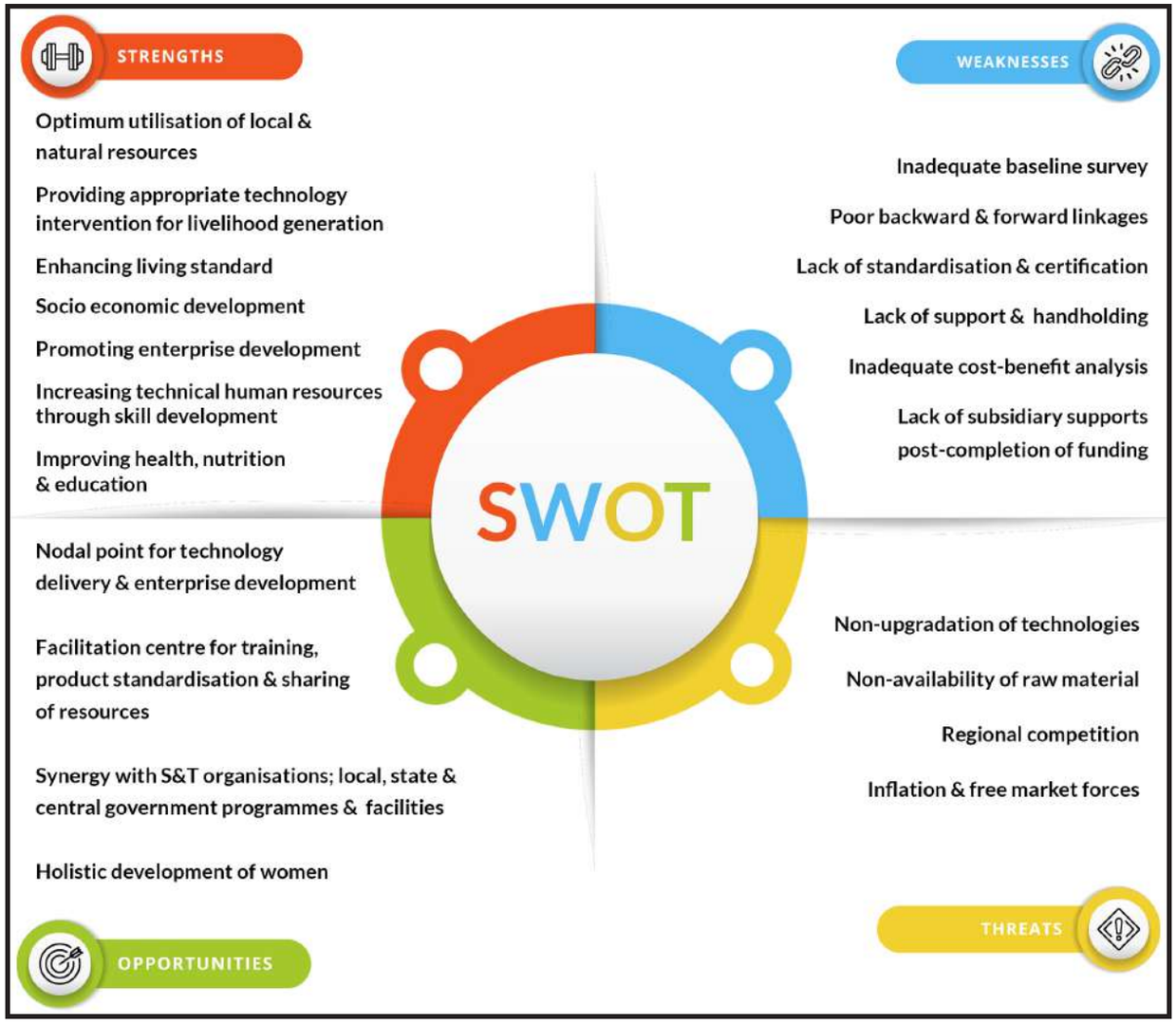


Fig. 21: SWOT Analysis of the WTP Programme

Chapter 7

Major Findings of the Study

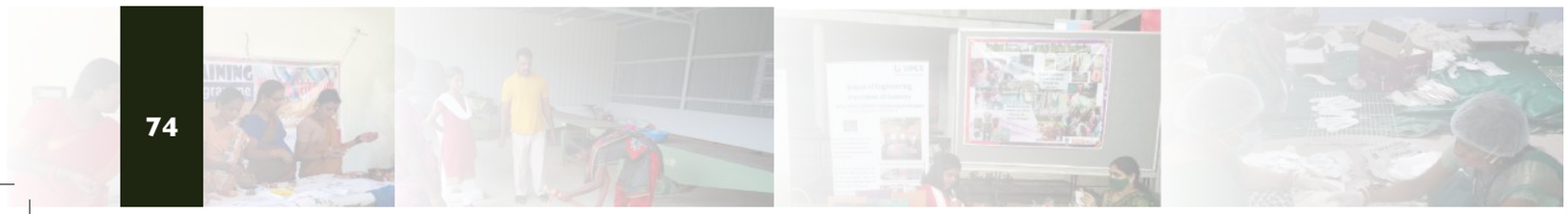
This chapter compiles the key findings of the study. It is a comprehensive and complete analysis of various aspects of WTPs such as duration and components of the training, training methods employed, benefits derived by the trainees from the programme, and its impact in terms of enhancing livelihood opportunities for rural women.

7.1 Major Findings

Following are the major findings of the study:

1. **Enhanced awareness of S&T knowledge and information amongst rural women:** The study reveals that the WTP programme is techno-centric at the macro and livelihood-centric at the micro levels. The science & technology-based knowledge and information, disseminated through numerous technological interventions having S&T components, has generated countless knowledge-based livelihood opportunities in several areas. For example, the basic computer knowledge imparted to the rural women and trainees was utilized to analyze the market requirement and produce products that could fetch higher prices.

   The WTPs were mentored by three types of organizations, namely Colleges, Non-Government Organizations (NGOs) and S&T Organizations, to disseminate



quality knowledge and technology. 75% of participants who were trained in utilising various technologies were of the 25-40 year-age group. These groups of women were found to be the most captive and also worked as societal changemakers. They not only generated sustainable livelihood but also helped in spreading the scientific way of living in communities. 25% of trained participants belong to the 40-60 year-age group, whose lives were changed entirely by generating income, reducing dependency and thereby improving the quality of life. Hence, the trainings imparted through WTPs to women played a pivotal role in women empowerment across the nation.

2. **Increase in opportunities for income enhancement:** In several cases, women associated with SHGs had started earning additional monthly income. Implementing apprpriate technologies has provided alternate and additional avenues of income to the trainees and employment to the unemployed rural women. Reduced dependency on intermediaries improved the financial status of various groups working on the ground, like farmers, micro-entrepreneurs, technology implementers, etc. The WTPs have positively impacted the socio-economic condition of the target community by increasing alternate livelihood options. The WTPs have the potential to co-operate and form SHGs to maximize profits utilizing local as well as regional markets. Most of the WTPs have generated small and medium scale enterprises using technologies.

   More than 50% of trained participants had studied up to high school. These women worked as the changemakers for their community and helped uplift the quality of the lives of community people. Around 15% of participants participating in the survey were graduate and were able to upgrade their knowledge and act as trainers for other women.

3. **Substantial improvement in quality of life through better hygiene, sanitation and nutrition:** Sanitary products were manufactured and sold locally, generating employment opportunities for rural women. Besides, it also aids in improving the health and hygiene of the locals. Creating awareness about food safety standards and rules, and the value of food and nutrition in preventing diseases by organizing camps, distributing medicines, and providing timely health check-ups, have positively impacted society resulting in substantial improvement in their quality of life. Better qualities of healthy and nutritious products are prepared at reasonable costs so that the poor can also access a balanced diet.

   As 67% of trainees had agricultural backgrounds, the information and basic training on health, hygiene and sanitation helped them attain remarkable improvement in health quotient. The reach of these interventions was multiplied by the presence of 8% of participants in the teaching profession and working as educators.

4. **Strengthening Traditional Knowledge System with S&T:** Several WTPs have worked extensively on traditional and ethnic arts, wherein skilled artisans were encouraged to use traditional technologies with few modifications, like utilising S&T inputs to improve and add new designs to old traditional phulkari work and also using computer-aided designs. The local herbs with their medicinal, cosmetic and nutritional benefits were

value added with S&T elements. Enhanced opportunities for phulkari work arose as it was accorded the patent. Promoting medicinal and aromatic plant technology gave the farmer a new dimension and avenue.

5. **Improved linkages with local and state government authorities:** WTPs have built strong forward linkages for sustainability by establishing connections with banks, non-banking finance corporations (NBFCs) and other financial and micro-financial institutions, like PDS Microfinance, etc., which resulted in improved availability of financial support. These forward linkages helped WTPs in future sustenance.
6. **Utilisation of local and natural resources:** WTPs primarily focus on utilising locally available raw materials and waste materials to produce marketable products, promoting economic independence and generating income opportunities for the trainees.
7. **Nodal Point for Enterprise development:** WTPs also worked as a nodal point of an area for enterprise development. The model helps in project formulation, technical assistance and mobilization of funds for the establishment and working of the new enterprises.

   The establishment of several entrepreneurship organizations is affected due to the efforts of WTPs and the associated S&T organizations. These are not just becoming self-sustainable but also act as a tool for continuous livelihood generation at grass-root level.
8. **Brand Creation of products:** Products of a WTP are branded under a common name. Branding products helps establish the product in the market and make it stand in competition with the other products. It also helps in establishing the credentials of a product.
9. **Capacity Building:** Regular Training in technologies was imparted to unskilled women by the WTPs to develop skill sets for livelihood generation. A pool of trainers was built who were trained in utilizing specific technologies and subsequently creating an ecosystem for grass-root technology developers, implementers, trainers and self-help groups.
10. **Need for Backward and Forward Linkages:** In several cases, raw materials used were costly, like mushroom cultivation. Also, there is a dependency on intermediaries, intermediaries, and money lenders due to the weak financial structure. Connecting WTPs strongly with S&T Organizations helps them improve their technology, services and products. Further, connecting them forwards, that is, with marketing platforms & opportunities and other banking & non-banking financial support systems assisted them towards self-sustenance.
11. **Cost Benefit Analysis:** The cost-benefit analysis helps determine whether a WTP is economically viable. If the cost incurred in manufacturing a product surpasses its market value, then the WTPs cannot be sustainable or economically viable.
12. **Exposure to the national and international market and their specific requirements:** Due to a lack of literacy regarding finances, market and technology, WTP

products could not compete with other similar products available in the market. The inability to adapt to changing market needs and technology has been observed. The unique properties of these products and other benefits are still unknown by most consumers due to the low market penetration of the products.

13. **Self-sustenance of WTPs:** Several WTPs have developed various mechanisms to self-sustain the initiative after the financial support gets over from the respective funding agency. These mechanisms include, but not limited to, collecting a nominal amount (say Rs. 20) for participating in various training programmes, selling the different value-added products in the local market, renting or loaning the services, available machineries, and so on. This mechanism imparted a sense of empowerment to the women associated with it.
14. **Collaborations & Networking:** Through its S&T activities, WTPs played a pivotal role in women empowerment. After gaining knowledge and information from WTPs, these women step outside their closed reach and explore the outside world. These phenomena were observed with several WTPs, where women networked with other communities and SHGs and collaborated to source raw materials and find markets for their products.

7.2 Best Practices

Although the empowerment of rural women by income generation through livelihood ventures is a long and bumpy road, WTPs have certainly gone miles in making the womenfolk financially independent and have inculcated confidence and a notion of self-worth among them. Women at WTPs are surging with confidence that they can shape their own destinies.

Among the 46 WTPs, some have certainly outperformed others and stand as a glaring example of how these entities should ideally function and operate so as to derive the optimum output in terms of resource utilization and productivity, besides being a treasure trove of locally manufactured indigenous products and a center for enhancing the standard of living and livelihood of women members. Some of the broad parameters on which the performance of these WTPs has been analyzed are Training and Capacity Building, Innovative Solutions, Standardization and Validation of Products, Establishing Market Linkages, Product Development and Branding, and Local Enterprise Development, Natural Resource Management among others.

There are some WTPs that have performed excellently on at least one of these parameters and have set a benchmark of a sort, being an ideal example for other WTPs on that particular parameter. Such WTPs have been classified as "Best Practices". Table 3 lists down the WTPs who have shown exceptional performances in the areas defined as 'Best Practices'.

Table 3: Best Practices Followed by WTPs		
S. No.	**Best Practice**	**WTPs**
1	Local enterprise development	1. Rural Women Technology Park at Chikiti Block, Ganjam, Odisha (KIIT-TBI, Odisha) 2. Rural Women Technology Park in Deoli village, Bishnah Block, Jammu (SKUAST, Jammu) 3. Rural Women Technology Park of University of Petroleum and Energy Studies at Dehradun, Uttarakhand 4. Rural women technology park at KVK -II, Sitapur (U.P) 5. Women's Technology Park at Sonoabori Village, Bhurbandha Block, Morigaon district, Assam 6. Rural Women Technology Park, Chittoor District, Andhra Pradesh 7. Women's Technology Park in Karnataka, Technology Informatics Design Endeavour (TIDE), Bangalore, Karnataka 8. Rural Women Technology Park at Kanjirapally, Ranny and Pathanamthitta Taluks, Kerala 9. WTP at Santhigram Chappath, Kerala 10. Rural Women Technology Park, Annur Taluk, Tamil Nadu 11. Centre for Enhancement of Livelihood and Enterprise Models (CELEM) for Rural Women in Shoolagiri Taluk, Krishnagiri District, Tamilnadu State" by Er. Perumal Manimekalai College of Engineering, Hosur, Krishanagiri, Tamil Nadu 12. Women Technology Park, Wardha District, Maharashtra
2	Innovative solutions for equity and inclusion	1. Rural Women Technology Park, Chittoor District, Andhra Pradesh 2. Rural Women Technology Park at Kanjirapally, Ranny and Pathanamthitta Taluks, Kerala 3. WTP at Santhigram Chappath, Kerala 4. Rural women Technology Park in Kasaragod District, Kerala 5. Rural Woman Technology Park in Salem, Tamil Nadu 6. Women Technology Park, Wardha District, Maharashtra
3	Capacity building & Skill Enhancement	1. Rural Women Technology Park at Chikiti Block, Ganjam, Odisha (KIIT-TBI, Odisha) 2. Rural Women technology Park at Pushpa Gujral Science City, Punjab 3. Rural Women Technology Park, Chittoor District, Andhra Pradesh

S. No.	Best Practice	WTPs
4	Using Advance Technologies	1. WTP at Pushpa Gujral Science City, Punjab 2. Rural Women Technology Park of University of Petroleum and Energy Studies at Dehradun, Uttarakhand 3. Rural Women Technology Park at Bansani, Varanasi 4. Rural Woman Technology Park in Salem, Tamil Nadu
5	Certification & Standardization	1. Rural Women Technology Park in Deoli village, Bishnah Block, Jammu 2. Rural women technology park at KVK -II, Sitapur (U.P) 3. Rural Women Technology Park in CSIR-North East Institute of Science and Technology, Jorhat, Assam 4. Rural Women Technology Park, Chittoor District, Andhra Pradesh 5. Rural Women Technology Park of Kanjirapally, Ranny and Pathanamthitta Taluks, Kerala 6. WTP at Santhigram Chappath, Kerala

7.2.1 Local Enterprise Development

The establishment of linkages is a weighty parameter, if established effectively, helps to fulfill one of the objectives of SEED division and WTP programme, i.e. generation of livelihood for rural women. Most of the WTPs have established linkages with community groups, local governing bodies like panchayats or other active groups in that region. This has also helped in the identification of interested trainees. Further linkages were also developed with the Science & Technology organizations to develop the selected technology and train and demonstrate the trainees with the help of experts. Also, the linkages were developed with market agencies to sell the products developed by the trainees to generate income and livelihood sources. As observed from the above table, 26 WTPs have successfully developed the linkages with the communities and S&T organizations and tried to develop linkages with market but only a few of them (around 6-10) have succeeded.

Local enterprises were established effectively by 12 WTPs for product development, sale and marketing. In some cases, the WTPs have been developed as enterprises. In other cases, they have supported SHGs to develop their own enterprises. The WTPs provided all the support and guidance about formation of enterprises during the training programs. The WTPs converted as enterprises are growing in sustainable way, but the status of enterprises formed by SHGs are unknown. Following are some of the examples of the local enterprises developed and supported by WTPs.

7.2.1.1 Empowerment of Rural Women through Agro-allied Micro and Small Enterprise Development, Idukki, Kerala

In the Kanjirapally, Ranny, and Pathanamthitta Taluks of Kerala the technologies adopted by the WTP were nursery techniques and seed production, white pepper production, Vetiver (Vetiveria zizanioides) cultivation, and production of value-added products from Cassava and Passion fruit. The technology employed was Vetiver Box of different shapes based on the export market requirement.

A facilitation cum marketing centre was set up and linkages with 32 experts/trainers and 11 S&T institutions have been established. Due to the food processing unit, a three-fold rise in the production of value-added products was witnessed while the benefits of Vetiver value addition units recorded an increase to Rs.4875000 from Rs.84000 in 4 years. A total of 720 women benefited and 219 SHGs have been formed while 330 training programs were conducted.

As many as 15 nurseries were established leading to income generation, while23 new products were developed under the four enterprises. Market linkages were developed with the help of Peramade Development Society (PDS), local shops, and exhibitions by various Government and non-government agencies, etc. A three-fold benefit is recorded due to food processing units producing value-added products like jam, squash, jelly, crushes, and juice.

Some of these enterprises have registered themselves as independent entities which led to the registration of women startups in agriculture and allied sectors and also availing FSSAI & other approvals.

Enterprises developed:

S. No.	Technology	No. of Enterprises	No. of People employed
1	Vetiver	17	195
2	White pepper	3	10
3	Passion fruit	7	85
4	Cassava	6	63
	Total	**30**	**353**

7.2.1.2 Rural Women Technology Park at University of Petroleum and Energy Studies, Dehradun, Uttarakhand

WTP at the University of Petroleum and Energy Studies in Dehradun works on three technologies: recycling of waste paper, identification & cultivation of Medicinal and Aromatic Plant (MAP) species, and Information and Communication Technology (ICT) assisted art and craft design.

The WTP has trained around 390 women by conducting 14 training programmes. For facilitating the connection between the women who have been provided training, they have been registered as a cooperative society named "Mera Kaushal Mera Vikas". Technology for manufacturing pencils out of waste paper was deployed and women were empowered.

Jewelry items were made by the rural women using date palm leaves, bamboo cut-outs, wild non-edible seeds, and other plant products. Following the 'waste to best' philosophy, adapting to market and customer demands, the whole exercise was made economically more viable. These products are eco-friendly and make a good source of income for rural women. These women now use the internet to analyze the market requirements, developed a website for product display and promotion, and came up with products that can fetch higher prices.

The basic idea was to maintain a balance between the environment and the wise use of technology for the economic independence of rural women. The aim was to help rural women earn a fair wage by training them to make high-quality products using waste.

7.2.1.3 Rural Women Technology Park in Chittoor District, Andhra Pradesh

Andhra Pradesh-based WTP at Chittoor district, uses raw materials, Tulsi and tender mango leaves, for manufacturing of products like cosmetics, fragrances. As many as 19 herbal products were produced and 10 dehydrated food products using fruits, vegetables, and the production of virgin coconut oil. Both the herbal product and packaging technology were eco-friendly. Around 400 women were trained by conducting eight training programmes per NSQF guidelines.

The products were certified with an FSSAI license and are with the brand name SPURThE (Sri Padmavati University Rural Women Technology Enterprise). Rural women thus developed a small-scale sustainable enterprise.

7.2.1.4 Value-added Livestock Products for Socio-economic Empowerment of Rural Women

WTP at Deoli village, Bishnah Block, Jammu district, established by Dr Arvind Kumar utilizes milk, meat and fish, and other local resources for producing value-added products. These products were sold by popular food outlets in the city and also by local food outlets. Thus, a sustainable business model is also being developed and exploring new opportunities.

Women involved in dairy, poultry, and fisheries have been provided training. A total of 546 participants have trained through54 training programs conducted at the center. While around 75 women entrepreneurs have benefitted, women have been facilitated for obtaining Municipal Identification Number (MIN) for their food carts as well as FSSAI number for the value-added products.

7.2.2 Innovative Solutions for Equity and Inclusion

In some cases, WTPs have identified a local problem and provided innovative solutions to the problems. It has been seen that some of the WTPs have identified the local problem of the women and provided innovative solutions for their problems. Some of them have even adapted the already-developed technologies or adapted and customized the available technologies with few technical adaptations in the old one with the help of S&T organizations and experts. Case studies of WTPs providing innovative solutions have also been detailed as under.

7.2.2.1 Rural Women Technology Park in Warangal District, Telangana

WTP in Hasanparthy Mandal of Warangal District of Telangana came up with a number of innovative technologies in weaving and handloom, banana fiber extraction, construction and habitat, metal Crafts, Agro, and forest-based processing, etc. Around 2700 women were trained and better technology has been transferred in weaving, designing and processing banana fiber extraction, developing blended fabric using banana fiber and cotton, building material production, etc.

WTP is planning to run the training programmes and serve as a resource centre for addressing the problems and needs of women. It will help acquire quality raw material at a reasonable cost; provide equipment for the processing (weaving & construction technologies) and help in marketing products etc. A small percentage of profits will be used for the sustainability of the centre.

7.2.2.2 Rural Women Technology Park (RWTP) under CSIR-NEIST, Jorhat, Assam Prepares Products to Combat COVID19

Rural Women Technology Park (RWTP) under CSIR-North East Institute of Science and Technology, Jorhat, has engaged rural women to prepare various products such as hand sanitizer, homemade masks, and liquid disinfectant to be distributed freely among family members and poor people in the nearby village to help combat COVID 19 in the area.

Rural women from the region were trained to produce homemade masks from traditional 'Gamocha' (a traditional Assamese cotton towel) by RWTP, Jorhat. The design of the homemade mask has been finalized, around 150 Gamochas purchased, and two sewing machines arranged (6 homemade masks can be prepared from one Gamocha). Apart from this, 200 liters of liquid disinfectant are being produced. The raw materials required for liquid disinfectants like Dettol, ethanol, glycerin, and essential oil have been acquired. The disinfectant will also be distributed freely among the family members and poor people in the nearby village.

The participant women prepared about 50 litres of hand sanitiser and 160 litres of liquid disinfectant, distributed among the 60 women participants and their family mem-

bers. The RWTP also prepared posters and leaflets on 'COVID19: Do's and Don'ts' in the Assamese language for making people aware of the Corona Virus and precautionary measures.

7.2.2.3 Rural Women Technology Park in Salem, Tamil Nadu

'Rural Women Technology Park in Salem, Tamil Nadu' has set an example for the society by coming up with sewing machines for differently-abled persons so that they can have equal opportunities in the growth and development of the country.

7.2.2.4 Rural Women Technology Park in Hasanparthy Mandal of Warangal District

Even if women masons have proficiency in their work, they lack confidence in delivering quality finished construction products such as fencing poles, water harvesting pits, cement rings, bricks, blocks, and tiles grouting. A 'Rural Women Technology Park in Hasanparthy Mandal of Warangal District of Telangana Region, Andhra Pradesh empowered rural women, masons, by capacity building in construction and habitat sectors.

7.2.3 Capacity Building and Skill Enhancement

All the WTPs has efficiently provided training & capacity building program on the selected technology after conducting a baseline survey to identify the interest of the trainees. Based on the interest and concern of the trainees for the selected technology the training program was conducted and further the capacity-building programmes are also being organized by the WTPs to improve their overall skills like knowledge about developing linkages, market analysis, product branding, banking etc.

These training programmes are supervised by a scientific or technical expert from an S&T organization or a master resource person in the related field or domain. In some of the cases, additional related information like maintenance of the technologies, and market prospects for the technology, etc. are also included in the training programmes. Such information forms an integral part of the capacity-building programmes and cater to the holistic development of the trainees.

7.2.3.1 Women Technology Park at Chikarta, Berhampur

The establishment of the WTP in rural Berhampur has given new hope and faith to the people, particularly women in large numbers. WTP for rural women at Chikarta, Berhampur (KIIT) has forayed into a diverse set of micro-enterprises, ranging from the production of biodegradable sanitary napkins (to address the issues of menstrual hygiene) to the production of millet-based noodles for healthy eating habits of rural populace. It helped in income generation for the women engaged in these enterprises and has thus elevated their living standards.

Private companies have sponsored and approached products like Millet-based Noodles and Incense sticks. The WTP is currently operating in the B2B model, where all the manufactured products are being procured by private entities for marketing purposes. Women who are working in the micro-enterprises are economically well-off and it has increased their social acceptance.

7.2.3.2 Rural Women Technology Park in Chittoor District, Andhra Pradesh

The training program was planned to NSQF Curriculum. The emphasis is on improving their living conditions, reducing drudgery, providing income generation opportunities through skill development, training them in health and nutrition, and enabling them to achieve a better quality of life. RWTP has conducted Eight Training programs with 390 members from the rural background who were trained as entrepreneurs in different technologies developed by the RWTP.

7.2.3.3 Women Technology Park at Pushpa Gujral Science City, Punjab

The WTP aims to ensure that science and technology's benefits percolate to rural women of the surrounding villages and provide them skill training and incubation facility to earn their livelihood in a dignified manner. The course content of long- term training programme is based on National Skill Qualifications Framework (NSQF) guidelines. The training programs aim to empower rural women by enabling them to earn their livelihood and are free of cost.

7.2.4 Using Advanced Technologies

- Rural Women Technology Park of University of Petroleum and Energy Studies at Dehradun, Uttarakhand empowered rural women by income generation through Information and Communication Technology (ICT) assisted art and craft design. It gave exposure to rural women to ICT, through a systematic training cycle ranging from basic IT awareness, to craft design education, and progressing towards design innovation. In addition, activities like recycling waste paper (using unused or leftover paper/newspaper for manufacturing pencils instead of using wood from trees and saving trees) and cultivating aromatic and medicinal plants for which a laboratory has been established were undertaken for income generation.

- 'Women's Technology Park at Sonoabori Village, Bhurbandha Block, Morigaon district, Assam' have trained ten women representatives on SPV service & repair, which lead to sustained improvement in the electrification of the households and also solved the problem of electricity in the region.

7.2.5 Certification and Standardisation

After successfully developing and manufacturing products, some of the WTPs have also made efforts to standardise and brand their products. 6 WTPs have standardised the product developed from the local or governmental bodies/organizations. The kind of products are varied and the associated standardization process and organizations have been approached for standardization and certification. The established enterprises generate good income after selling the products due to standardization and certification.

To standardize the training programmes, few WTPs had planned the training program as per NSQF. While framing the training program on specific technology the WTPs has also take support of S&T institutions, Governmental agencies and involved industry for better understanding. Some of the examples of the same are:

- Women Technology Parks at Santhigram, Thiruvananthapuram, Kerala has developed 33 products from Jack fruits out of which 14 products have been tested and 7 products were standardized through FSSAI.

- RWTP at Sri Padmavati Mahila Visvavidyalayam, Tirupati, Andhra Pradesh, has developed startups with women entrepreneurs by setting up their own small scale enterprises in rural areas with a brand name of SPURThE (Sri Padmavati University Rural women Technology Enterprise) products. The products include health benefits such as antidiabetic, antimicrobial, anti-aging and antioxidants properties and have been standardized.

- WTP at Peermade Development Society (PDS), Idukki, Kerala is managing and coordinating 33 Techno-based enterprises with 7 Passion fruit processing units, 17 Vetiver value addition units, 3 White pepper production units, and 6 Tapioca processing. Quality products of Cassava, Passion fruit etc. manufactured at the established women enterprises, are sold nearby. For the production, region wise common facilities centre (like weighing & packaging etc.) were set up so that the entrepreneurs can utilize these at an affordable cost without any initial investment. FSSAI certification & other legal formalities have been arranged for all enterprises. A quality monitoring team has been set for ensuring the produce quality from various established enterprises.

- WTP at Shere-e-Kashmir University of Agriculture Sciences and Technology, R.S Pura, Jammu has facilitated the women trainees in getting Municipal Identification Number of their Food Carts (Reris). They have also facilitated them in obtaining FSSAI Number of their valued added Milk, Meat, Egg and Fish Products. The Nutritional profile, Sensory evaluation, Storage profile and Texture Profile Analysis of the products made by Entrepreneurs/ Trainees has been detailed and documented by each one of them.

7.2.6 Similar and Common Technologies Taken up by WTPs Across the Country

Table 4 lists the technologies, processes and products which are being taken up by more than one WTP for technology demonstartion and adoption.

Table 4: List of Similar and Common Technologies taken up by WTPs

S. No.	Technology	Location Of WTP
1	Palletisation Technology	Women Technology Park in Chandigarh
		Rural Women Technology Park in KVK -II Sitapur, Uttar Pradesh
		Rural Women Technology Park, Annur, Coimbatore, Tamil Nadu
2	Preparation of Cow Dung Logs	Rural Women Technology Park in KVK -II Sitapur, Uttar Pradesh
		Women Technology Park at Kapurthala, Punjab
3	Waste Paper Recycling	Rural Women Technology Park of University of Petroleum and Energy Studies at Dehradun, Uttarakhand
		Rural Women Technology Park in CSIR - North East Institute of Science & Technology, Jorhat, Assam
		Rural Women Technology Park on Vidhani Village, Jaipur, Rajasthan
		Rural Women Technology Park in Salem, Tamil Nadu
4	Sanitary Napkin Unit	Rural Women Technology Park at Chikarta, Odisha
		Women Technology Park in Fatehgarh Sahib, Punjab
		Women Technology Park in Tripura
		Rural Women Technology Park, Annur Taluk, Coimbatore District, Tamil Nadu
5	Mushroom Cultivation	Rural Women Technology Park (Coimbatore District Tamil Nadu)
		Rural Women Technology Park at Chikarta, Odisha
		Women Technology Park in Tumkur District, Karnataka
		Women Technology Park at Kapurthala, Punjab

S. No.	Technology	Location Of WTP
6	Nursery	Rural Women Technology Park in Rural and semi Urban areas of Idukki, Kottayam and Pathanamthitta Districts of Kerala
		Rural Women Technology Park, Annur Taluk, Coimbatore District, Tamil Nadu
		Women Techology Park by FRLHT, Bengaluru, Karnataka
		Rural Women Technology Park of University of Petroleum and Energy Studies at Dehradun, Uttarakhand
7	Leaf Plates	Women Technology Park for Empowerment of Rural Women in selected Villages of Fatehgarh Sahib, Punjab
		Women Technology Park at Tripura
		Women Technology Park in Tumkur District, Karnataka
		Rural Women Technology Park, Annur Taluk, Coimbatore District, Tamil Nadu
8	Water Quality Management	Women's Technology Park at Sonoabori Village, Bhurbanda Block, Morigaon District, Assam
		Women Technology Park for Tribal Women in Paderu, Visakhapatnam District, Andhra Pradesh
		Rural Women Technology Park, Annur Taluk, Coimbatore District, Tamil Nadu
9	Application of ICTs	Rural Women Technology Park of University of Petroleum and Energy Studies at Dehradun, Uttarakhand
		Rural Women Technology Park at Bansani, Varanasi, Uttar Pradesh
		Women Technology Park in Sahoolagiri Taluk, Hosur, Tamil Nadu

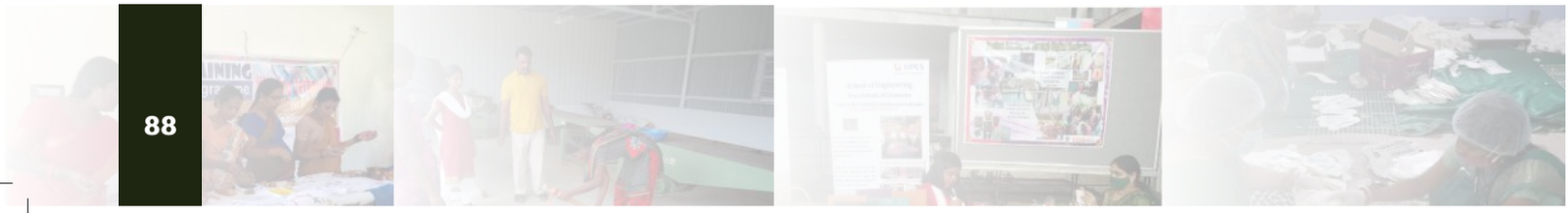
Chapter 8

Outputs of the Study and Recommendations

At the time of undertaking the survey and the study, there were forty existing WTPs which were fully functional. Out of these 40 WTPs, 30 WTPs were considered for the survey and the study as 10 WTPs did not respond to the questionnaire survey and follow up study. Additional 6 WTPs were added during the later part of the study, in 2022, which could not be included in the study.

The outputs of the study include the following:

- Proposed Framework for WTP Programme of DST
- Recommendations at Micro, Meso and Macro levels
- Recommendations at WTP National Meet
- Opportunities Identified
- Standard Operating Procedure (SOP)
- Compendium of Technologies
- Compilation of Best Practices & Success Stories
- Video Films as Communication, Popularisation and Outreach
- Website of WTP as centralized resource



8.1 Proposed Framework for WTP Programme of DST

A framework has been proposed, based on the study inputs, which provides a basic skeleton for establishing the WTP to making it self-sustaining. It describes in detail each and every step in the process. The establishment of the WTPs is done through two steps, namely in-depth baseline study and project designing. After funding from the DST or any other funding organisation, there is a period of regular monitoring and evaluation by the funding organization. The following steps describe the process in detail:

Fig. 22: Framework for WTP Programme of DST

8.1.1 Step 1: In-depth Baseline Study

In-depth baseline study requires collecting and analysing information about the important factors for establishing the WTPs. This study would be conducted by the intended organisation, in which the information gathered works as the prerequisite and forms the basis of the technological interventions planned. Appropriate baseline study may also be conducted by potential WTPs catering to women. Any other verified study may also be considered as the raw material for the intended study outcome.

It includes identifying potential geographical areas, including more than one village, profiling socio-cultural and economic factors, local needs and problems, predominant livelihood practiced systems and natural resources available in the region. It also includes identifying the loose links of the region's predominant livelihood system and providing livelihood opportunities to the local women.

8.1.2 Step 2: Proposal Designing Before Applying for Funding

The information and facts collected during the in-depth baseline study can be categorised and documented as a proposal to be presented to the funding agency. The basic understanding of the problem from the baseline survey can be verified and tested with the help of the interaction of the community that needs technological interventions. This will also ensure the participation, engagement and inclusion of the community and the rural women in designing the proposals to complement their needs and demands.

This is the step where the actual action plan is drawn, and the sustainability and business plan for the WTP are also prepared. Linkages and other requirements of the action plan and the business plans, like the engagement of the S&T organizations, backward and forward linkages can be explored and engaged at this stage. This brings in the reliability of the partner institutes and community for better execution.

8.1.3 Step 3: Institutional Support

At the time of applying for DST support, the outcomes of in-depth baseline study and plan for establishing WTP would be reflected in the project proposal. At the time of presentation of the proposal by the proposed investigator or scientist, it would be imperative to interact with the women representatives of the region where WTP needs to be established.

This step is predominantly controlled and regulated by DST, wherein the usual review and approval by the Project Advisory Committee are done. This process is an administrative step and requires the verification of facts and ideas by the PIs and experts in the respective

fields. After this step, there is a period of regular monitoring and evaluation by the funding organization. The areas of S&T interventions and innovative solutions can be selected and finalised with the help of the S&T organisation selected for collaboration and support.

8.1.4 Step 4: Community Mobilisation and Engagement

On receiving the DST support, at the planning stage, the principal investigator of the WTP would have a detailed interaction with the target women groups and communities, where the actual community and resource mobilisation and engagement take place. This includes preparing the community for the required technological intervention in terms of basic education, technical information, and required backward and forward linkages. This would subsequently help to review the needs assessed during the baseline survey.

8.1.5 Step 5: Time-bound Technology Implementation

On-time delivery of technology, after requisite customisation based on the local needs, is significant as the actual technological intervention takes place. This step by WTPs must be implemented with a time-bound strategy and should strive for seeding the technology to the core of the community. This requires regular monitoring by the respective knowledge partners, attached S&T organisations and funding agencies.

8.1.6 Step 6: Capacity Building

The next step is implementing and percolating the technological intervention through training and capacity building programmes. The training programmes' structure and contents have been finalised and designed in the planning phase. This step is the realization of those structures and processes. This is essential as the actual results and social changes are formed and observed at this stage. The standardization and certification of the manufactured products are also done at this stage. This also helps in actual community engagement as the trainees perform the complete process of standardization and certification.

8.1.7 Step 7: Support and Handholding

This is the first step toward sustainability and the most important step. It also ensures and decides the sustainability and mainstreaming of the WTP into the local demand and supply chain of the predominant livelihood system of the area. It involves monitoring and evaluating every step in the process. The Quality Assurance and Quality Control of the products and processes of the WTP is also done at this stage.

The most important step towards support and handholding is performing tie-ups with other programmes and schemes of the government and also at non-government levels.

It involves access to raw materials, equipment, machineries, finances, marketing, branding for revenue generation. This also involves administerial and financial support and handholding for enterprise development, and also strengthens the weak links

8.1.8 Step 8: Sustainability Plan

This step is the actual implementation of the sustainability plan devised in step 2. It involves networking and collaboration with potential stakeholders. This is the stage where the linking to district and state authorities takes structure and transfer of control. The course correction of the WTP can also be done at this stage. This can be done by mentoring the weak WTPs by the established WTPs.

For sustenance of WTPs, it is recommended that funding sources from other than main funding agencies need to be explored, like CSR funds, SSR funds, NABARD, and other central and state funding agencies.

8.1.9 Step 9: Empowering Rural Women

If the above steps are done in the prescribed manner, the aims of the WTPs for empowering rural women can be achieved and sustained. This not only ensures improved livelihood, enterprise development and overall well-being of the community but also brings social equity and inclusion at the macro and micro-level.

8.2 Recommendations

Recommendations for improving the performance of Women Technology Parks (WTPs) and making these sustainable have been made based on a thorough analysis of the feedback and outcomes from the several initiatives undertaken as part of the WTP study. To optimise the output of WTPs and realise their worth, interventions at every level – Micro, Meso, and Macro – are called for.

8.2.1 Interventions at Micro-level

1) Upgradation of technology is a must for making WTPs sustainable and catering to the emerging requirements of the market.
2) Value-addition to the indigenous products: The WTPs should strive for value-addition to their products to improve the quality and survive in the competitive market.
3) Cost-effective procurement of locally available raw materials: The WTPs should strive to increase dependency on locally available raw materials and explore all pos-

sibilities of deploying more such technologies that require locally available natural resources as input. Further, the raw materials should be procured in a cost-effective manner, one which justifies the final value of the product.

4) More skill sets for trainees: Each woman member should be trained in operating more than one technology or process; hence skill set of every woman should be enhanced.

5) Deployment of more than one Technology: Every WTP should ideally strive to deploy more than one technology and thus enhance their operations. For which they can remain in contact with more than one S&T Institution or organization.

6) Women should pool money in Banks/Cooperative Banks – Women members of WTPs should pool a particular portion of their income into some common account so that it can be used for helping any member in case of necessity or be used for sustained operations of WTP.

7) Technology/ skill sets at doorsteps: Some women members of WTP can take it upon themselves to reach out to more and more women in the adjoining villages, reaching door-to-door, making them aware of technology and imparting preliminary skills wherever possible.

8) Ensure Participation of Local-self-government: WTPs should involve Gram Sabha in their operations; this would help not only in increasing their acceptability but also would fetch help from the Gram Panchayat wherever and whenever possible.

9) Strengthening linkage with markets at the local level

10) Overhauling of Call for Proposals is required for better functioning of WTPs like flexibility in sanctioning of capital amount. The applicant WTPs should have pre-requisites like know-hows of selection of livelihood technologies based on baseline survey, selection criteria of trainees, business proposals and linkage formation.

8.2.2 Interventions at Meso-level

1) WTPs should form collectives and cooperatives: For smooth and sustained operations, WTPs in a block or district should form collectives/cooperatives. WTPs can also learn from each other's best practices.

2) The S&T Institutions in a District and State should handhold WTPs in a criss-cross manner: All S&T organisations at the district and state level (those who are mentoring/supporting WTP) should be handhold WTPs other than theirs, wherever possible and needed, for increasing the impact and applying their best practices. This would immensely boost the operations of WTPs.

3) The Financial Institutions and Banks can collectively support the weak WTPs: Banks and Financial Institutes need to come to the fore to help WTPs on the verge of collapse sans financial support. Banks should develop a mechanism to collectively give loans to such WTPs as this would not burden a single bank and can support more and more WTPs.

4) District cooperatives should support WTP cooperatives or individual WTPs.

5) WTPs in a state or district should learn from each other and collectively work on bridging gap areas.

6) WTPs in a district should explore all the possibilities of strengthening linkages with government, private and autonomous (cooperative societies) to popularise and market their products.

7) Social security net should be established for WTPs.

8) The training programmes can be divided into three parts - Technical, Financial and Field level. This would help in providing exhaustive knowledge and exposure to the trainees along with practical experience. The field level training provides access to identifying the pre-requisites for predominant livelihood generation and marketing linkages.

9) The selection of the trainees should be through a rigorous and well-defined process that checks for their essential knowledge-base and interest in learning and exploring a particular livelihood technology.

8.2.3 Interventions at Macro-level

1) A comprehensive policy for sustaining WTPs should be devised through legislation.

2) Mandatory support to each WTPs in logistics and finance by the Government.

3) It should be mandatory for private players to support WTP under CSR.

4) All platforms for the global marketing of WTP products should be explored.

5) The WTPs should be more digital in their operations and businesses.

6) Environment and Forest laws must be relaxed to allow WTPs to optimise natural resources.

7) From the very beginning, help must be provided to WTPs to come up with products that comply with the safety and Quality standards, for which handholding by agencies should be mandatory.

8) For Each Government Shop, big private players in FMCG and Shops like Khadi India should compulsorily promote the products of WTPs.

9) Aspirational districts should be considered for establishing WTPs for generating livelihood opportunities and holistic capacity building

10) Since India is a vast country in terms of its geography and resources, it is proposed that at least one WTP in each state can be established to cover the geographic vastness of the country while optimizing the use of available local resources.

11) At the top of the pyramid in science administration, a network of all WTPs and associated SHGs, etc. needs to be channelised to obtain the optimum output and

troubleshoot the issues that arose during the process of achieving the deliverables of WTPs. This process may be initiated through WTP's already available dedicated web portal. At ground level, all WTPs should maintain a database, at the web portal, of all women trainees with their name, address, occupation, livelihood and contact number to reach out during any crisis.

Besides the Local Programme Advisory Committee (LPAC) meetings and suggestions, learnings and experiences from the regional workshops, interactions with Principal Investigators (PIs) of WTPs, and reports compiled at various stages form the basis for these recommendations. The following detailed recommendations have been made for improving the efficacy of WTPs and making these sustainable. These recommendations suggest measures to eliminate the loopholes and existing bottlenecks.

Baseline survey a must: A baseline survey should be conducted before setting up a WTP. A study should also be made after a WTP starts functioning after technology intervention. The baseline survey or study is essential to take stock of needs at the grassroots level and help develop an idea of what type of technological intervention is required and to what extent. It also helps in comprehensively mapping the local resources available and how they can be tapped optimally, as livelihood generation through optimum utilization of local resources lies at the helm of WTP.

While conducting a baseline study, the community's most pressing need or requirement, which can be solved through the prospective STI intervention or technology, should be gauged, and the S&T organisation should be roped in. Accordingly, the solutions should be provided by modifying, developing, or adapting technology and applying relevant S&T components. It must always be kept in mind that any solution through S&T should be centered around the livelihood generation for rural women. Besides, it should also help elevate the living standard and provide viable solutions for better health, hygiene, education, and financial inclusion for rural women.

Optimum Utilisation of Local Resources: The WTPs should tap all possible opportunities to optimise local resources to maximize output and enhance production. The output of the WTPs in the form of various end-products should cater to the needs and requirements of the local populace besides being marketable. Local resource-based livelihood generation lies at the helm of WTP however the WTPs cannot be sustainable unless they utilize the locally available resources or raw materials sustainably. The resources or raw material that a WTP is utilising as input should be available in plenty. This can only be ensured if tapped optimally and measures are taken to replenish it at the source. Involvement of community members in production (in the case of forest and agro-based raw materials), collection, and procurement of raw materials are essential components to ensure that the supply of inputs remains sustained and unhindered.

A post-operational survey: A survey must be conducted once a WTP starts its operations. This survey must be comprehensive, including all aspects and not only remain confined to income or livelihood generation. It must encompass changes in health, hygiene, nutrition, education, financial inclusion, physical and psychological health, and self-confidence of the women after the start of WTPs operations. Besides drudgery reduction, a WTP should empower women by improving their lives and livelihood.

A post-operational survey also helps in identifying the parameters on which improvement is required and thus helps in modulating the course or plan of action accordingly. Significantly, the PIs and the associated S&T organization can play a crucial role in conducting such a survey and devising the future course of action based on the findings.

Enterprise Development: An ideal WTP should strive to become an enterprise. Rural women should be promoted as entrepreneurs, and all support to the women members of WTP should be extended so they can start their businesses independently. Making women members "Aatmanirbhar" should be the aim. Thus the promotion and replicate a technology-based business model are what WTPs should promote.

As the emphasis is on developing WTPs as a sustainable enterprise, the technologies applied and products derived should be at par with the standards necessary for an enterprise besides meeting the local demand. Rural women's enterprises are based on simple technologies that utilise local resources as raw materials for making indigenous products.

Monitoring and Evaluation: WTPs should be regularly monitored and evaluated even after completion. The successful WTPs should be projected as a benchmark or Model WTP to help set up new WTPs and assist in their operations. Also, there should be regular monitoring and sensitization of WTPs in terms of output and productivity, and proper checks and balances in their operation and maintenance should be ensured by the funding agency, S&T organisation and other stakeholders.

Besides playing the role of the funding agency, DST's role as an S&T knowledge enabler should also be emphasized equally and given no less priority. The roles and responsibilities of all stakeholders need to be defined and redefined by DST depending upon their performance for each WTP. Hence, DST can also identify the micro and macro-level players that play an essential role in the ecosystem. The micro level players include the ground and state level S&T organisations and programmes like Entrepreneurship programmes of Centre of Excellences of NSTEDB, TBIs, BIRAC, National Industrial Corporation (NIC) etc. At the macro level, the National level organisations can be included. Along with this, DST can also provide a database of local, state and national experts available in the areas for collaboration and support. The women-based start-ups, local S&T organizations, and other local bodies

can also be involved for maximum support and help. Also, mapping problems with provided solutions are required to be regularly checked by LPAC and DST officials during review meetings.

To encourage WTPs to perform and bring sustainability to the system, incentives should be provided based on the performance of the WTPs. Another solution could be recognising the top performing WTPs and supporting them further for two years after their term ends. The lessons learned from the case studies of the WTPs should be documented as a reference for other WTPs. The assessment report on the WTPs should portray the vital role played by the various scientific and technical organizations operating the WTPs. There should also be a provision for handholding of the low-performing WTPs by S&T or Knowledge organisations, identifying the performing WTPs and making them the mentor WTP for others.

Competing for the global and local market standards and demands: Initial research should be done by WTPs to understand the demand and supply chain in the market and produce accordingly. Strategic interventions for low competition, high-value, low-volume products must be developed. Also, interlinkages among WTPs should be established for logistical as well as financial and technical support.

In order to be sustainable, WTPs should comply with the best marketing practices and strengthen all market linkages so that the products manufactured at the WTP fetch a hefty price. Market linkages should be further strengthened through online marketing, i.e.WTPs can collaborate with online marketing giants to sell their products globally. The performance of WTPs should not only be measured in monetary terms (profit/loss analysis) but also how it helps elevate the living standards for women, and parameters for health, hygiene, one-time investment, and recurring costs must be included. It must also have the workforce and the cost of raw materials. Due recognition must be given to the WTPs for their good work to encourage them to carry out their activities, and further scale them.

Standardisation and Validation: Standardisation and validation of the WTP products add credibility and face value. Standardisation should be made compulsory before launching in the market for some of the products concerning rural women's health and overall quality of life. The WTPs need to refine and periodically revise the procedure of selecting women beneficiaries, creating market tie-ups and promoting Self Help Groups (SHGs).

For running the WTPs, proper training should be imparted to the members so that they become dexter in operating the technology that has been deployed and can utilise it optimally for their livelihood generation. The training should generate interest among the participants who can inspire more women towards livelihood enhancement by being part of WTPs in their areas. Training sessions must be in local languages for better clarity and understanding. The technologies should be such that women readily accept them. Further, trainees must be conversant with the basic banking and financial procedures and the digital platforms working in their interest and should not just be fence-sitters.

Regular training needs to be imparted to the women members, for which linkages with the S&T organisation should be strengthened. These training programmes should be aligned with the National Skills Qualifications Framework (NSQF) standards. Organisations like KVK and State S&T Councils can play a role in women's capacity and capability building through scientifically validated processes. Ministry of Education may also be roped into including programmes like incubation centres and other innovation and incubation related programmes.

WTPs must build strong linkages for the procurement of raw materials and banking and finance linkages for the initial help (referred to as Backward linkages) while also strengthening the market linkages (here referred to as forward linkage) along with attuning to upgraded technologies.

Since, right from the induction of a WTP to coming out with products, their branding and standardization are all to be accomplished within three years, a strict timetable for each activity must be devised and adhered to by the WTPs. The safety and quality standards of the products manufactured by the WTPs must be verified by standard QC/QA (Quality Check/Quality Assurance) procedures like FSSAI, ISO certification etc. The WTP products should be registered with appropriate agencies (FSSAI, BIS, ISI) by their brand name and must mention the WTPs that have manufactured these.

WTPs can also benefit from social media marketing and undergo MoU with online marketing platforms like E-Khadi India. The WTPs need to establish and consolidate linkages with banks to support women financially.

Collaborations: WTPs should also connect with the S&T Institutions and Organisations other than their mentor Organisations to continuously keep upgrading and modulating their technology and know what interventions are used to improve the output. Expert guidance and handholding of the women members are also required at every step or stage of WTP. Further, all opportunities to showcase and market products manufactured by WTPs should be utilized, like national and state level exhibitions, e-Haats, Hunar Haats, traditional crafts and artisan Mela, festivals, etc.

Also, the WTPs must be strongly linked with the institution or organisation that has helped develop or implement the technology. Women members should be trained regularly at these Institutes for their skill enhancement and up-gradation. The WTPs should be linked with the state science and technology councils and industries to channel the resources effectively. Another probable solution could be engaging WoS-B Scientists by suggesting and implementing relevant R& D in areas like clean energy sectors, health, water quality, etc.

Synchronisation with the community's needs, aspirations and convenience: The training schedule, including training timings and durations, should be synchronized

with the convenience of the locals and women members to ensure maximum participation. Training and sessions must be in regional languages for better clarity and understanding. The technologies should be such that they are readily accepted by the people and can quickly become popular. WTPs should be developed on a need-basis and must generate and amplify livelihood opportunities for the locals. Beneficiaries should be conversant with the basic banking and financial procedures and the digital platforms working in their interest. The State Governments and local self-government must also support the WTPs.

8.2.4 Recommendations from WTP National Meet

1) First, mapping of the livelihood system should be done in an area, and appropriate technological intervention should be made thereafter by the S&T organization or Institution. Gauging the needs at the local level is essential.
2) The S&T organization and Institutions should first look at the problem at the grassroots and then come up with a solution.
3) Potential areas where WTPs should be established must be identified first.
4) S&T Organizations/ Institutions, i.e. Academic Institutions and government agencies, must work in tandem. Academic institutes cannot afford to work in silos.
5) The research at the academic Institutions must be need-based, that is, they must identify what are the problems at the grassroots and how they can be solved by suitable innovation and development of appropriate technology which gives answers to the existing issues.
6) Research for the grassroots level should not be typically cast into themes because this might encourage people trying to fit within the set framework to qualify for government agencies' funding. This defeats the very purpose of innovative need-based solutions from the grassroots people.
7) The WTPs established in the hinterlands and remote areas should engage young science scholars and pay them a reasonable stipend to retain them. If young science students and scholars are engaged, it would be a real push for the WTP programme and help them move towards sustenance.
8) A need is felt to devise a strategy to make women-made indigenous products, particularly ayurvedic and natural products, by the WTPs stand in competition with already established brands. It is observed that the users prefer to buy products of already established brands.
9) A need is felt to assess whether S&T interventions were able to bring cost-effectiveness, quality improvement, etc.
10) The significance of WTPs cannot be and should not be analysed on a singular parameter of increase in income of women instead a comprehensive view of empowerment should be taken, entailing the marked changes in standards of health, hygiene, education, nutrition, etc.

11) A pressing need is felt to think about whether S&T intervention has been able to benefit the poor in a real sense or not. For instance, what we have done to reduce the snake bites on our farmers when they visit farms, whether we have been able to devise an affordable raincoat or shield for those villages who work in fields during monsoon, whether we have been able to design slippers for the villagers who are forced to step out in every season and conditions. The STI intervention is justified if we, through S&T, can achieve this end and do such things.

12) In S&T intervention, the bottom-up approach should be promoted rather than the top-down.

13) The rural women who have been successful up to some extent in their endeavours through S&T should be projected as role models and brand ambassadors so as to encourage more and more women to come forward.

14) There should be greater coordination among various WTPs and they should learn from each other in terms of best practices and how to do away with the hurdles or gap areas.

15) There should be a quantitative study of what changes technological intervention has brought in terms of time-saving, income generation, and improvement in health and education levels. A quantitative study is a must.

16) WTPs can form cooperatives and work collectively to achieve their goals.

17) WTPs should explore all possible product market opportunities, including access to international markets.

18) A need to extend the logistical and financial support to WTPs beyond their completion period is felt.

19) Financial support and banking linkages should be strengthened for WTPs

20) Global Best Practices should be documented by each WTP based on their individual thematic area of work need to be documented and disseminated in top-down approach.

21) PIs should cover the need based grassroot innovation developed with the support of S&T organizations, so that the WTP can be showcased as Role Models.

22) A List of thematic inventors available locally need to be identified and made available to the WTPs through the WTP website.

23) A methodology should be developed to take the technology to the farmer communities in relevant areas; eg. from NIF Booklets, Health Care System, etc.

24) Business models developed by WTPs need to be replicated by the line Ministries to maximise the benefits and further connecting with the forward linkages.

25) To promote Vocal for Local practices, efforts should be made by the WTPs to make women self-reliant by crossing socio culture barriers and they should connect with State S&T Council and other appropriate agencies.

26) WTPs need to maintain the quality standard in the process, product and trainings by maintaining quality of local raw material, finished products and training as per the NSQF standards.

27) Organizations, like KVK and State S&T Councils can be motivated to play a role in the capacity building of women through scientifically validated processes and strengthen their knowledge skills.

28) Special efforts for aspirational districts should be addressed to make the WTPs self-reliant.

29) WoS-B Scientists can also play a role in WTPs approach by doing relevant R&D in areas, like cleaning sectors, health, energy and water quality, etc.

30) Technology interventions need to be implemented at the systemic level.

31) A dedicated web page should be created at ISTI Portal (https://www.indiascience-andtechnology.gov.in/) for the PIs to guide WTPs how to develop linkages with S&T institutions like IITs, NITs, TBIs and AIs etc.

32) WTPs should optimally address the local women related issues of the area, like mental health and model of physical drudgery reduction, education and access essentials, like energy and water.

33) WTPs outcomes should align to the Sustainable Development Goals (SDGs) and best practices.

34) WTPs need to assure Quality Control (QC) and Quality Assurance (QA) to maintain standard for Business-to-Business (B2B) and Business-to-Consumer (B2C) marketing strategy so that forward marketing linkages can be established.

35) WTPs should be established Pan-India, efforts should be made for the happiness and well-being of women possibly through cross-sector collaboration with agencies, like NSIC, NABARD, MSME, etc. should be explored.

36) The call for proposal submitted by PIs should be solution centric and way forward for the commercialisation and marketing of the products need to be covered.

8.3 Opportunities Identified

The study of implementation of WTP programme and the functioning of individual WTPs, several opportunities are identified as interventions for providing relevant solutions for further consideration. The interventions include replicable technologiues which include emerging technological solutions that is socially relevant, locally appropriate and environmentally sustainable; and standardisation and upscalable technologies. These opportunities would help WTPs in bridging the systemic gaps for livelihood system strengthening and social entrepreneurship development.

List of replicable and upscalable technologies are provided in the Table 5.

Table 5: List of Replicable and Upscalable Technologies of WTPs	
Replicable Technologies	
Technologies selected/developed for training purposes	**WTP**
Sector 1. Agriculture and Allied	
Drudgery & occupational hazards reduction through improved farm tools and implements	Establishment of the Rural Women Technology Parks in KVK -II Sitapur (U.P)
Arecanut dehusking unit	Rural Women Technology Parks in ten Village of Parappa Block of Kasaragod District, Kerala
Mechanical weeding unit for paddy / ragi fields	Centre for Enhancement of Livelihood and Enterprise Models for Rural Women (CELEM) in Sahoolagiri Taluk
Technology identification in improved agricultural tools for adivasi women which are culturally congruent	Integrate Livelihood Technologies as Women Technology Park for Tribal Women in Paderu, Visakhapatnam District, Andhra Pradesh
Bush cutting unit	Rural Women Technology Parks in ten Village of Parappa Block of Kasaragod District, Kerala
1. Azolla cultivation and value addition 2. Oyster mushroom production and Drying process	Rural Women Technology Park (Coimbatore District, Tamil Nadu)
Azolla cultivation and Makhana processing	Establishment of the Rural Women Technology Park in KVK-II, Sitapur (U.P)
Mushroom farming & Food processing unit	Establishment of Rural Women Technology Park for Women Empowerment through Technological approaches
Oyster mushroom cultivation and value addition	Women Technology Park in Tumkur District, Karnataka
Pleurotus sajor caju Cultivation	Empowerment of Women in Rural areas through Science based Skill Development
Organic farming through vermin and ghura compost methods for nutrition garden	Rural Women Technology in Patan Block of District in Maharashtra
Organic farming & sustainable agriculture	Women Technology Park in Tumkur District, Karnataka
1. Organic Farm inputs, 2. Vegetable Plant Nursery, 3. Organic Vegetable Sale	Women Technology Park, Wardha District, Maharashtra

Technologies selected/developed for training purposes	WTP
Vermicomposting	Enhanced Livelihood of Women in selected villages of Karnataka through Green Technologies
Rapid bio-composting process from dry leaves and garden wastes	Empowering Rural Women through various Technology based Livelihood Opportunities under Women Technology Park
Coir Pith Composting	Rural Women Technology Parks in ten Village of Parappa Block of Kasaragod District, Kerala
Community Nursery	Rural Women Technology Park, Annur Taluk, Coimbatore District, Tamil Nadu (covering Block, Dist. State)
Nursery & seed propagation techniques	Enhanced Livelihood of Women in selected villages of Karnataka through Green Technologies
Pressed flower techique	Women Technology Park in Tumkur District, Karnataka
Nursery Techniques and Seed Production	Rural Women Technology Parks for the Holistic Empowerment of Women in Rural and Semi Urban areas of Idukki, Kottayam and Pathanamthitta Districts of Kerala through Agro-allied Micro and small Enterprise development
1. Cultivation of Dry land Crops and Developing Value Added Products 2. Production of exotic flowers through greenhouse cultivation	Rural Women Technology Park at Vishnupur Village, Narsapur Mandal, Medak District, Telangana
Identification and Cultivation of Medicinal and Aromatic Plant Species	Rural Women Technology Park of University of Petroleum and Energy Studies at Dehradun, Uttarakhand
Low volume high value (LVHV) from Quinoa and Chia	Rural Women Technology Park at Kacharam Village, Shamshabad Block, Rangareddy District, Telangana State
1. Semi-processing & value addition of medicinal and horticulture plants 2. Homestead cultivation of medicinal plants	Enhanced Livelihood of Women in selected villages of Karnataka through Green Technologies

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Technologies selected/developed for training purposes	WTP
1. Fresh water poly culture 2. Brackish water poly culture 3. Quality seed production through Hatchery & Hapa method 4. Fish feed production 5. Dry fish production through solar dryer facilities 6. Low external input bases aqua farming/integrated fish farming (duck, hen, horticulture)	Establishment of a Model Resource Centre for Aquaculture at Women Technology Park, Sagar, South 24 Parganas
UMMB (Feed blocks) for goat and Cow	Establishment of the Rural Women Technology Parks in KVK -II Sitapur (U.P)
Animal husbandry and poultry technology	Rural Women Technology in Patan Block of District in Maharashtra
Solar incubator for low-cost hatchery	Bolmoram Technology Resource Centre cum Knowledge and Innovation Park, East Garo Hills, Meghalaya
1. Micro hatchery unit 2. Pearl culture unit	Rural Women Technology Parks in ten Village of Parappa Block of Kasaragod District, Kerala
Natural colour and herbal dye preparation from herbal waste	Rural Women Technology Park on Vidhani Village, Sanganer Block, Jaipur District, Rajasthan
Oil extractions from waste flowers	Rural Women Technology Park on Vidhani Village, Sanganer Block, Jaipur District, Rajasthan
Herbal Processing	Rural Women Technology in Patan Block of District in Maharashtra
Herbal mosquito repellent incense stick and candle	Establishment of Rural Women Technology Park in CSIR – North East Institute of Science & Technology, Jorhat, Assam
Herbal Gulal	Empowering Rural Women through various Technology based Livelihood Opportunities under Women Technology Park
Sector 2. Traditional Technologies	
1. Gem and Jewellery design 2. Handicraft item preparation 3. Designer diya preparations and Handicraft items	Rural Women Technology Park on Vidhani Village, Sanganer Block, Jaipur District, Rajasthan

Technologies selected/developed for training purposes	WTP
Terracotta craft & Moonj craft	Establishment of Rural Women Technology Park in Baghera Village, Karchhana Block, Allahabad District, UP
Coconut shell craft unit & Bamboo craft unit	Rural Women Technology Parks in ten Village of Parappa Block of Kasaragod District, Kerala
Metal Craft Technologies	Rural Women Technology Park in Hasanparthy Mandal of Warangal District of Telangana Region, Andhra Pradesh
Craft: Terracota jewelery	Women Technology Park, Wardha District, Maharashtra
IT assisted Phulkari designing	Development of Women Technology Park for Empowerment of Rural Women in selected Villages of Fategarh Sahib, Punjab using Eco-friendly innovation
Skill & product development in weaving	Establishment of Rural Women Technology Park in CSIR – North East Institute of Science & Technology, Jorhat, Assam
Interventions in Handlooms and Handicrafts	Rural Women Technology Park at Vishnupur Village, Narsapur Mandal, Medak District, Telangana
Weaving and handloom	Rural Women Technology Park in Hasanparthy Mandal of Warangal District of Telangana Region, Andhra Pradesh
Pulse plating of silver anklet	Rural Women Technology Parks in Salem (Kandarkulamanickem Panchayat), Tamil Nadu
Sector 3. Energy	
Solar Crop Drier: A energy saving devices	Women's Technology Park at Sonobori Village, Bhurbanda Block, Morigaon District, Assam
Maintenance and repairing of Photovoltaic (PV) systems	Women's Technology Park at Sonobori Village, Bhurbanda Block, Morigaon District, Assam
Cow Dung Logs: An Innovative Way Of Using Cow Dung	Empowerment of Women in Rural areas through Science based Skill Development
Charcoal based briquette production through portable charring kiln & briquetting machine using farm waste/ by-products	Establishment of the Rural Women Technology Parks in KVK -II Sitapur (U.P)

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Technologies selected/developed for training purposes	WTP
Bio briquettes Production	Rural Women Technology Park, Annur Taluk, Coimbatore District, Tamil Nadu (covering Block, Dist. State)
Improved cook stove	Women's Technology Park at Sonobori Village, Bhurbanda Block, Morigaon District, Assam
Fuel-pellets from rural biomass	Technological Empowerment of Women on Energy from Rural Biomass
1. Paper bags from waste newspapers 2. Handmade paper from paper waste	Rural Women Technology Park on Vidhani Village, Sanganer Block, Jaipur District, Rajasthan
Recycling of waste paper	Rural Women Technology Park of University of Petroleum and Energy Studies at Dehradun, Uttarakhand
Value added products from handmade paper	Establishment of Rural Women Technology Park in CSIR – North East Institute of Science & Technology, Jorhat, Assam
Wastepaper recycling	Rural Women Technology Parks in Salem (Kandarkulamanickem Panchayat), Tamil Nadu
Paper bag making	Women Technology Park in Tumkur District, Karnataka
Granite saw waste transformation into bricks	Centre for Enhancement of Livelihood and Enterprise Models for Rural Women (CELEM) in Sahoolagiri Taluk
E-waste processing	Centre for Enhancement of Livelihood and Enterprise Models for Rural Women (CELEM) in Sahoolagiri Taluk
Green bricks and firing in LCBK	Women Technology Park in Tumkur District, Karnataka
Green building	Bolmoram Technology Resource Centre cum Knowledge and Innovation Park, East Garo Hills, Meghalaya
Paver block	Rural Women Technology Parks in Salem (Kandarkulamanickem Panchayat), Tamil Nadu
Waste Wood Products	Women Technology Park, Wardha District, Maharashtra

Technologies selected/developed for training purposes	WTP
Sector 4. Forest based Products	
Bamboo craft	Establishment of Rural Women Technology Park in Baghera Village, Karchhana Block, Allahabad District, UP
Bamboo furniture and agarbatti sticks	Bolmoram Technology Resource Centre cum Knowledge and Innovation Park, East Garo Hills, Meghalaya
Value adding to the Non-Wooden Forest Product (NWFP)	Integrate Livelihood Technologies as Women Technology Park for Tribal Women in Paderu, Visakhapatnam District, Andhra Pradesh
NTFP (non-timber forest products) based livelihood interventions	Rural Women Technology Park at Vishnupur Village, Narsapur Mandal, Medak District, Telangana
Agarbatti manufacturing unit	Establishment of Rural Women Technology Park for Women Empowerment through Technological approaches
Leaf plates manufacturing	Development of Women Technology Park for Empowerment of Rural Women in selected Villages of Fategarh Sahib, Punjab using Eco-friendly innovation
Bioplates and leaf cup machine	Empowering Rural Women through various Technology based Livelihood Opportunities under Women Technology Park
Eco-friendly plates	Women Technology Park in Tumkur District, Karnataka
Arecanut Leaves Plates	Rural Women Technology Park, Annur Taluk, Coimbatore District, Tamil Nadu (covering Block, Dist. State)
Sector 5. Health Care	
Identifying foods of nutritional value to be added to the current consumption by vulnerable groups among adivasi women	Integrate Livelihood Technologies as Women Technology Park for Tribal Women in Paderu, Visakhapatnam District, Andhra Pradesh
Developing skills through training technologies for young women as herbal based health care practitioners	Integrate Livelihood Technologies as Women Technology Park for Tribal Women in Paderu, Visakhapatnam District, Andhra Pradesh

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Technologies selected/developed for training purposes	WTP
Environmental awareness	Rural Women Technology Park in Kovvada Village (Bhimavaram Block), West Godavari Distriact, Andhra Pradesh
Water quality management and Biosand filter production	Women's Technology Park at Sonobori Village, Bhurbanda Block, Morigaon District, Assam
Bio sand filters for clean drinking water	Integrate Livelihood Technologies as Women Technology Park for Tribal Women in Paderu, Visakhapatnam District, Andhra Pradesh
Water Purification	Rural Women Technology Park, Annur Taluk, Coimbatore District, Tamil Nadu (covering Block, Dist. State)
Outreach programme on health and nutrition	Rural Women Technology Park in Kovvada Village (Bhimavaram Block), West Godavari Distriact, Andhra Pradesh
Sector 6. Information Technology	
Information and Communication Technology assisted art and craft design	Rural Women Technology Park of University of Petroleum and Energy Studies at Dehradun, Uttarakhand
Digital art making Craft designing using CAD	Setting up of Rural Women Technology Park at Bansani, Varanasi (Target Block - Baragaon, Pindra & Haruha in District Varanasi, Uttar Pradesh)
Skills development on video technology	Integrate Livelihood Technologies as Women Technology Park for Tribal Women in Paderu, Visakhapatnam District, Andhra Pradesh
Making designer chocolates	Centre for Enhancement of Livelihood and Enterprise Models for Rural Women (CELEM) in Sahoolagiri Taluk
Sector 7. Waste to Wealth	
low dust chalk pencil and wax crayon colored pencil	Establishment of Rural Women Technology Park in CSIR – North East Institute of Science & Technology, Jorhat, Assam
Soild deodrant freshener	Establishment of Rural Women Technology Park in CSIR – North East Institute of Science & Technology, Jorhat, Assam

Technologies selected/developed for training purposes	WTP
Idea Neck rest pillow with Memory Foam	Centre for Enhancement of Livelihood and Enterprise Models for Rural Women (CELEM) in Sahoolagiri Taluk
Mosquito repplent candle	Empowering Rural Women through various Technology based Livelihood Opportunities under Women Technology Park
Sewing machine for differently abled women	Rural Women Technology Parks in Salem (Kandarkulamanickem Panchayat), Tamil Nadu
Construction and Habitat Technologies	Rural Women Technology Park in Hasanparthy Mandal of Warangal District of Telangana Region, Andhra Pradesh
Mobile Workshop & Rural Enterprises	Women Technology Park, Wardha District, Maharashtra
Millet noodles	Establishment of Rural Women Technology Park for Women Empowerment through Technological approaches
1. Value added Milk Products 2. Value added Meat Products	Technological Interventions in clean, Meat, Milk, Fish production and Socio-economic Empowerment of Rural Women through training on Value Added Livestock Products
Ragi and Rice papad	Rural Women Technology in Patan Block of District in Maharashtra
Guava processing	Establishment of Rural Women Technology Park in Baghera Village, Karchhana Block, Allahabad District, UP
Food processing & preservation	Setting up of Rural Women Technology Park at Bansani, Varanasi (Target Block - Baragaon, Pindra & Haruha in District Varanasi, Uttar Pradesh)
Agro food processing	Women's Technology Park at Sonobori Village, Bhurbanda Block, Morigaon District, Assam
Extraction of banana fiber & product development	Establishment of Rural Women Technology Park in CSIR – North East Institute of Science & Technology, Jorhat, Assam

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Technologies selected/developed for training purposes	WTP
Mechanised dhenki and grain puffing cum roasting machine	Empowering Rural Women through various Technology based Livelihood Opportunities under Women Technology Park
1. Tulsi based products 2. Tender Mango based products 3. Tulsi and Tender Mango based products 4. Cosmetics: Virgin coconut oil 5. Home fragrances	Rural Women Technology Park in Cherlopalli Village, Andhra Pradesh
Minor millet (Ragi) value addition	Women Technology Park in Tumkur District, Karnataka
1. Vetiver (Vetiveria zizanioides) cultivation and value added products 2. Cassava – Value added products 3. Passion fruit - Value added products 4. White pepper production	Rural Women Technology Parks for the Holistic Empowerment of Women in Rural and Semi Urban areas of Idukki, Kottayam and Pathanamthitta Districts of Kerala through Agro-allied Micro and small Enterprise development
Value added products from Jack fruit	Standardized Value-Added Jack Fruit Products for Supplements income for Women through Jack Park
Medicinal oil unit	Rural Women Technology Parks in ten Village of Parappa Block of Kasaragod District, Kerala
1. Post Harvest Technology Based Value Added Products 2. Multi Millet Biscuits	Rural Women Technology Park, Annur Taluk, Coimbatore District, Tamil Nadu (covering Block, Dist. State)
1. Banana Fiber Extraction and Value Added Products 2. Value Added Products (Coir Pot) from Coir Fibre	Rural Women Technology Park, Annur Taluk, Coimbatore District, Tamil Nadu (covering Block, Dist. State)
1. Production of Virgin Coconut Oil (VCO) and Value-added Products 2. Minimal Processing of Ready-to-Cook (RTC) Fresh-cut Vegetables	Rural Women Technology Park, Pollachi
Solar Food Processing	Rural Women Technology Parks in Salem (Kandarkulamanickem Panchayat), Tamil Nadu
Banana Fiber Extraction	Rural Women Technology Park in Hasanparthy Mandal of Warangal District of Telangana Region, Andhra Pradesh

Technologies selected/developed for training purposes	WTP
Incense sticks, fragment cone, dhup making	Empowering Rural Women through various Technology based Livelihood Opportunities under Women Technology Park
Upscalable Technologies	
Sector 1. Agriculture and Allied	
Azolla cultivation and Makhana processing	Establishment of the Rural Women Technology Park in KVK-II, Sitapur (U.P)
Pressed flower techique	Women Technology Park in Tumkur District, Karnataka
Low volume high value (LVHV) from Quinoa and Chia	Rural Women Technology Park at Kacharam Village, Shamshabad Block, Rangareddy District, Telangana State
Solar incubator for low-cost hatchery	Bolmoram Technology Resource Centre cum Knowledge and Innovation Park, East Garo Hills, Meghalaya
1. Micro hatchery unit 2. Pearl culture unit	Rural Women Technology Parks in ten Village of Parappa Block of Kasaragod District, Kerala
Herbal Gulal	Empowering Rural Women through various Technology based Livelihood Opportunities under Women Technology Park
Millet noodles	Establishment of Rural Women Technology Park for Women Empowerment through Technological approaches
Ragi and Rice papad	Rural Women Technology in Patan Block of District in Maharashtra
Extraction of banana fiber & product development	Establishment of Rural Women Technology Park in CSIR – North East Institute of Science & Technology, Jorhat, Assam
Herbal mosquito repellent incense stick and candle	Establishment of Rural Women Technology Park in CSIR – North East Institute of Science & Technology, Jorhat, Assam
Sector 2. Traditional Technologies	
IT assisted Phulkari designing	Development of Women Technology Park for Empowerment of Rural Women in selected Villages of Fategarh Sahib, Punjab using Eco-friendly innovation

Contd...

Technologies selected/developed for training purposes	WTP
Terracotta craft & Moonj craft	Establishment of Rural Women Technology Park in Baghera Village, Karchhana Block, Allahabad District, UP
Sector 3. Energy	
Recycling of waste paper	Rural Women Technology Park of University of Petroleum and Energy Studies at Dehradun, Uttarakhand
E-waste processing	Centre for Enhancement of Livelihood and Enterprise Models for Rural Women (CELEM) in Sahoolagiri Taluk
Sector 4. Forest based Products	
Bioplates and leaf cup machine	Empowering Rural Women through various Technology based Livelihood Opportunities under Women Technology Park
Bamboo furniture and agarbatti sticks	Bolmoram Technology Resource Centre cum Knowledge and Innovation Park, East Garo Hills, Meghalaya
Sector 5. Health Care	
Bio sand filters for clean drinking water	Integrate Livelihood Technologies as Women Technology Park for Tribal Women in Paderu, Visakhapatnam District, Andhra Pradesh
Sector 6. Information Technology	
Information and Communication Technology assisted art and craft design	Rural Women Technology Park of University of Petroleum and Energy Studies at Dehradun, Uttarakhand
Digital art making Craft designing using CAD	Setting up of Rural Women Technology Park at Bansani, Varanasi (Target Block - Baragaon, Pindra & Haruha in District Varanasi, Uttar Pradesh)
Making designer chocolates	Centre for Enhancement of Livelihood and Enterprise Models for Rural Women (CELEM) in Sahoolagiri Taluk
Sector 7. Waste to Wealth	
Sewing machine for differently abled women	Rural Women Technology Parks in Salem (Kandarkulamanickem Panchayat), Tamil Nadu

Technologies selected/developed for training purposes	WTP
Soild deodrant freshener	Establishment of Rural Women Technology Park in CSIR – North East Institute of Science & Technology, Jorhat, Assam
Ideal Neck rest pillow with Memory Foam	Centre for Enhancement of Livelihood and Enterprise Models for Rural Women (CELEM) in Sahoolagiri Taluk
Millet noodles	Establishment of Rural Women Technology Park for Women Empowerment through Technological approaches
Ragi and Rice papad	Rural Women Technology in Patan Block of District in Maharashtra
Extraction of banana fiber & product development	Establishment of Rural Women Technology Park in CSIR – North East Institute of Science & Technology, Jorhat, Assam
Ideal Neck rest pillow with Memory Foam	Centre for Enhancement of Livelihood and Enterprise Models for Rural Women (CELEM) in Sahoolagiri Taluk

8.4 Standard Operating Procedures (SOP) for Various Stakeholders

Standard Operating Procedures (SOPs) have been laid down for the smooth and proper functioning of WTPs such that these entities work optimally and meet the desired objectives. Based on the analysis and findings, the experts have suggested some specific modulations and procedures, which have been compiled in the form of SOP. The SOPs are like guiding principles that improve efficiency and pave the way for the sustainability of WTPs. These need to be followed and complied with by the WTPs and all other stakeholders. SOP has been framed keeping in view the identified gap areas and are a sort of corrective actions that, when adhered to, can help WTPs overcome the hurdles, plug the loopholes; and preventive actions, to do away with the bottlenecks that stand tall in the way of its operation, maintenance and sustainability. These are step-by-step instructions to guide the Principal Investigators to operate the WTPs can be implemented with the existing or the proposed methodology and operational strategy for the WTPs to work efficiently to provide high-quality outputs. This SOP would help PIs to cater to the objectives set up by SEED Division of DST to run the WTP successfully. It has been customised into various sections like pre-requisites, procedures, sustenance, and quality control for better understandability. The SOPs have been attached as Annexure I.

8.5 Compendium of Technologies of WTPs

A compendium has been prepared to document and showcase the technologies implemented by Women Technology Parks in rural regions, especially for women. This is aimed at compiling some of the popular and successful technologies implemented by the WTPs and; practised and transferred efficiently to rural women. The compendium serves as a basis to promote the knowledge of technologies concerning the use of local resources available in abundance in the region. It also showcases the prototype or adaptation made in the technology with the help of S&T components suggested by experts and institutions; and customised according to the local needs. The S&T knowledge partners and the impact of the technology have also been documented. The figure shows the cover page of the compendium. The compendium may be assist through the following link:

https://www.indiascienceandtechnology.gov.in/Study%20of%20Women%20Technology%20Parks%20%28WTPs%29/compendium-technologies-wtps

Fig. 23: Snapshot of Compendium of Technologies of WTPs

8.6 Compilation of Best Practices and Success Stories

The Compilation of Best Practices and Success Stories of Women Technology Parks titled 'Journey of Women Technology Parks towards Sustenance' provides a collection of the best and the most promising examples which have been chosen to be successful WTP in improving the social status of rural women across India. It showcases the success stories of the WTPs and the best practices of the WTPs based on the assessment parameters. The figure shows the cover page of the compilation. Those WTPs which have performed excellently on at least one of these parameters and have set a benchmark of a sort, being an ideal example for other WTPs on that particular parameter. Such WTPs have been classified as "Best Practices". On the other hand, some have an overall performance above the average and are the ones that have been able to excel on most of these parameters. The tale of their success is narrated under the "Success Stories." The best practices & success stories may be assist through the following link:

https://www.indiascienceandtechnology.gov.in/Study%20of%20Women%20Technology%20Parks%20%28WTPs%29/best-practices-wtps

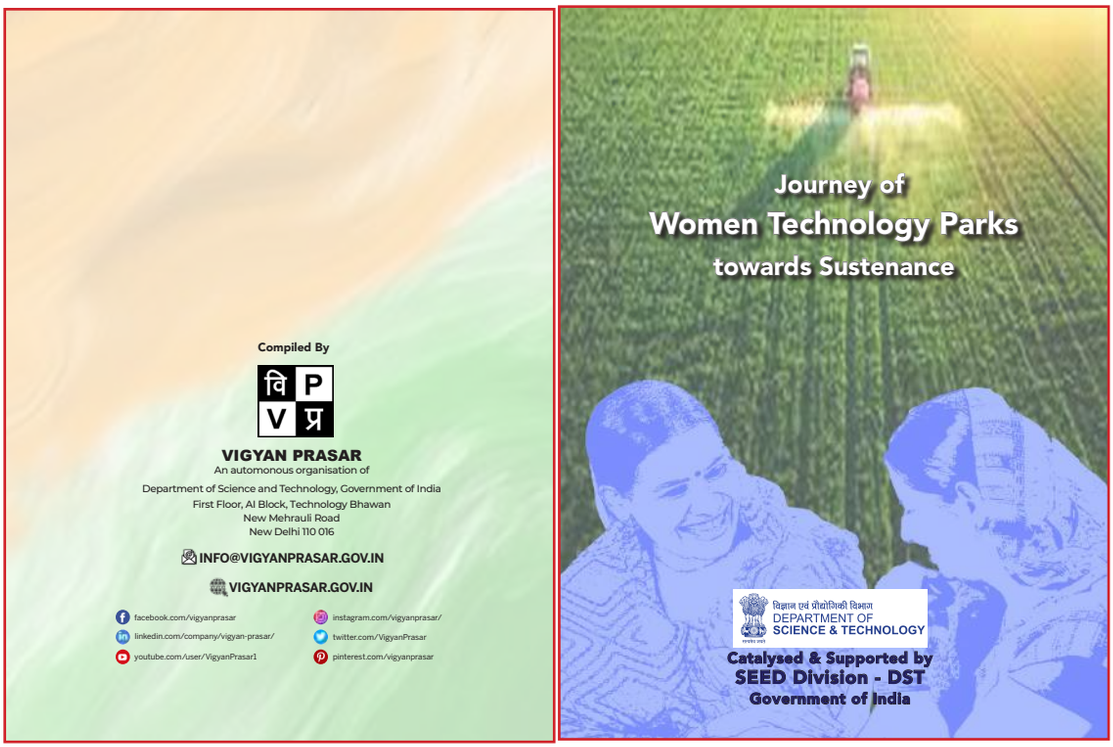


Fig. 24: Snapshot of Best Practices and Success Stories

Fig. 25: A Reference Image for WTP Video

8.7 Video Films

Two video films on Women Technology Parks have been produced to portray the working of WTP, real-life stories and feedback from the community members trained under WTPs. The entire process of establishing WTP has been captured to understand better the importance of WTPs and their functioning as a resource point for technology delivery at the grassroots level. The figure shows one of the stills from the video. Besides this, WTPs are also encouraged to make short films related to the project.

8.8 Website

A Website in the form of an online platform to showcase the Women Technology Parks established across the country has been developed by Vigyan Prasar. The website's main objective is to bring the activities and achievements of the WTPs to the notice of various research and developmental organisations, social organisations, government departments and people. The website would benefit the stakeholders and beneficiaries by planning and highlighting the technology that is adapted, developed, or modified by them. It also acts as a platform to showcase the products manufactured and services provided by WTPs and to make these products available commercially. It facilitates replication and exchange of knowledge and backs the efforts of WTPs to pene-

Fig. 26: A snapshot of WTP Website

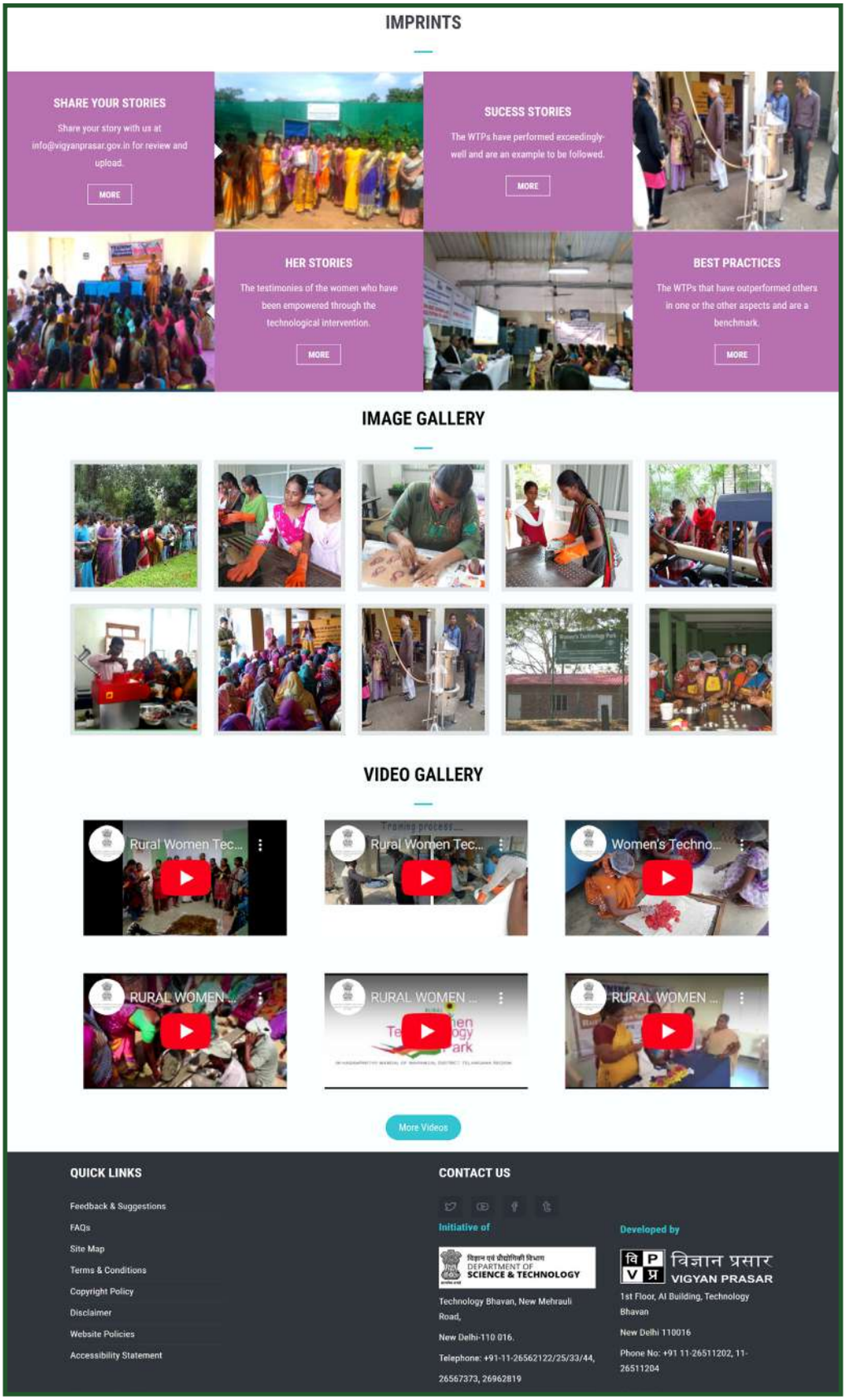


Fig. 26: A snapshot of WTP Website (*Contd.*)

trate at the grassroots level leading to the empowerment of rural women. The website is designed and developed comprehensively, acting as an information clearinghouse for showcasing best practices and successful models, conducting discussion forums, information about success stories, building the knowledge network, etc. The website URL is https://dst-wtp.in/.

8.9 National Level Stakeholders' Meet and Brainstorming Session

A National Level Stakeholders' Meet for the Study of Women Technology Parks (WTPs) for the Integrated Development of Rural Women across the country was organized by Vigyan Prasar on 12-13th July 2022 at India International Center, New Delhi. The Meet was catalyzed and supported by Science for Equity, Empowerment and Development (SEED) Division, Department of Science and Technology, Government of India. It was a two-day meet organized to discuss and brainstorm on various aspects of WTPs & discuss gap areas & bottlenecks in way of women empowerment through S&T. On the first day, the dignitaries discussed on the importance of the WTPs in the holistic development of the rural women. Presentations and discussions on individual WTPs were also done in the panel discussion.

The Second Session included presentations from selected WTPs with expert remarks and comments. The detailed and comprehensive presentation on the study of WTPs conducted by Vigyan Prasar was presented on the Day 2 of the meet. The Meet concluded with a panel discussion on devising the way forward and evolutionary mechanism for the WTPs and exploring integrated methods for collaborations with other national-level programmes and policies for women.

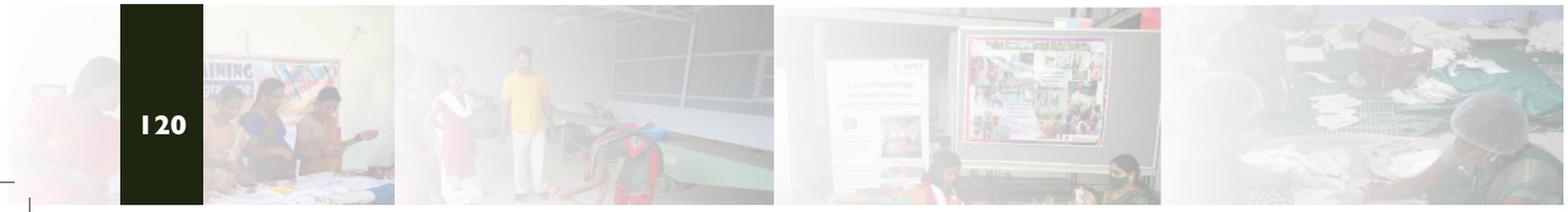
Chapter 9

Way Forward

The journey of the study has been very engaging and enlightening one. The study summarizes and brings out the crucial role of WTPs as a vehicle for bringing in women empowerment through STI interventions. Women empowerment is a mountain to conquer through the tiny wheels of the WTPs but these parks make the journey easy by introducing the most basic yet most important elements to strengthen the local livelihood system and inclusive enough to mainstream the rural women of the area.

The study reveals that there is an increase in the opportunities for skill and income enhancement for the rural women of the area being covered by the respective WTPs. Implementation of grass-root level technologies has provided alternate and additional avenues of income to the trainees and also provided employment to the unemployed rural women. The WTPs show the potential to co-operate and form SHGs to maximize profits utilizing local as well as regional markets. As per the data collected from the reports, several WTPs were successful in establishing livelihood options for the trainees, after imparting training; they have also been provided a platform to sell their products and guidance for marketing linkages.

Also, there is a substantial improvement in quality of life through better hygiene & sanitation. The WTPs which are promoting Traditional Knowledge System by implementing various associated technologies have shown increased their acceptance in the area. One of the strongest pillars of the WTPs is that they primarily focused on utilising indigenous raw materials and waste materials to produce marketable products, promoting economic independence and generating income opportunities for the trainees. This has opened



many avenues of self-sustainability of these parks. This was possible because WTPs also worked as an enterprise development agency which could be treated as a nodal point for that area and surrounding area. They help the trainees by providing assistance in project formulation, technical assistance and mobilization of funds for the establishment and working of the new enterprises.

Although, a positive trend in the improved linkages with local government and market has been observed; yet adequate network and linkages for marketing of the manufactured products need to be adopted which would also provide a suitable platform for selling the products developed by WTPs. The cost benefit analysis of the technologies needs to be assisted by experts from the requisite fields to upgrade them to sustenance. Regardless of this, several WTPs have developed various mechanisms to self-sustain the initiative after the financial support gets over from the respective funding agency. Examples include WTPs of Peermade Development Society, Kerala; TIDE, Bengaluru, KIIT, Odisha; and Bolmoram Technology Resource Centre cum Knowledge and Innovation Park, Meghalaya.

Similarly, there is a need for standardisation and validation of the products and processes being manufactured and disseminated at these parks, providing credibility and stand to compete in the global markets. This also includes the standardization of the capacity building and skill enhancement programmes being integrated and validated through National Skill Qualification Framework (NSQF) or any other standard programmes. This would lead to brand creation and popularization in the market for gaining trust and attracting collaborators and partners for continued support and building a self-sustainable mechanism. Although the total quality management of WTPs have been added in modified objectives of establishing the WTPs, this needs to be reinforced with greater effect.

The infrastructure of WTPs need to be developed and customised as per the observations from in-depth baseline study and rechristened as one physical entity as the nodal centre for technology dissemination and delivery. Building these parks around the proposed model and framework would help them get accreditation. This could as well lead to integration with programmes from different ministries like Ministry of Micro Small and Medium Enterprise (MoMSME), Ministry of Panchayati Raj (MoPR), Ministry of Rural Development (MoRD), Ministry of Tribal Affairs (MoTA), Line Departments like Animal Husbandry Department (AHD), Fisheries (DoF) and industry associates, like FICCI, AGNIi, etc.

The establishment of linkages of WTPs with the line ministries and think tanks across the nation would help in bring together the isolated developments. In order to fulfil the goal of Atmanirbhar Bharat Abhiyan, solution-centric Science & Technology (S&T) interventions are essential with bottom up approach for identifying the problem that lack solution and top down approach for solutions on identified problems to develop and promote locally driven enterprises. These WTPs also help in supporting the call of "Vocal for Local" by establishing marketing linkages in their local markets as well as in national and global markets. They also initiate networking and cross-bridge collaborations among KOs, NGOs and communities for hand-holding, technology development, standardization, and

information dissemination to address systemic gaps. The literature also depicts that SDGs can also be achieved at through the establishment of these WTPs.

9.1 Guiding Points for Various Stages of WTP

The following guiding points are suggested for the Principal Investigators of the WTPs to operate the WTPs sustainably and consistently. These observations aim to assist the competent authorities at WTPs to cater to the objectives of WTP Programme of DST of SEED Division of DST.

After studying and mapping the formats of proposals, annual reports and project completion reports submitted by PIs of WTPs, it was strongly observed that the formats were not strictly adhered to and defiant to the spirit of the initiative.

9.1.1 General Guidelines

- The technologies should be selected based on evidences enumerated in baseline survey and predominant livelihood generation linkages.
- The selected technologies should be user-friendly, popular and predominant in the area and helpful in improving the quality of life of the people. This aims to help gain social acceptance and better outreach and response in the community and area.
- The Technologies should be women-friendly and oriented toward their needs.
- Those WTPs that are established as successful models should mentor and handhold other WTPs, provide logistical and technical support.
- WTPs should be able to understand the demand-supply chain of the system for establishing linkages and better outcomes.
- WTPs need to select the policy from the possible effects that can be created with a set of means, like they need to have intense networking among academic scholars, entrepreneurs, new ventures, accelerators, venture capitals, industrial firms, consultants, and so on.
- WTPs should have a holistic approach towards livelihood generation that includes health, hygiene, basic education, like knowledge of banking, and so on.
- They should also identify state-of-art facilities already available, weak linkages in pre-dominant livelihood in the area and analyse post-intervention studies of other WTPs.
- Training and implementation of technologies should be sought from already established organisations in the areas.
- Training needs to be provided in local languages.

Principal Investigators should identify the agency or the institution interested in the technologies or the project's resultant outcomes for the trainees' benefits to market or sell their products. The formation of a cooperative society by PI will provide a platform to market products manufactured by trainees at the regional level and may plan for state or national level marketing.

- WTPs should select at least one of the technologies using the local natural resources of the target region. It will reduce efforts on training procedures as the trainees will be familiar with the local resources, and only training in technology will be required. WTPs should conduct surveys on the socio-economic status of targeted regions, like the availability of basic amenities and facilities such as water, sanitation, health centres, roads, and marketing facilities. It would help to explore the best suitable technologies and training programs for the trainees.
- Based on the technology selected, WTPs should plan to form linkages with local governmental or non-governmental bodies and involvement of voluntary organizations to identify trainees.
- The major focus needs to be given to the details of the S&T component framed for improvement in the adapted technologies
- The baseline survey of the region should be mandatory for the WTPs, especially in agricultural practices targeted areas, it will help PIs to understand the present status, soil conditions, and crop productivity and significantly in improvement of livelihood of the targeted population.
- The justification of technical details, selection of technology to fill the gaps, framing of methodology to achieve the objectives successfully, and the work plan should be clearly covered to achieve the goal.
- WTPs should fill in details about the technology development/adaptation/modification along with the institution and expert involved in it, affordable deliverables and estimation of benefits in a descriptive manner. WTPs should be mandated to mention the self-sustainability of the project and the possibilities of replication in similar areas, involvement of state government or large-scale technology dissemination, etc.
- The tangible and non-tangible indicators of the project should be filled with keeping in view the project's outputs. This will help DST officials monitor the project's effectiveness with respect to the objectives and deliverables.
- The detailed planning for post-intervention analysis should be part of the work plan and suggested to cover in the initial stage only.
- The WTPs should mention support team members, implementation organization, nature of implementation, capability, links with local bodies, voluntary organizations, S&T, industries or banks etc. The collaboration with such organisations will help WTPs build confidence in trainees, improving the work efficiency and regulatory conformity of project processes.
- The process followed for sanctioning WTPs needs to be different from the other action research Projects supported by the division and DST as the expectation and

targets of the WTPs are different. WTPs' funding, duration, evaluation and monitoring must differ from the other projects. Also, evaluation criteria should be based on the funding/budget being provided to the projects.

- During the study, it has been strongly observed that three years is insufficient to achieve the self-sustainability of the WTPs as one year is consumed in hiring, procurement and establishment. Also, more accountability needs to be given to the organization hosting the WTPs for the project's administration-related tasks. This would also relax the PIs to focus on training and technologies.
- More power needs to be given to the LPAC members of the project, and their report needs to be considered by DST for releasing further installments. Site monitoring of the WTPs for the LPAC Members also needs to be arranged every six months. Hence, more accountability needs to be provided to the LPAC Members of the concerned project.
- There needs to be a provision to identify and document star performers and list out the least performer to avoid providing further allotment of WTPs or other projects.
- The monitoring procedure of the WTPs should be different from the other action research projects; hence accountability of the LPAC Members should be increased for better site monitoring and handling.
- Briefing sessions for new PIs and detailed directions for precise and proper documentation should be organized by DST officials.
- Star Colleges or Knowledge Institutes of the area should be directed for mentoring, up-scaling and hand-holding of the WTPs in management and sustainability. Also, there should be a provision for a group of superannuated experts to review continuously.
- DST should get brief reports of the WTPs after completion of the Projects for at least three years. It will help to monitor the sustainability of the projects. Also, the examples of successful WTPs can be widely publicized to create awareness for others to follow. It will also help to make necessary policy changes in project formulation, sanctioning, monitoring, and evaluation to better project sustainability. The successful WTPs will also get recognition all over the country.
- The WTPs may be asked for a due diligence report of each technology. The report may contain information on the suitability of the technology according to the area, its cost-effectiveness, and market study, the technology absorption capacity of the locals, its TRL Level, scalability, and other relevant details. Accordingly, the technology may be tailored as per local demands.
- Providing ICT assistance to the existing livelihood system may also be considered. This would help envisage the WTPs as nodal points that would catalyze and facilitate the linkages for mobilizing the communities, companies, and agencies by mapping the local resources, skills, and problems. They may also be mobilized to integrate into the conduction of different programmes of other line ministries.
- The organisation should be answerable and responsible for the infrastructures and facilities provided by DST for establishing WTP, even after the project tenure. A

commitment must be sought from the organization to sustain and maintain it for the greater good of the community.

- On-the-spot evaluation of the WTPs is required at the beginning of the project's second year to evaluate the work done.

9.2 Proposed Roadmap for Sustainable WTP

The roadmap of the WTP towards sustainability, social equity and inclusion moves through a series of steps and methods. These steps have been detailed in the former discussions and form an integral part of the WTP as an entity empowering rural women. First and the most important step is the establishment of the WTP which is a collosum of a number of steps like: Baseline survey, roping in a funding organization, and S&T organizations, technology demonstration and implementation, providing innovative solutions to local problems, capacity building, skill training, development of value-added products, making necessary tie-ups and marketing linkages, and enterprise development.

As discussed earlier, baseline survey is based on need identification of local needs, local problems, local natural resources available, S&T inputs, appropriate technology, and new livelihood opportunities for the rural women. The funding organization will help provide the necessary handholding and fund support. It will also help in finalizing the area of interventions and perform the necessary monitoring and evaluation. The scientific and the technical organization will bring in the necessary technological intervention through technology modulation and other S&T solutions. It will also help in technology implementation and demonstration through trained experts. The innovative solutions provided by the S&T organizations are also implemented at the local level at this stage. The role of these scientific and technical organizations is also highlighted in capacity building and skill training. The related experts provide the necessary information in form of technology training modules and training programmes for training of scientific and technical manpower.

The S&T organisations are also responsible for performing standardisation, testing, validation and certification of the value-added products developed by these WTPs. The necessary quality control and assurance would be provided by these organisations. This would be done through training programmes and enterprise development. The products would then be sent to the local markets through WTP cooperatives and other cooperatives established under Corporate Social Responsibilities of the partner institutions and industries. The necessary tie-ups can be fetched for providing access to markets, products, finances and support through other programmes of the government.

The adoption and awareness of the aforementioned steps and elements lead to empowering of rural women. This is realised through SHG formation, enterprise development, and improved incomes and also through improvement in food security, health, education and hygiene. This brings in holistic development of the rural women. This

ultimately leads to improved linkages, social equity and inclusion and overall wellbeing of the rural women.

An ideal WTP should have the capacity to impart training to rural women in technologies that optimally use at least one of the local resources, coming up with value-added products that are a source of income and livelihood generation for rural women. Facilitating women to be self-reliant by providing all possible support from financial institutions, banks, government agencies and strengthening market linkages are integral to model WTP. They can also act as bridges between Knowledge Organizations and Field-level organisation/agency. It needs to act as resilience focal point increasing community resilience, through S&T components and further should be developed as a park that demonstrates and incubates need based technologies and strives for sustainability. Following are the basic roles that a WTP needs to perform:

- **Identification of Local Innovation:** Identifying and validating locale and in-practice innovative technologies in land-to-lab model and providing the required customisation as per the needs
- **Technology Delivery:** Focal point for technology delivery and transfer to rural women, making them use the technologies, capacity building and help them to become self-reliant
- **Establishing Linkages:** Empowering rural women by connecting them with appropriate technology delivery platforms. Facilitating the trained women with financial support and market linkages for developing micro-enterprises. Strengthening the rural women S&T enables training that enhances prospects of livelihood generation
- **Capacity Development and Skill Enhancement Point:** Providing training to women on the use of appropriate technologies, product development and capacity building and encourage them to enterprise development

The establishment and sustenance of WTPs involves planning and setting up an independent entity for training and knowledge transfers and establish enterprises. For WTPs to act as a hub for its subsidiary units, FPOs, SHGs, and other independent WTPs of the region, various components affects its performance as discussed below.

9.2.1 Management of WTP

Management of a WTP refers to the arrangement and coordination of the various aspects of the park initiating from planning, funding, development, administration, operation and sustenance. A successful management requires a clear vision and mission that helps in fulfillment of the objectives that aid in WTP development and substance. Moreover, this step is responsible for planning and formulating WTP policies, undertaking risk analysis, drawing subsequent mitigation plans, and devising cost structure and revenue models.

For the ideation stage, it needs appropriate technology intervention as it is a crucial strategy that is important both at their planning stage and later on as they develop. The pro-

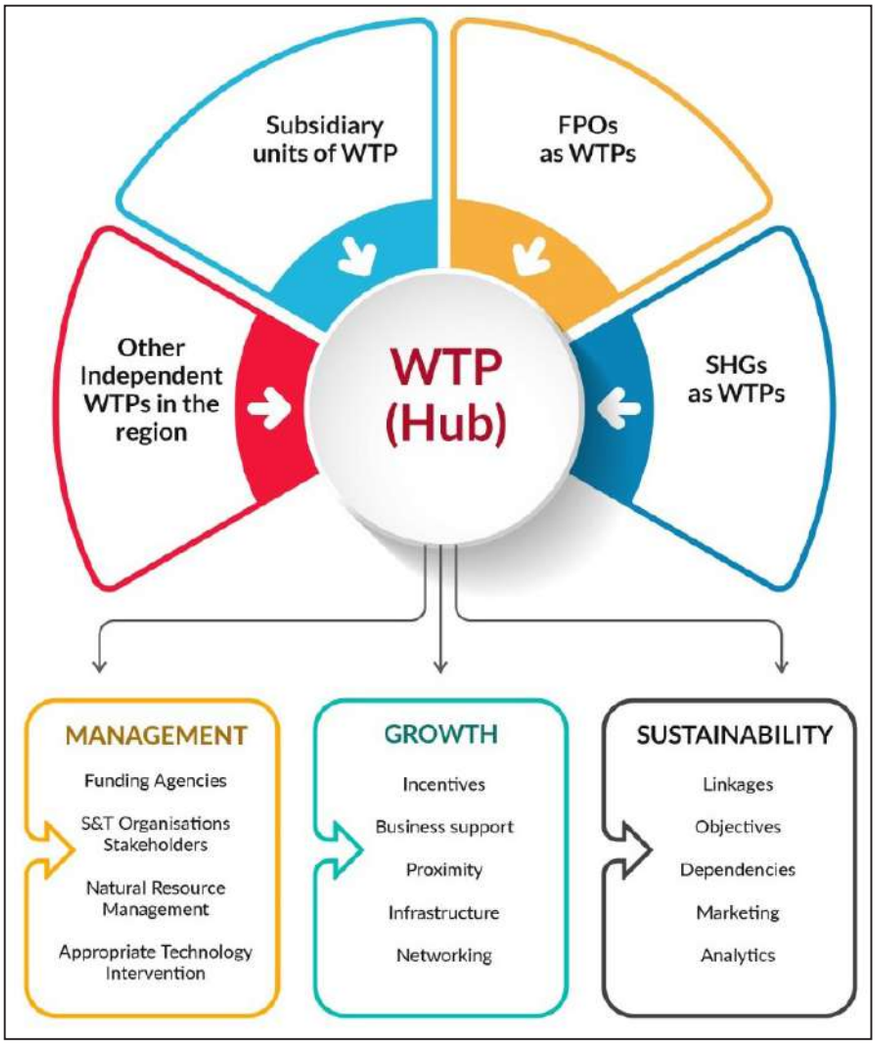


Fig. 27: A Sustainable Model WTP

posed technology intervention can either have a strong technology focus or have a more generalist approach. The choice of being either specific or general mainly depends upon the predominant livelihood system and the socio-cultural-economic status of the region.

These technologies are supported and implemented through R&D organizations, regional and national development authorities, and private sectors and are key stakeholders in establishment and sustenance of a WTP. Particularly there are three stakeholders – S&T Organization, local government, and target group. The main role of the S&T Organization as per its objective is to create some independent income source for the WTP and create opportunity for target groups to secure additional income by working with enterprises established through the park, to create an opportunity for technology transfer from the S&T organization and other sources into the commercial domain, to raise the profile of the WTP as a center of excellence in technology. The local government acts as the planning and legal authority and its main function is to assist in the process of the economic and legal development of the region and locality. Target groups and SHGs are there to establish a business in an environment that favors

their development and growth and acquire competitive advantage through access to skills and technology.

The funding agencies support the WTP in the form of money or other assets that is required by a WTP during development, operations and sustenance. Seed capital is acquired from grants, loans, leasing etc. from DST and other funding agencies, whereas, working capital can be generated against offered services or incentives at the WTP.

Natural resource management in a WTP refer to eco-friendly relationship between the WTP and environment. WTPs through natural resource management prioritizes environment-friendly arrangement in the park as per the local environmental standards. In addition, it can also take initiative for improving the environment by taking proactive measures like use of cleaner and renewable energy sources, and green building" initiatives.

9.2.2 Growth of WTP

Growth of a WTP is enabled by the services it offers to its target group. Commonly these services include: networking support throughout its value chain, infrastructure for desirable quality of life and work ambience, access to business opportunities that lie inside/ outside WTP, economic incentives, access to eminent S&T organizations, and culture with general familiarity with entrepreneurial behavior and ethics.

a. **Incentives:** Incentives refer to financial or nonfinancial benefits offered to the target groups of the WTPs. For instance, the WTPs that are linked with universities can provide their trainees the access to university assets such as R&D equipment, skilled human resource, and employ training and counseling activities. Enterprises developed and supported through the park can also receive financial benefits in the form of access to funds and grants, tax waivers, subsidies on R&D activities, single window clearance, etc.

b. **Business Support:** The business support and other entrepreneurial services provided by the WTPs are not limited to incubation, rather it is also offered in the form of financial support, technology transfer, and investor consulting through local investors, banks and venture capital providers. WTPs also offer networking and consulting opportunities which help the target groups in investigating and assessing the commercial and market opportunities and arranging licensing deals, technology transfer, and other kind of support.

c. **Proximity:** The Proximity of a WTP refers to its geographical proximity to trainees or organizations and infrastructure prompting trade and commerce. They include but are not limited to industries, R&D organizations, government agencies, universities, target areas, railway, etc. This can help them to get easy access and connectivity with rest of the country for trade and other operations. In addition to geographical proximity, trainees get technological and organizational proximity as well. This helps them to connect with a major industrial area as well as to best science laboratories in the country. They also take advantage of being near to major markets and trading opportunities.

d. **Infrastructure:** The infrastructure development of the WTP is the most important component of its growth and development; and can be divided into physical, social, technical, marketing and communication infrastructure. Availability of space and land to accommodate the expected needs of technologies and machineries and the storage of raw and finished products are the foremost requirements. Social facilities like medical center, emergency response center, trainaing and sale counters etc. can help to uplift parks' brand value. In terms of communication infrastructure, a WTP should be able to provide intra-park, domestic and international data and information connectivity etc.

e. **Networking:** Through networking, WTPs built through collaboration and shared resources, understandably require strong networking roots. Networking initiatives are in the forms of making arrangements to ensure linkages between different enterprises and WTP that include but are not limited to the linkages between different WTP spokes, as it provides forward and backward linkages of a value chain and access to national/foreign investments and markets. By possessing advanced technology and having access to global networks, WTPs act as 'knowledge brokers' who facilitate knowledge flows. Hence, their impact is not limited to their own enterprises and target groups. They can also affect the technological base of high-tech industries in their region and generate positive technology spillovers to other local firms in the same sector and region.

In addition, WTPs may help them in industry-research liaison, executing market assessment and exploitation of research results, and assists with R&D proposal preparation, submission and project management. The unit may also get help in measurement and testing of quality control. Such WTPs can also help enterprises and trainees to connect with the intellectual and technology base in the host university. Added to this the WTP can also have a progressive approach in dealing with emerging technology companies through continuous training and supportive workshops for national and international operators and agencies. It can also provide higher education courses, specialist studies, shadowing and consultancy on technology transfer themes and projects.

9.2.3. Sustainability of WTP

The sustainability of WTPs is vital for making women self-reliant and starting entrepreneurship. After combining the recommendations and suggestions from experts and data, the following points can be considered for establishing a self-sustainable WTP.

The direct top-down approach and indirect bottom-up approach are two ends of the spectrum in the role of government in developing a sustainable livelihood generation ecosystem. Taking a hybrid approach, the study developed the concept of the ecosystem enricher which fertilises the interactions and linkages of multiple stakeholders in ecosystems. In the top-down approach, the funding agencies act more like a planner and directly involves itself in the process, while in the bottom-up approach, the government restricts its role as more of a facilitator and promotes livelihood generation mechanism through incentivising backward and forward linkages.

9.2.3.1 Elements of Sustainability

It has been observed that the WTP programme is techno-centric at the macro level and livelihood-centric at the micro level. The observations of the study mentioned above and suggestions can be categorised to conceptualise certain elements of sustainability. The conceptual analysis along the lines laid above-identified four distinct elements that can help achieve sustainability. These elements are woven around the routine mentoring and regular evaluation with short-term, mid-term and long-term objectives.

Sustainability refers to the ability of a WTP to gauge its performance against given criteria, which relates to performance appraisal in reference to its objectives, linkages, etc. Based on such appraisal, WTPs need to periodically collect the required performance statistics for marketing and branding. Factors that are related to sustainability of a WTP are illustrated in and discussed as the following.

Evaluating Objectives: Evaluating a WTP against its objectives can give a clear picture of its standings and its progress towards sustainability. Evaluation need to be separately performed on multiple parameters like short-term, mid-term and long-term objectives. Short-term objectives usually revolve around established firms moving to a park, new technologies fostered, turnover, profitability, publications (if any), etc. Mid-term objectives track the movement and implementation of activities envisaged in short-term objectives and establishes and customises the long-term objectives. The Long-term objec-

Fig. 28: Elements of Sustainability

tives, on the other hand, consider on-park employment quantity and quality, increase in region's balance of trade, change in relative unemployment level, etc. The first metric is growth of WTPs. They may fill a pre-set questionnaire annually, and growth is measured by employment, company turnover, and expansion within the WTP. To measure innovation, WTPs may be asked how they are developing their links with education, skillset training, and so on. They may be asked about their licensing activity, new products and services, and about sources of investment (whether friends and family, venture capital, etc.), which indicate how successful they are in bringing new money into the local economy. The WTPs may also provide assistance and handhold its subsidiaries, other WTPs in the region and also track the alumni companies to monitor their development.

Evaluating Linkages: Network analysis – in reference to linkages among WTPs, knowledge partners and organisations outside the WTP – is vital for the survivability of a WTP. To evaluate the linkages, methodology, like earning credits system, may be introduced, in which each WTP must earn a minimum number of credits by establishing forward linkages with knowledge organisations, market, etc. The credit system may be designed to promote entrepreneurial activity, inter-sector interaction and partnerships. Thus, WTPs may be given credits for the actions, like number of technologies implemented, consultancy to other WTPs, earning royalties, sponsored students, mentoring students, training on skill development, serving as adjunct faculty, and generating livelihood employment as well as part-time employment. A list of probable linkages has been placed at Annexure VIII.

Evaluating Dependencies: Evaluating dependencies refer to minimising risk of failures for a WTP. The dependencies range from selection of predominant livelihood technology to backward linkages and available resources. The criteria for evaluating dependencies may be like: Why had a specific technology been selected? What is entrepreneurial about it, that is, how are you going to leverage your resources to get this done? What kind of partnership is included that will expand the asset base? This has shown substantial hard and soft business impacts, e.g. minimal business failure accelerated business growth, increased collaboration, increased new product and service development and new jobs created.

Marketing and Analytics: A sustainable brand image of a WTP depends upon publically available periodicals on its performance reviews, and information publicity through local newspapers. There may be an indexing methodology developed based on indicators that measure the socioeconomic strength and highlight challenges, and provides an analytical foundation for leadership and informed decision making.

These elements of sustainability need to be included in WTP proposal to be planned for execution within three years. Successful WTPs may be supported with an extension of another two years for establishing a sustainable WTP model.

The five models in existence selected as model WTPs as the output of the study showed that the CSR, Spoke & Hub Model, Business Model, etc. Details of these existing models are available at Annexure IX.

9.3 Conclusion

Model WTPs framework proposed in the study report should be the guiding principle for a setting up a sustainable WTP to function. As WTPs can be envisaged as one point delivery platform for technology transfer, and capacity building for livelihood generation, they are playing an instrumental role in engaging more rural women through S&T interventions extending livelihood support and creating new opportunities for consolidating their position in building an inclusive society. The study brings out several best practices fulfilled by various WTPs in having business plan, develop its subsidiary units in different districts, fulfilling the expectations of local units. WTPs can address critical gap areas like natural resource management, health & hygiene, food & nutrition, drudgery reduction by creating awareness, providing training and demonstration of technologies and education. WTPs can play a vital role in addressing the weak links in the livelihood generation for women and strengthen the strong links by promoting social entrepreneurship and the process of women empowerment. WTPs have been pivotal to generate livelihood for rural women thus leading to equity and empowerment.

Hub and spoke model of WTPs are identified as the standard and resilient focal point for technology demonstration, delivery and capacity building. At the same time, delivering on generating sustainable livelihood models and enterprise developments should be the key ingredients of measuring the success of a WTP. One of the strongest pillar of the WTPs is that they primarily focused on utilising indigenous raw materials and waste materials to produce marketable products, promoting economic independence and generating income opportunities for the trainees. Integrating technologies with traditional knowledge through various associated technologies have depicted increased acceptance. Self-sustainability of some of the parks was possible because WTPs also worked as empowerment agency or nodal point by working on various aspects of women empowerment. The cost benefit analysis of the technologies needs to be assisted by experts from the requisite fields to upgrade them to sustenance. Building these parks around the proposed model and framework would help them get accreditation. This could as well lead to integration with programmes from different ministries and industry associates. A network of experts, custodians and stakeholders of WTPs, administrators at funding agency and all other stakeholders need to be channelized which may be done through upgrading the already available dedicated website to be dynamic.

India is celebrating Azadi ka Amrit Mahotsav and going into the Amrit Kaal for next 25 years. As the nation will be celebrating the 100 years of independence in 2047, WTPs – nurtured by incorporating S&T components – should be envisaged and nurtured as a resilient focal point imparting education, empowerment and delegating economic independence to women. And as a way forward, the successful WTPs need to be integrated with services and welfare departments and ministries of centre and state levels to become robust, full-fledged, independent, income generators and self-sustainable.

Annexure I

WTPs Across the Country

The Women Technology Parks supported by Department of Science and Technology accross the country has been enlisted below in the tabular form:

Sr. No.	Details of WTP	Location	District	State
Completed (During the study period)				
1	Rural Women Technology Park in Kovvada Village (Bhimavaram Block) West Godavari District, Andhra Pradesh	Shri Vishnu Engineering College for Women, Department of Mechanical Engineering, Vishnupur, Kovvada Village, Bhimavaram, Andhra Pradesh	West Godavari	Andhra Pradesh
2	Development & Extension of Technologies to Improve Livelihood of Small Farm Holders at Alamanda, North Costal of Andhra Pradesh	Gitam University, Gandhinagar, Rushikonda, Vishakhapatnam, Andhra Pradesh	Vishakhapatnam	Andhra Pradesh

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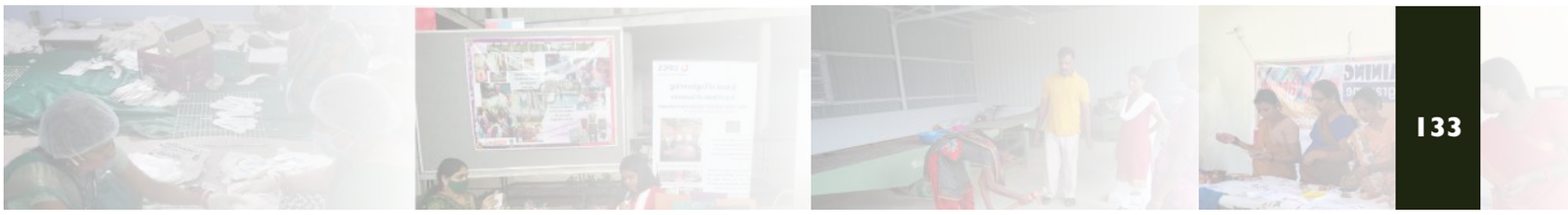


Sr. No.	Details of WTP	Location	District	State
3	Rural Women Technology Park, Chittoor District, Andhra Pradesh	Institute of Pharmaceutical Technology, Sri Padmavati Mahila Visvavidyalayam, Tirupati, Andhra Pradesh	Chittoor	Andhra Pradesh
4	Women's Technology Park at Sonoabori Village, Bhurbandha Block, Morigaon district, Assam	Resources Centre for Sustainable Development, Guwahati #20, Bye Lane-12 (West), Rajgarh Road, Guwahati, Assam	Morigaon	Assam
5	Technological Empowerment of Women on Energy from Rural Biomass	Punjab State Council for Science and Technology, MGSIPA Complex, Sector-26, Chandigarh	Chandigarh	Chandigarh
6	Technological interventions in clean meat, milk, fish production and socio-economic empowerment of rural women through trainings on value added livestock products	Division Of Livestock Products Technology SKUAST, R. S. Pura, Jammu & Kashmir	Jammu	Jammu & Kashmir
7	Rural Women Technology Parks for Dissemination of Technology at Raidhi Block of Gumla District Jharkhand	Department of Women's Section, Society for Rural Industrialization, Bariatu, Ranchi, Jharkhand	Gumla	Jharkhand
8	Women's Technology Park in Karnataka, Technology Informatics Design Endeavour (TIDE), Bangalore	Technology Informatics Design Endeavour (TIDE) No.19, 9th Cross, 6th Main Malleswaram, Bangalore	Bangalore	Karnataka

Sr. No.	Details of WTP	Location	District	State
9	Enhanced Livelihoods of Women in Selected villages of Karnataka through Green Technologies	Foundation for Revitalization of Local Health Traditions (FRLHT), Institute of Ayurveda & Integrative Medicine (IAIM), 74/2, Jarakabande Kaval, Post Attur, Via Yelakhanka, Bangalore	Bangalore	Karnataka
10	Rural Women Technology Park for the Holistic Empowerment of Women in Rural and Semi Urban Areas of Kanjirapally, Ranny and Pathanamthitta Taluks of Kerala through Agro - Allied Micro and Small Enterprise Development	Integrated Community Health & Development Peermade Development Society, PB No.11, Peermade, Idukki District, Kerala	Idukki	Kerala
11	Standardized Value-added Jackfruit Products for supplementary Income for women	Santhigram Chappath, Kazhuvur, P.O, Pulluvilla, Thriunvanthapuram, Kerela	Thiruvananthapuram	Kerala
12	Establishment of Rural Women Technology Park in ten villages of Parappa block, Kasaragod District, Kerala	Malabar Social Service Society Sreepuram, Pallikunnu, P.O. Kannur Kerela	Kasaragod	Kerala
13	Women Technology Park, Wardha District, Maharashtra	Magan Sangrahalaya Samiti Kumarappa Marg, Wardha, Maharashtra	Wardha	Maharashtra
14	Rural Women Technology Park in Patan Block of District in Maharashtra	Shramjivi Janata Sahayyak Mandal 127/1-A, Mangalawar Peth, Satara	Satara	Maharashtra

Contd...

Sr. No.	Details of WTP	Location	District	State
15	Tribal Women Technology Park, Senapati District, Manipur	Krishi Vigyan Kendra (KVK) Sylvan, P.O. Kangpokpi, B.P.O.- Hengbung, Senapati District, Manipur	Senapati	Manipur
16	Establishment of Rural Women Technology Park, for Women Empowerment through Technological approaches at Chikiti Block, Ganjam, Odisha	Technology Business Incubator (TBI), Campus 11, KIIT University, Bhubaneswar, Odisha	Ganjam	Odisha
17	Rural Women Technology Park at Village Digod Block Sultanpur in Kota District of Rajasthan	Society for Environment & Development, Gramin Vigyan Kendra (GVK), Village-Digod, District-Kota, Rajasthan	Kota	Rajasthan
18	Rural Women Technology Park on Vidhani Village (Sanhaner Block, Jaipur District, Rajasthan	Department of Biotechnology, JECRC University Ramchandrapura, Sitapura Industrial Area Extn Near Mahatma Gandhi Hospital, Vidhani Village, Jaipur, Rajasthan	Jaipur	Rajasthan
19	Women Technology Park	Banasthali Vidyapith, P.O. Banasthali Vidyapith, Rajasthan	Banasthali	Rajasthan
20	Rural Women Technology Park, Pollachi, Coimbatore Dt., Tamil Nadu	Dr Mahalingam College of Engineering and Technology, Udumalai Road, Pollachi	Coimbatore	Tamil Nadu
21	Rural Women Technology Park (Sirucvani Area - Thondamuthur Block - Coimbatore – Tamil Nadu	School of Engineering, Amrita Vishwa Vidyapeetham, Amrita Nagar, Coimbatore, Tamil Nadu	Coimbatore	Tamil Nadu

Sr. No.	Details of WTP	Location	District	State
22	Rural Women Technology Park, Annur Taluk, Coimbatore District, Tamil Nadu	PSGR Krishnammal College for Women, Peelamedu, Coimbatore, Tamil Nadu	Coimbatore	Tamil Nadu
23	Rural Women Technology Park for Coimbatore District, Tamil Nadu	Department of Biotechnology, PSG College of Technology, Coimbatore	Coimbatore	Tamil Nadu
24	Centre for Enhancement of Livelihood and Enterprise Models for Rural Women (Celem) in Shoolagiri Taluk, Krishnagiri District, Tamil Nadu State	Er.Perumal Manimekalai College of Engineering,, 17th Km Hosur-Krishnagiri Highways, Koneripalli, Hosur, Krishnagiri District, Tamil Nadu	Hosur	Tamil Nadu
25	Rural Woman Technology Park in Salem, Tamil Nadu	Department of Computer Science and Engineering Computer Science and Engineering, Sona College of Technology, Salem	Salem	Tamil Nadu
26	Rural Women Technology Park at Vishnupur Village, Narsapur Mandal, Medak District, Telangana.	Freshman/Basic Sciences & Humanities Vishnupur, Narsapur, Medak, Telangana	Medak	Telangana
27	Rural Women Technology Park -Kacharam	Vardhaman Engineering College (Vardhaman Educational Society) Kacharam, Shamshabad, Hyderabad, Andhra Pradesh	Kacharam	Telangana
28	Rural Women Technology Park in Hasanparthy Mandal of Warangal District of Telangana Region, Andhra Pradesh	Department of Mechanical Engineering, Sr Engineering College, Ananthasagar, Hasanparthy Warangal, Andhra Pradesh	Warangal	Telangana

Contd...

Sr. No.	Details of WTPP	Location	District	State
29	Establishment of Rural Women Technology Park under scheme of Dept. of Science & Technology science for equity empowerment and development division, at Vill.: Baghera block Karchhana Dist. Allahabad, UP	Bhartiya Mahila Gramodyog Sansthan, Allahabad, Uttar Pradesh	Allahabad	Uttar Pradesh
30	Setting up of Rural Women Technology Park at Banasani, Varanasi (Target Block - Baragaon, Pindra & Haruha in District Varanasi, Uttar Pradesh)	Bansani, Varanasi (Target Block - Baragaon, Pindra & Haruha in District Varanasi, Uttar Pradesh)	Varanasi	Uttar Pradesh
31	Rural women technology park at KVK -II, Sitapur (U.P)	KVK-II Village - Katia Post-Ulra, Block - Biswan , Sitapur, Uttar Pradesh	Sitapur	Uttar Pradesh
32	Rural Women Technology Park of University of Petroleum and Energy Studies at Dehradun, Uttarakhand	Computer Science & Engg. Department, Centre for Information Technology, University of Petroleum and Energy Studies, Dehradun	Dehradun	Uttarakhand
33	Establishment of a Model Resource Centre for Aquaculture at Women Technology Park, Sagar, South 24 Parganas	Vivekananda Institute of Biotechnology, Sri Ramakrishna Ashram Nimpith, P.O. Nimpith Ashram, Dist. S.24, Parganas West Bengal	Parganas	West Bengal
Ongoing (During the study period)				
1	Integrate Livelihood Technologies as Women Technology Park for Tribal Women in Paderu, Visakhapatnam district, Andhra Pradesh	Department of Home Science, St. Joseph's College, Gnanapuram	Visakhapatnam	Andhra Pradesh

Sr. No.	Details of WTP	Location	District	State
2	Design & Development of Solar Photovoltaic Powered Cane Slicing Machine	National Institute of Technology, Silchar, Assam	Karimganj	Assam
3	Establishment of Rural Women Technology Park in CSIR-North East Institute of Science and Technology, Jorhat, Assam	CSIR-North East Institute of Science & Technology, Jorhat, Assam	Jorhat	Assam
4	Livelihood Generation &Improvement for Women Entrepreneurs in Small Scale Fruits & Vegetable Farming & Post-Harvesting Management	Indian Institute of Technology, Himachal Pradesh	Mandi	Himachal Pradesh
5	Women Technology Park (WTP) for Capacity Building & Entrepreneurship Development	CSIR-National Metallurgical Laboratory, Burmamines, Jamshedpur	Ranchi	Jharkhand
6	To Establish Women Technology Park for Demonstrative Model of Technologies for Livelihood Enhancement of Tribal Women in Narharpur Block, Kanker (C.G)	Madhya Pradesh Vigyan Sabha Gyanvigyanparisar, Sagoni Kalan, Raisen Road, Bhopal, Madhya Pradesh	Kanker	Madhya Pradesh
7	Bolmoram Technology Resource Centre Cum Knowledge and Innovation Park	State Council of Science, Technology & Environment, Meghalaya, Nongrim Hills, Shillong	Shillong	Meghalaya
8	Enhancement of Livelihood Options for Rural Women in Aizawl, Mizoram	Mizoram Science, Technology & Innovation Council, Aizawl, Mizoram	Aizawl	Mizoram

Contd...

Sr. No.	Details of WTP	Location	District	State
9	Women Technology Park (WTP) for Rural Tribal Women of North-East through Technological Intervention	State College of Teacher Education, Kohima, Nagaland	Kohima	Nagaland
10	Development of Women Technology Park for Empowerment of Rural Women in selected Villages of Fatehgarh Sahib, Punjab using Eco-Friendly Innovation	Desh Bhagat University, State Highway, 12A, Amloh Road, District Fatehgarh Sahib, Mandi Gobindgarh, Fatehgarh Sahib, Punjab	Fatehgarh Sahib	Punjab
11	Empowerment of Rural Women through Science based Skill Development	Pushpa Gujral Science City Jalandhar- Kapurthala Road, Kapurthala, Punjab	Kapurthala	Punjab
12	Empowering Rural women Through various Technology based Livelihood Opportunities under women Technology park	Tripura State Council for Science & Technology, Vigyan Bhawan, 1st Floor, Pandit Nehru Complex Gorkhabasti, Kunjaban Agartala, Tripura	Agartala	Tripura
13	Development of Low-Cost Polythene substituted Biodegradable Fabric from Nettle & Lyocell Fiber for Livelihood Enhancement of Women	Unnati Mahila Udhamita Avam Prashikshan Samiti, Dehradun, Uttarakhand	Dehradun	Uttarakhand

Annexure II

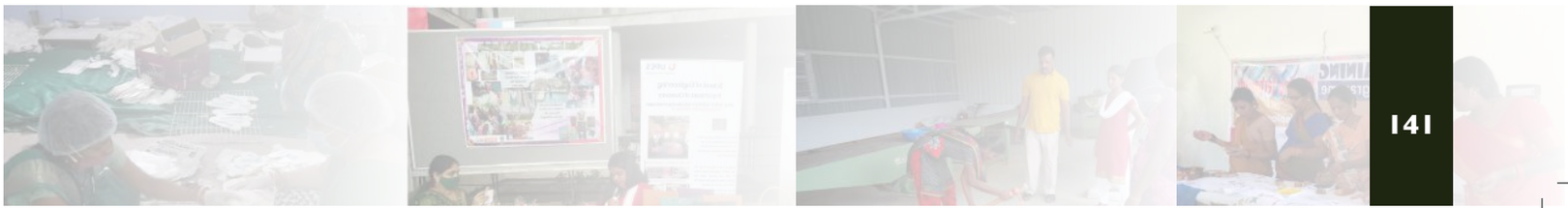
Standard Operating Procedures (SOP)

Preamble

India is a growing economy with an increasing say of Science and Technology (S&T) in almost all fields and walks of life. The S&T intervention has brought significant changes in the lives and livelihood of people for good. It has also empowered women as never before.

The challenges faced by women range from social to cultural, from economic to political, etc. The numerous challenges that rural and peri-urban women have to face in their day-to-day lives are a bit different from those encountered by women in metropolitans and big cities. The myriad challenges faced by rural women are managing the household chores to struggling for their daily bread.

Against this backdrop, women's empowerment is the need of the hour and no community or country can afford to take it for granted. A noble step in this direction is the establishment of Women Technology Parks (WTPs) across the nation that act as centres for empowering rural women by training them on the use of appropriate technologies that uses locally available raw materials for the production of indigenous products. The WTPs have emerged as potent centers for the livelihood generation of rural women thus bringing them to the fold of the economy from the fringes.



WTPs help create an enabling environment so that the S&T interventions can be extended for micro-enterprise development by women and enhance their income. These parks strive to provide a competitive market for the indigenous products manufactured by women and thus are a real boost to the 'VocalforLocal'. Capacity building, value-addition of products, and technology up-gradation lie at the core of making these parks sustainable.

Objectives of Women Technology Parks

- To develop area-specific technologies and make rural women adapt them for livelihood generation, transfer of proven technologies and live demonstration of technology models
- To address the weak links that hamper the livelihood generation for the rural women in an area and promote supplementary income generation among women
- To generate employment opportunities for women through their skill development and capacity building
- To utilise the resources found locally and empowerment of rural women through S&T
- To address issues related to health & nutrition, drudgery reduction and addressing the occupational hazards faced by women in a particular area

Scope

Women Technology Parks (WTPs) are established for the development and adaptation of innovative bouquet of technologies, transfer of proven technologies and demonstration of live technology models to address the weakest link and/or strongest link of the livelihood system of women, resulting in significant improvement in quality of life and income generation. The mandate of WTPs are to innovate in sectors like health & hygiene, food & nutrition, and sanitation technologies for different stages of women's life; strive for skill enhancement and capacity building of women using science & technology, preferably as per National Occupational Standards (NOS) for various sectors using area-specific resources; provide hands-on training, promote the establishment of micro-enterprises, and ensure value-addition of the products and access to markets. The nuclei of the focus areas of WTPs are to attain local self-reliance of women for economic re-growth in rural and peri-urban areas and aspirational districts with sizable populations.

The scope of WTPs can be drawn in critical functional areas such as technology improvisation, promotion & demonstration, capacity development and skill enhancement, income & livelihood enhancement, building institutional and market linkages, and overall enhancement of quality of life.

Principle

An ideal WTP has the potential to train rural women in technologies that optimally use at least one of the local resources and bring forth value-added products that are a source of income and livelihood generation for them. Facilitating women to be self-reliant by providing all possible support from financial institutions, banks, non-banking finance corporations (NBFCs), and government agencies and strengthening market linkages are integral to model WTP. These agencies are intended to act as connections between Knowledge Organizations (KOs) and field-level community-based organisations and agencies. It must act as a resilience focal point, increasing community resilience through S&T components. Further, it should be developed as a park that demonstrates and incubates need-based technologies and strives for sustainability.

Following are the essential roles that a WTP needs to perform:

- Knowledge Resource Point: Nodal point for knowledge transfer to rural women, making them use the technologies, capacity building and help them to become self-reliant
- Establishing linkages: Empowering rural women by connecting them with appropriate technology delivery platforms. Facilitating the trained women with financial support and market linkages for developing micro-enterprises. Strengthening the rural women, S&T enable training that enhances prospects of livelihood generation
- Capacity Development and Skill enhancement point: Providing training to women on the use of appropriate technologies, product development and capacity building

Pre-requisites

Following are the pre-requisites an organisation applying for establishing a WTP must fulfill:

Organisations that can apply

1. Academic, R&D Institutions, Central and State Government organisations with a proven track record in executing S&T-based projects
2. Private Universities/Colleges/Autonomous Institutes recognised by at least one government institute for having experience in executing S&T projects
3. Community Based Organisations/Potential Voluntary Organisations (NGOs) with experience and have successfully implemented projects with support from S&T Departments/other credible funding agencies

4. Community Based Organisations (Voluntary organisations & NGOs) should have mandatory tie-up with S&T Institutions for technology transfer
5. A scientific expert needs to be engaged with the organisation who can look for the S&T aspects of the implementable technological interventions

Applying against a Call for Proposal

1. Evidence of conducting a baseline survey to study the socio-cultural and economic backdrop of the area. The problem addressed should precipitate from the baseline survey.
2. Frame objectives of a WTP in alignment with the objectives laid by the respective funding agencies, which fulfill natural resource management, skill development, promotion of livelihood generation and dissemination of appropriate and need-based technologies.
3. Selection of appropriate technologies: Technical availability, environmental sustainability, economic viability, and other administrative requirements related to a technology need to be considered. At least one of the technologies should use the local natural resources of the target region.
4. Methodology to be adopted for establishing WTP covering detailed information about system approaches followed for community mobilisation, involvement of social bodies, technology modulation and diffusion, conducting awareness and training program at the applying organisation.
5. Frame project timeline based on deliverables and measurable impacts considering the regional resource availability, identifying linkages with local governmental or non-governmental bodies to benefit the trainees.
6. Defined project planning in terms of team members, implementation organisation, nature of implementation, capability, links with local bodies, voluntary organisations, S&T, industries or banks etc.
7. Finalise the qualitative and quantitative analysis indicators.
8. Calculate the economic viability of each technology and project as a whole. While calculating and documenting a project's financial viability, the capital cost, running cost, human cost and infrastructural cost, etc., along with the recurring cost for every technology, should be covered.
9. Follow-up action plan for post-project activity through which the trainees acquire support/guidance from WTPs. It assists trainees in getting proper advice and solutions to the problems encountered and retaining the benefits of the training and technology after the project is over.
10. Chalk out the sustainability plan and mechanism sustaining the WTPs by forward and backward linkages

Check-list for a Funding Agency

1. The submitted proposal needs to aim at improving women's livelihood opportunities and focuses on-field demonstration, capacity building and training oriented activities.
2. Selected technology packages need to be primarily based on locally available resources, innovative and cover potential areas of S&T. These validated technologies need to have proven records of livelihood enhancement or drudgery reduction.
3. Technologies – requiring additional R&D aspects and validation – that specifically focus on problems relating to women may be considered. These may be from sectors like health & hygiene, food & nutrition, geriatric issues, etc.
4. The technological interventions and the benefits to the target population may be clearly expressed in terms of quantifiable goals, targets, a list of verifiable progress indicators, etc.
5. Pre-planned marketing linkages (forward linkages) emphasising micro-enterprise development may be mechanised and indicated in submitted proposals.
6. A mechanism must be developed to ensure the project's sustainability after the support from the funding agency gets over.
7. The local physical presence of these types of organisations in a particular region needs to be ensured.

Procedure

On any initiative to work upon, there needs to be a certain way of accomplishing the objective and deliverables. The procedures outlined here are meant to target two types of audiences – one who wants to establish a WTP and the other who wants to support the establishment of a WTP by any means, like financial, technological, etc.

For Funding Agencies

1. Organise regular briefing sessions for new Principal Investigators (PIs) of WTPs to orient/reorient them.
2. Perform continuous follow-up of the functions of ongoing WTPs and visits by PAC members or any other Committees.
3. Evaluate the completed WTPs and their outputs/deliverables as per the guidelines, and document them on measurable indicators. These documents will be the evidence for future WTPs to cite as references.

4. Ensure the completed WTPs submit their best practices and success stories in the form of short videos and texts for new WTPs to follow.
5. Identify the top performers as a WTP and PI for replicating and upscaling the best practices and success stories. Also, recognise them and showcase them at various platforms.
6. Provide handholding to the weak performers on identified parameters.
7. Develop a mechanism to mentor the weak performers and the new WTPs by the successful WTPs.
8. Build a database and establish a mechanism for networking of WTPs.
9. Document the due-diligence report of each technology timely.
10. Ensure that the technology selected adds value to the existing livelihood system of the area and should be able to facilitate the forward and the backward linkages to them.
11. Provision for establishment of Project Management Unit (PMU) to ensure appropriate & timely action on electronic/physical data management, coordinating seamless implementation of the projects, outputs & outcome analysis, project evaluation & monitoring, gainful utilization of Capital assets etc.

For WTPs

1. Need Assessment: An exhaustive and in-depth baseline study is required to gauge the needs at the grassroots level. It also includes identifying issues specific to rural women, understanding the present capacities of the target group, and understanding the socio-economic parameters.
2. Identification/Development of Appropriate Technology: Develop or identify the appropriate technology that not only helps resolve the present issues through the S&T component but also generates employment and income opportunities for rural women.
3. Resource and Community Mobilisation: It includes aligning the community members, here rural women, to make them understand that science and technology (S&T) can help resolve their problems while simultaneously generating income opportunities by value-addition of the local products.
4. Training and Capacity Building: Capacity building is a continuous process having regular training and certification as integral components. It can be aligned with National Skill Qualification Framework of Government of India to enable trained women to enter the mainstream livelihood system. It is done by enhancing their skills would bring about a socio-economic change as it enhances their income and elevates their standard of living.
5. Livelihood Enhancement: The basic idea is that women should be self-reliant and the technology developed/used for livelihood generation should be sustainable.

Financial support is also needed for business development, and WTPs help facilitate financial support from the government and other agencies. Ensuring economic viability is an essential component.

6. Operation of WTPs and Delivery: Ensuring the technical viability of the enterprises, establishing the linkages with markets and other essential linkages, and support to and from the rural women are essential for the successful operation of WTPs. The approach to enterprise development becomes more effective through Group led or community-led training programmes and could bring a significant change in the women through extensive scale participation and seamless adoption of appropriate technologies, thereby making the WTPs an effective platform for technology delivery.
7. Monitoring and Evaluation: Regular monitoring and evaluation helps identify the bottlenecks if any, and thus find ways to get rid of them. Evaluation helps in identifying the parameters or the weak areas that need to be reworked upon.

Sustenance

The sustainability of a WTP depends on several factors. The two most essential parts are the constant engagement of the target audience and the drawing of funds for sustaining different administrative processes.

The following steps need to be incorporated into the procedure to ensure the sustainability of WTPs:

1. The WTPs will refine the procedure of selecting beneficiaries, creating market tie-ups, and promoting SHGs.
2. They need to build strong backward and forward linkages for every technology besides aligning some technologies with their respective NSQF levels. This should start from the second year onwards.
3. The safety of the products manufactured under the aegis of the WTPs must be verified through a standardisation procedure like FSSAI certification. The product should, however, be registered with the FSSAI with the appropriate brand name and the name of the implementing organisation rather than that of DST.
4. The WTPs need to establish linkages with banks to provide financial support to the women and buy back arrangements and marketing linkages.
5. A collaboration between government and field agencies is essential for the success of the WTPs. For better marketing, associations such as those between GEM and E-Mahila Haat are suggested. An expedition to various centres of NIRD and NABARD can provide knowledge on funding and support for the enterprises and help establish linkages with different organisations such as the Department of Rural Development and Panchayats, Punjab Agriculture University, KVKs, etc.

Quality Control

Quality control is essential for highlighting a WTP's potential for creating a bigger picture.

1. ISO Certification: The WTP can strive for ISO certification for any novel activity, method, technology or technique supported under its umbrella. There are various ISO certifications available for each one of them.
2. Standardisation and Validation: After developing any products, they need to be standardised and validated by following specific guidelines by respective quality control and assurance agencies.
3. Certification of Products: After standardisation of the respective products, the certification to be obtained after fulfilling all the pre-requisites from respective QC agencies, like FSSAI.

Annexure III

WTPs Considered for Impact Assessment

S. No	Title	Year of Implementation	Status*
1	Rural Women Technology Park in Cherlopalli Village, Andhra Pradesh	2017	Completed
2	Integrate Livelihood Technologies as Women Technology Park for Tribal Women in Paderu, Visakhapatnam District, Andhra Pradesh	2019	Ongoing
3	Women's Technology Park at Sonoabori Village, Bhurbanda Block, Morigaon District, Assam	2015	Completed
4	Establishment of Rural Women Technology Park in CSIR - North East Institute of Science & Technology, Jorhat, Assam	2018	Completed
5	Bolmoram Technology Resource Centre Cum Knowledge and Innovation Park, East Garo Hills, Meghalaya	2018	Completed
6	Empowering Rural Women Through Various Technology Based Livelihood Opportunities Under Women Technology Park	2019	Ongoing

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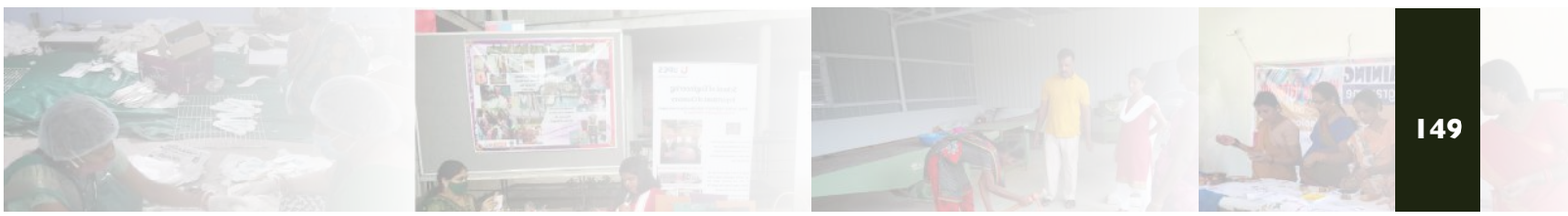


S. No	Title	Year of Implementation	Status
7	Development of Women Technology Park for Empowerment of Rural Women in Selected Villages of Fatehgarh Sahib, Punjab Using Eco-Friendly Innovation	2019	Completed
8	Empowerment of Women in Rural Areas Through Science Based Skill Development	2019	Ongoing
9	Technological Interventions in Clean Meat, Milk, Fish Production and Socio-Economic Empowerment of Rural Women Through Training on Value Added Livestock Products	2016	Completed
10	Women Technology Park in Tumkur District, Karnataka	2010	Completed
11	Enhanced Livelihood of Women in Selected Villages of Karnataka Through Green Technologies	2015	Completed
12	Standardized Value - Added Jack Fruit Products for Supplements Income for Women Through Jack Park	2015	Completed
13	Rural Women Technology Park for the Holistic Empowerment of Women in Rural and Semi Urban Areas of Idukki, Kottayam And Pathanamthitta Districts of Kerala Through Agro- Allied Micro and Small Enterprise Development	2015	Completed
14	Rural Women Technology Park in Ten Village of Parappa Block of Kasaragod District, Kerala State	2018	Completed
15	Women Technology Park, Wardhan District, Maharashtra	2015	Completed
16	Establishment of Rural Women Technology Park, for Women Empowerment Through Technological Approaches	2016	Completed
17	Rural Women Technology Park on Vidhani Village (Sanganer Block, Jaipur District, Rajasthan)	2015	Completed
18	Rural Women Technology Park, Pollachi	2015	Completed
19	Rural Women Technology Park (Coimbatore District Tamil Nadu)	2016	Completed

S. No	Title	Year of Implementation	Status
20	Centre For Enhancement of Livelihood and Enterprise Models for Rural Women (Celem) in Sahoolagiri Taluk	2017	Completed
21	Rural Women Technology Park, Annur Taluk, Coimbatore District, Tamil Nadu	2015	Completed
22	Rural Women Technology Park in Salem (Kandarkulamanickem Panchayat), Tamil Nadu	2017	Completed
23	Rural Women Technology Park at Kacharam Village, Shamshabad Block, Rangareddy District, Telangana State	2016	Completed
24	Rural Women Technology Park at Vishnupur Village, Narsapur Mandal, Medak District, Telangana	2016	Completed
25	Rural Women Technology Park in Hasanparthy Mandal of Warangal District of Telangana Region, Andhra Pradesh	2015	Completed
26	Setting Up of Rural Women Technology Park at Bansani, Varanasi (Target Block - Baragaon, Pindra & Haruha In District Varanasi, Uttar Pradesh)	2018	Completed
27	Establishment of Rural Women Technology Park in Baghera Village, Karchhana Block, Allahabad District, Up	2018	Completed
28	Establishment of The Rural Women Technology Park in KVK -II Sitapur (U.P)	2018	Completed
29	Rural Women Technology Park of University of Petroleum and Energy Studies at Dehradun, Uttarakhand	2015	Completed
30	Establishment of A Model Resource Centre For Aquaculture at Women Technology Park, Sagar, South 24 Parganas	2017	Completed

*** Status during the study period**

Annexure IV

List of WTPs Based on Livelihood Generation and Enterprise Development

1 Rural Women Technology Park in Ganjam, Odisha

Technology Implemented

1. Sanitary napkin making unit
2. Agarbatti manufacturing unit
3. Making of Millet noodles
4. Mushroom farming & Food processing unit

Products Produced

1. Sanitary Napkins
2. Millet Noodles
3. Agarbattis

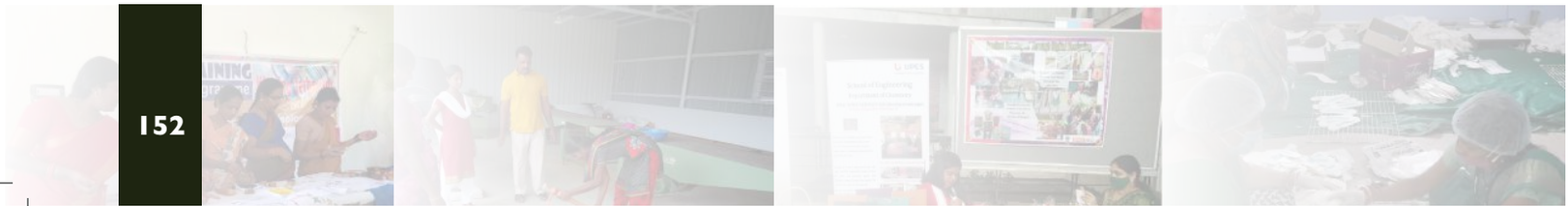
Enterprise Development

1. Sanitary Napkin unit: 7 employees
2. Millet noodle production: 3 employees
3. Mushroom cultivation: 3 employees

Total: 3 Units and 13 Women

Livelihood Generation

1. Created employment opportunities for 25 women
2. Increased income by 30% of associated women through SHGs



Sustainability Model
5 Phase Model

2 Women Technology Park in South 24 Parganas, West Bengal

Technology Implemented
1. Fresh water poly culture
2. Brackish water poly culture
3. Quality seed production through Hatchery & Hapa method
4. Fish feed production
5. Dry fish production through solar dryer facilities
6. Low external input bases aqua farming/integrated fish farming (duck, hen, horiculture)

Products Produced
1. Fish feed
2. Dried fish

Livelihood Generation
1. 1305 women and 87 SHGs benefitted
2. Market linkages with Government agencies by involving SHGs of Sagar block

Sustainability Model
Community Model

3 Rural Women Technology Park in Deoli village, Jammu & Kashmir

Technology Implemented
1. Value added Milk Products: Paneer, Kaladhi Mozzarella Cheese, Khoa based sweets, Chhana based sweets, Milk beverages
2. Value added Meat Products: pickle, nuggets, patties, snacks and balls

Products Produced
1. Kaladhi
2. Mozzarella Cheese
3. Milk beverages
4. Value added Meat and fish pickle, nuggets, patties, snacks and balls

Enterprise Development
73 Food Cart with Municipal Identification Number and FSSAI Number

Livelihood Generation

1. Fish Processing Entrepreneurs -24
2. Poultry Processing Entrepreneur -20
3. Khoa Processing Entrepreneurs -15
4. Kaladi Processing Entrepreneur (Kaladi Kulcha) -6
5. Vermicompost Entrepreneur -8

Total: 73 women entrepreneurs

4 Rural Women Technology Park of University of Petroleum and Energy Studies at Dehradun, Uttarakhand

Technology Implemented

1. Recycling of waste paper
2. Identification and Cultivation of Medicinal and Aromatic Plant Species
3. Information and Communication Technology assisted art and craft design

Products Produced

1. Waste Paper
2. Pencils
3. ICT craft products
4. Green Tea - Tulsi, Chamomile, etc

Enterprise Development

Registered a Cooperative Society

Livelihood Generation

Registered a Cooperative Society

Sustainability Model

Enterprise Model

5 Rural Women Technology Park at Bansani, Varanasi, Uttar Pradesh

Technology Implemented

1. Skill enhancement training on food processing & preservation
2. Digital art making Craft designing using CAD
3. Retail management and accounting
4. Health awareness and workshops

Products Produced
1. CAD software for textile
2. Food processing products

Livelihood Generation
Skill development of 1000 women

6 Rural Women Technology Park at KVK -II, Sitapur, Uttar Pradesh

Technology Implemented
1. Drudgery & occupational hazards reduction through improved farm tools and implements
2. Utilization of farm waste/ by-products for production of fuel through portable charring kiln & briquetting machine
3. Agriculture based enterprise development Azolla cultivation and Makhana processing, ornamental fish culture and backyard poultary

Products Produced
1. FSSAI certified Makhana product
2. Charcoal Briquettes
3. Cattle feeds

Enterprise Development
1. Namkeen grah Udyog
2. Masal Grah Udyog

Livelihood Generation
Marketing agreement between Nextgen Farmkart producer company and SHG for marketing of Namkeen and Makhana

7 Women's Technology Park at Sonoabori Village, Morigaon, Assam

Technology Implemented
1. Energy saving devices like solar crop drier
2. Improved cook stove
3. Agro food processing
4. Value addition process of local agriculture and horticultural products
5. Water quality management

6. Biosand filter production; enabling local Capacity for maintaining and repairing photovoltaic (PV) systems

Products Produced

1. Solar Crop Drier
2. Bio-sand Filter
3. Improved cook stoves

Enterprise Development

28 women led SHG enterprises covered 262 smokeless cook stoves, 150 Biosand filters and 7 domestic level food processing units.

Livelihood Generation

Establish as small scale agro processing enterprise processing local food crops and gain meaningful employment. Maintaining and repairing photovoltaic (PV) systems lead to continued and sustained operation in the identified remote village.

8 Bolmoram Technology Resource Centre Cum Knowledge and Innovation Park

Technology Implemented

1. Bamboo furniture and agarbatti sticks
2. Solar incubator for low-cost hatchery
3. Intergrated farming
4. Green building

Products Produced

1. Bamboo furniture 2. Agarbatti sticks
2. Solar incubator for low-cost hatchery

Livelihood Generation

275 women trained act as spoke

Sustainability Model

Hub and spoke model

9 Rural Women Technology Park, Chittoor District, Andhra Pradesh

Technology Implemented

1. Tulasi Based Products: Tulasi roti mix, Tulasi Patti powder, Tulasi Fryums, Tulasi Toffees With Ginger (Zero Calorie toffee), Tulasi Toffees With Cloves (Zero Calorie toffee)

2. Tender Mango Based Products: Tender mango spicy mix, Tender mango roti mix, Tender Mango Leaves & Ginger (Zero Calorie toffee)
3. Tulasi And Tender Mango Based Products: Tulasi, Tender Mango Leaves & Ginger (Zero Calorie toffee)
4. Cosmetics: Tender mango face pack, Tulasi herbal bath powder, Tulasi face pack, Hair growth promoter (Hibiscus Leaves and other ingredients), Virgin coconut oil (Cold Compressed method)
5. Home Fragrances: Tulasi Air freshener spray, Tender mango air freshener gel, Tulasi air freshener gel
6. Dehydrated Products: Lemon powder (Lemon juice- Ready-mix), Ginger and Garlic Powder (Instant spices), Tomato Powder (Instant ready mix of tomato ketchup, Sauce and gravy), Amla Powder (used as Morning Freshener), Beetroot Powder (Used for Milkshake), Sapota Powder (Used for Milkshake), Wheatgrass powder (Used as Value-added products)

Products Produced

19 herbal products using tulasi and tender mango leaves, 10 dehydrated food products using fruits and vegetables and virgin coconut oil and got FSSAI license with brand name of SPURThE

Enterprise Development

Own small scale enterprises in rural areas with a brand name of SPURThE

Livelihood Generation

Created Women Entrepreneurs from Rural and Peri urban areas, through the manufacture and market of the Innovative Herbal products in the Indian market

10 Women's Technology Park at Technology Informatics Design Endeavour (TIDE), Bangalore

Technology implemented

1. Eco-friendly plates
2. Green bricks and firing in LCBK
3. Minor miller value addition
4. Oyster mushroom cultivaiton and value addition
5. Organic farming & sustainable agriculture
6. Pressed flower techique
7. Paper bag making

Products Produced

1. Eco-friendly plates
2. Green bricks

3. Oyster mushroom products
4. Paper bag

Enterprise Development
WTP as enterprise

Livelihood Generation
83 women trainees, employed in WTP

Sustainability Model
Enterprise Model

11 Rural Women Technology Park in Kanjirapally, Ranny and Pathanamthitta taluks of Kerala

Technology Implemented
1. Nursery Techniques and Seed Production
2. White pepper production
3. Vetiver (Vetiveria zizanioides) cultivation and production of value-added products-
4. Cassava – Value added products 5. Passion fruit - Value added products

Products Produced
23 products

Enterprise Development
1. Vetiver- 17 units (no. of women employed-195)
2. White pepper-3 units (no. of women employed-10), 3. Passion fruit -7 units (no. of women employed-85) 4. Cassava-6 units (no. of women employed- 63)

Total: 33 enterprises (No. of women employees - 353)

Livelihood Generation
Income generated by each enterprises and established direct linkage with entrepreneurs and R&D institutions with PDS division, shops, exhibition at various government and non-government agenices, etc.

Sustainability Model
Joint Liability Group promotion & Bank Linkage programme

12 Rural Women Technology Park at Santhigram, Chappath, Thiruvananthapuram, Kerala

Technology Implemented
33 Value added products from Jack fruit (jam, jelly, candy, cake, peda, halwa, squash, chips, jeggery and pickle)

Products Produced
Total products produced – 33 (14 products were tested and 7 were standardized)

Enterprise Development
7 Production units

Livelihood Generation
Trainees started 7 production unit

13 Rural Women Technology Park, Annur, Tamil Nadu

Technology Implemented
1. Water Purification
2. Community Nursery
3. Post-Harvest Technology Based Value Added Products
4. Multi Millet Biscuits
5. Banana Fiber Extraction and Value-Added Products
6. Value Added Products (Coir Pot) from Coir Fibre
7. Value Added Products from Arecanut Leaves (Plates)
8. Bio briquettes Production
9. Sanitary napkin Production

Products Produced
1. Multi Millet Biscuits
2. Value Added Products (Coir Pot)
3. Value Added Products from Arecanut Leaves (Plates)
4. Bio briquettes
5. Sanitary Napkin

Enterprise Development
1. Water Purification- 10
2. Community Nursery-20
3. Post-Harvest Technology Based Value Added Products- 12
4. Multi Millet Biscuits-42
5. Banana Fiber Extraction and Value-Added Products-22
6. Value Added Products (Coir Pot) from Coir Fibre-19
7. Value Added Products from Arecanut Leaves (Plates)-37
8. Bio briquettes Production-10

9. Sanitary –Napkin Production-23

Total: 195 women as entrepreneurs

Livelihood Generation
RWTP is functioning as incubator and common facility centre

14 Rural Women Technology Park in Krishnagiri, Tamilnadu

Technology Implemented
1. Neck rest pillow with Memory Foam
2. Granite saw waste transformation into bricks
3. Designer chocolates and customisied gifts through 3D printing
4. Mechanical weeding unit for paddy / ragi fields
5. Micro enterprise for e-waste processing

Products Produced
1. Neck rest pillow
2. Granite saw waste bricks
3. Designer chocolates

Enterprise Development
1. 4 women entrepreneurs for Neck pillow
2. 3 women entrepreneurs for brick making

Livelihood Generation
Marketing and training programmes available

15 Rural Women Technology Park at Vishnupur village, Medak, Telangana

Technology Implemented
1. Cultivation of Dry land Crops and Developing Value Added Products
2. Production of exotic flowers through greenhouse cultivation
3. NTFP (non-timber forest products) based livelihood interventions
4. nterventions in Handlooms and Handicrafts

Products Produced
1. NTFP Products
2. Handlooms and crafts

Livelihood Generation
893 Skilled rural women

Self-Employment in toys/handicrafts, door mats

16 Rural Women Technology Park - Kacharam, Telangana

Technology Implemented
Low volume high value (LVHV) from Quinoa and Chia

Products Produced
Quinoa and Chia products

Livelihood Generation
49 women trained and adopted these technologies

Sustainability Model

17 Rural Women Technology Park in Hasanparthy, Warangal, Telangana

Technology Implemented
1. Weaving and handloom
2. Banana Fiber Extraction
3. Construction and Habitat Technologies
4. Metal Craft Technologies

Products Produced
1. Metal crafts
2. Handloom products
3. Banana fibre

Livelihood Generation
2655 trainees and 13 linkages were estabilshed

18 Women Technology Park, Wardha, Maharashtra

Technology Implemented
1. Products from Waste Wood
2. Craft
3. Organic Farm inputs
4. Vegetable Plant Nursery
5. Organic Vegetable Sale

6. Mobile Workshop,
7. Rural Enterprises

Products Produced

1. Products from Waste Wood-9,
2. Craft-5,
3. Organic Farm inputs-7,
4. Vegetable Plant Nursery-8,
5. Organic Vegetable Sale-3,
6. Rural Enterprises -36

Enterprise Development

Enterprises Established-15

Livelihood Generation

Total 68 women employed

Total Subsidiary Employment Generated-119

Annexure V

Questionnaire Survey for Completed WTPs

FOR COMPLETED WTPs

FOR PRINCIPAL INVESTIGATOR

QUESTIONNAIRE ON WOMEN TECHNOLOGY PARKS (WTPs)

Title: Study of Women Technology Parks (WTPs) in the Country for the integrated development of rural women.

General purpose: Vigyan Prasar is conducting a study on Women Technology Parks in the country. So we would need brief information of your project through this questionnaire.

Please review the questionnaire carefully before you begin. Answer each question as accurately and completely as possible. If the question does not apply to your position, write "Not Applicable".

Some questions also have "OTHER" option to enable you in writing your own answer.

Documents to be uploaded: Approved Proposal and Project Completion Report

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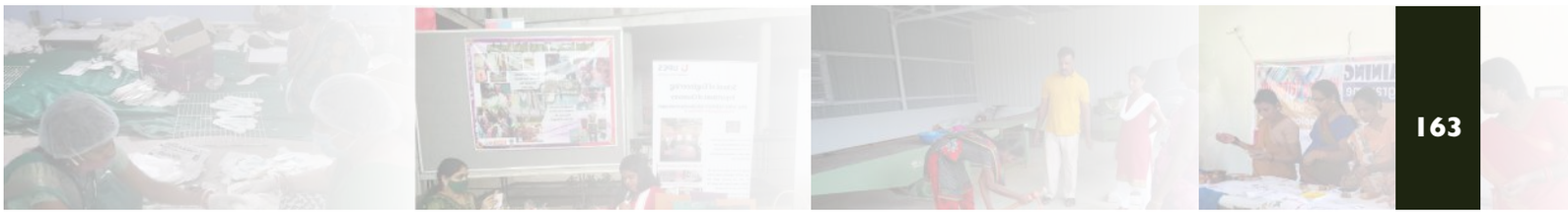


Project Sanction Number: _____

Title of the project: _____

Date of Start: _____

Date of Completion: _____

Location of the WTP: _____

Rural or Urban: _____

Area covered: _____

Name of the Implementing Organization: _____

Name and Address of P.I. and Co P.I.: _____

Current email address: _____

Phone number: _____

PART A: General information

1. What is the status of the WTP set up with the support from DST? If the WTP is still in operation, what is the mechanism of operation? If the WTP is not in operation, then give a detailed account of the reasons for its non-sustainability. (you may upload a doc file)

   _____

2. What is the predominant livelihood of the area?

   _____

3. Who are the knowledge partners/ collaborators?*(Long Answer)

   _____

4. What are the activities undertaken by the WTP.* (Long Answer)

   _____

5. State the deliverables of your project. (Tick wherever applicable and give details in the others section)*

- ☐ Number of Technology Developed
- ☐ Technology Adaptation
- ☐ Product development
- ☐ Product Value Addition
- ☐ Process development
- ☐ Process Adaptation
- ☐ Technology package for development of the project area and local community
- ☐ Technology capability development, training & documentation (e.g. reports, papers, articles, technology manuals, patents)
- ☐ Others

6. State any socio-economic changes brought about through this WTP.(Long Answer)

_____

7. How do you manage the financial support post completion of project with DST? Are you getting financial support from any other institutions or agency?* (Give details)

_____

8. Do you have manpower and skilled staff to work with you? What are the other resources other resources for sustaining it?* (Long Answer)

_____

9. Is your WTP in a position to carry on the production of any kind of products and services, and training, etc.?

_____

10. Is there any follow-up done mechanism developed by WTP?

_____

11. Do you plan to or have presented a paper in any seminar or have published any research paper related to your work at WTP? Give details.

_____

12. Have you applied for any patents? If yes, then give details.

_____

Contd...

13. Suggest measurable indicators to monitor/ assess the effectiveness of the interventions done by the WTP. (Tick as many as applicable)*

- ☐ Increase in Crop production/ Land Productivity/ Land Use Pattern
- ☐ Increase in family income
- ☐ Number of beneficiaries adopting technologies
- ☐ Increase in employment opportunities
- ☐ Improved backward linkages with raw material procurement
- ☐ Improved market linkages with enterprises, retailers or online sell platform or other
- ☐ Number of SHGs/technology user groups/cooperatives
- ☐ Reduction in drudgery in work
- ☐ Number of beneficiaries trained
- ☐ Number of new technologies/products/processes/ services developed/adapted
- ☐ Number of organizations motivated and mobilized for replication
- ☐ Linked products with manufacturers
- ☐ Others

PART B: Technology, Training and Awareness

14. Was the baseline data considered while selecting the technologies/ activities? Justify your answer.*

_____

15. Have you explored any other similar technologies for the identified problem?

_____

16. What are the factors taken into consideration for pre and post-intervention analysis? Kindly share the background report. (Document Upload)

_____

17. Are the technologies used in project adopted by any other organization? If yes, then name the technology and organization.

18. Are any of the technologies commercialized?

19. Is the technology or product cost-effective and eco-friendly? If yes, give details.

20. What is the Total Number of training programmes held?

21. What is the present status of the beneficiaries trained under the project?* (Long Answer)

22. What are the successes stories of your WTP that you would like to highlight? (please upload a doc file with details)

23. Were training modules developed in any of the following areas? (Tick as many as Applicable)

- ☐ SHG Formation
- ☐ Product/Technology Development
- ☐ Product/ Technology Demonstration
- ☐ Financial Aids
- ☐ Budget/ Business Model Making
- ☐ Others

24. Are the trainings given to the women beneficiaries certified by any of the government skill certification program? If yes, then please give detailed information.*

25. What are the other kinds of information provided in the training modules? (Tick as many as applicable)*

- ☐ Availability of technology/ Technology development process
- ☐ Process of product development/ Technology Usage Instructions
- ☐ Various funding sources for their startups or entrepreneurial projects or business/ Loans & Finances
- ☐ Market Analysis/ Competition with the already available products in the market/ Market value of the products being developed

Contd...

- [ ] Preparation of project proposal
- [ ] Backward and Forward Market Linkages
- [ ] Environmental/ Ethical, Legal and other kinds of permissions
- [ ] Others

PART C: Beneficiaries, Livelihood, Employment & Entrepreneur

26. How many women were trained under your project?* (Short Answer)

_____

27. What is the number of SHGs formed under the project?*

_____

28. In what percentage women are still engaged in any work related to the project after the training is over?(Linear Scale)

_____

29. Name the value added products which are being manufactured.*

_____

30. After completion of the project in what other job activity the women who are trained are engaged or got employed? Mention

_____

31. What were the forward/ market linkages established through this WTP?*

_____

32. Has any beneficiary taken up entrepreneurship? If yes, then give details.*

_____

33. A. What steps did you take for marketing your product?* (Long Answer)

_____

B. Which online portal you prefer for marketing your developed product?

- [ ] No Online Marketing
- [ ] E-mahila haat

- ☐ Saheli
- ☐ Amazon
- ☐ Any other, specify _____

34. Any product which is marketed? Give details.* (Long Answer)

_____

35. Would you be interested in mentoring the ongoing or newly formed WTPs in your State?

_____

36. What are the challenges faced while running the WTP under the support from DST?

_____

Annexure VI

Questionnaire Survey for Ongoing WTPs

FOR ONGOING WTPs

FOR PRINCIPAL INVESTIGATOR

QUESTIONNAIRE ON WOMEN TECHNOLOGY PARKS (WTPs)

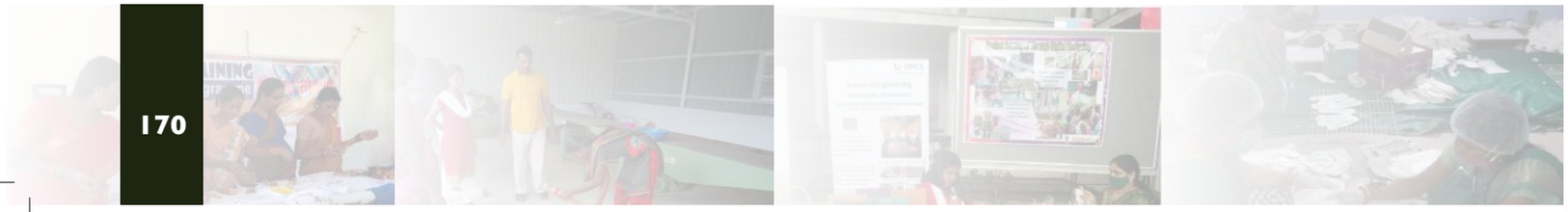
Title: Study of Women Technology Parks (WTPs) in the Country for the integrated development of rural women.

General purpose: Vigyan Prasar is conducting a study on Women Technology Parks in the country. So we would need brief information of your project through this questionnaire.

Please review the questionnaire carefully before you begin. Answer each question as accurately and completely as possible. If the question does not apply to your position, write "Not Applicable".

Some questions also have "OTHER" option to enable you in writing your own answer.

Documents to be uploaded: Approved Proposal and Latest Annual Progress Report



Project Sanction Number: _____

Title of the project: _____

Date of Start: _____

Expected Date of Completion: _____

Location of the WTP: _____

Rural or Urban: _____

Area covered: _____

Name of the Implementing Organization: _____

Current email address: _____

Phone Number: _____

Head of the organization: _____

Address and Contact details: _____

Name and Address of P.I. and Co P.I.: _____

PART A: General Information

1. State the purpose of setting up of this WTP (Long Answer)

   _____

2. What is the predominant livelihood of the area?

   _____

3. (a) What are the roles and responsibilities of the implementing organization?* (Long Answer)

   _____

   (b) Are you collaborating with any other organizations? If yes, then state the type of collaboration?*

   _____

4. What is the nature of support provided to you by SEED division of the Department of Science and Technology (DST)?* (Tick as many as applicable)

   - ☐ For Infrastructure development
   - ☐ Purchase of Machinery
   - ☐ Development of Technology
   - ☐ Product Development

Contd...

- ☐ Conduct trainings
- ☐ Others (Please Specify)_____

5. What are the activities undertaken by this WTP.* (Long Answer)

_____

6. State the deliverables of your project.* (Tick wherever applicable)
   - ☐ Technology Development
   - ☐ Technology Adaptation
   - ☐ Product development
   - ☐ Product Adaptation or Value Addition
   - ☐ Process development
   - ☐ Process Adaptation
   - ☐ Technology package for development of the project area and local community
   - ☐ Technology capability development, training & documentation (e.g. reports, papers, articles, technology manuals, patents)
   - ☐ Others
7. State the estimated benefits through this WTP.* (Tick wherever applicable)
   - ☐ Employment generation
   - ☐ Social Benefits
   - ☐ Environmental Viability
   - ☐ Others (Please specify) _____
8. What are your plans for making the WTP sustainable?* (Document Upload)

_____

9. Do you plan to or have presented a paper in any seminar or have published any research paper related to your work at WTP?

_____

10. Have you applied for any patents? If yes, then give details.

_____

11. Was general information about health care or local / governmental health care centers given to the beneficiaries?

_____

12. Suggest measurable indicators to monitor/ assess the effectiveness of the interventions suggested by the WTP.* (Tick as many as applicable)

- ☐ Increase in Crop production/ Land Productivity/ Land Use Pattern
- ☐ Increase in family income
- ☐ Number of beneficiaries adopting technologies
- ☐ Increase in livelihood/ employment opportunities
- ☐ Improved forward/ market linkages or with enterprises
- ☐ Improved backward linkages with raw material procurement
- ☐ Number of SHGs/technology user groups/cooperatives
- ☐ Number of enterprises formed
- ☐ Reduction in drudgery in work
- ☐ Number of beneficiaries trained
- ☐ Number of new technologies/products/processes/services developed/adapted
- ☐ Number of organizations motivated and mobilized for replication
- ☐ Others. Specify _____

13. What are the factors taken into acknowledgement for pre and post intervention analysis?* (Document Upload)

_____

PART B: Technology, and Activity Details

14. (a) How the Technology has been designed and developed?* (Tick wherever Applicable)

- ☐ Developed in-house by WTP
- ☐ Acquired from Collaborator or any other organization? Kindly provide details
- ☐ Modification of the existing technlogy (Value addition)
- ☐ Packaging of Products

(b) Give Details.* (Long Answer)

_____

Contd...

15. Was the baseline data considered while selecting the technologies/ activities?*

_____

16. Have you explored any other similar technologies for the identified problem?

_____

17. Are the technologies used in project adopted by any other organization? If yes, then name the technology and organization.

_____

18. How were the machinery being used procured?*

- ☐ Purchased with DST support
- ☐ Purchased through self-finance
- ☐ Hired through a Collaborator
- ☐ Others. Specify _____

19. Are the technologies ready for commercialization?

_____

20. Is the technology or product cost effective and eco-friendly? If yes, give details.

_____

PART C: Training and Awareness

21. Please provide the details of the different types of training programmes conducted by WTP? The Nature of the training material could be Audio-Visual/ Pamphlets/ Training modules/ Demonstration/ Hands-on/ Digital form/ etc. (File to be uploaded in PDF or DOC Format. File Size: 1 MB)*

Technology/ Activity	No of days for one training	Trainers/ Resource Person/ Expert	Training Module/ Manual developed (Yes/ No)	Nature of the Training Material

22. Are the trainings given to the women beneficiaries certified by any of the government skill certification program? If yes, then please give detailed information.*

_____

23. What are the other kinds of information provided in the training modules? (Tick as many as applicable)*

- ☐ Availability of technology/ Technology development process
- ☐ Process of product development/ Technology Usage Instructions
- ☐ Various funding sources for their startups or entrepreneurial projects or business/ Loans & Finances
- ☐ Market Analysis/ Competition with the already available products in the market/ Market value of the products being developed
- ☐ Preparation of project proposal
- ☐ Backward and Forward Market Linkages
- ☐ Environmental/ Ethical, Legal and other kinds of permissions
- ☐ Others

PART D: Beneficiaries

24. How many women are trained under your project till this time? (Short Answer)*

_____

25. What is the number of SHGs formed under the project?

_____

26. In what percentage women are still engaged in any work related to the project after the training is over? (Linear Scale)

_____

27. What criteria were followed for the selection of beneficiaries?V

- ☐ Educational background
- ☐ Occupational Background
- ☐ Interest
- ☐ Other, Specify.....

Contd...

28. What is the literacy level of women in the district where you set up the project?*)

- ☐ Illiterate
- ☐ 8th Pass
- ☐ 10th pass
- ☐ 12th pass
- ☐ Graduate
- ☐ Post graduate

Annexure VII

Contact Details of WTPs and their Technologies

Sr. No	WTPs Contact Details	Technologies of WTPs
1.	Dr S Chitra, Principal & Professor, Er. Perumal Manimekalai College of Engineering, Near Koneripalli, Hosur, Krishnagiri, Tamil Nadu. E-mail: schitra3@gmail.com	1. Mechanical weeding unit for paddy / ragi fields 2. Granite saw waste transformation into bricks 3. Creating of micro enterprise for e-waste processing 4. Making designer chocolates and customised gifts through 3D printing 5. Neck rest pillow
2.	Dr Neelu J. Ahuja, UPES, Energy Acres, P.O. Bidholi, Via Premnagar, Dehradun-248 007, Uttarakhand, E-mail: neelu@ddn.upes.ac.in	1. Recycling of waste paper 2. Information and Communication Technology assisted art and craft design 3. Cultivation of Medicinal & Aromatic Plants (MAPs)
3.	Dr Mrutyunjay Suar, CEO, KIIT-TBI, Campus-11, KIIT-University, KIIT Road, Bhubaneswar-751 024, Odisha E-mail: msbiotek@yahoo.com , surekha@kiitincubator.in	1. Sanitary Napkin Unit 2. Mushroom farming & Food processing unit 3. Making of Millet noodles

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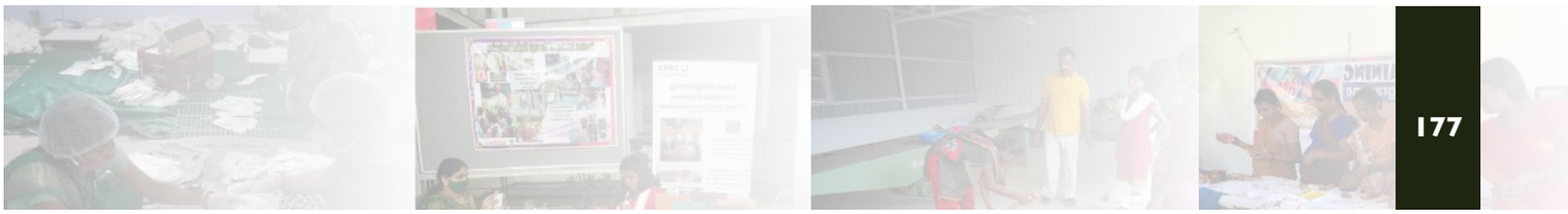


Sr. No	WTPs Contact Details	Technologies of WTPs
4.	Dr Harvinder Kaur Sidhu, Desh Bhagat University, Mandigobindgarh, Punjab E-mail: sidhuinder6@gmail.com	1. Sanitary Napkin Unit 2. Leaf-plate making
5.	Dr (Mrs) N. Yesodha Devi, Secretary, PSGR Krishnammal College for Women, Peelamedu, Coimbatore, Tamil Nadu. E-mail: principal@psgrkc.com	1. Sanitary Napkin Unit 2. Value Added Products from Arecanut Leaves (Plates) 3. Post-Harvest Technology Based Value Added Products 4. Multi Millet Biscuits 5. Banana Fiber Extraction and Value-Added Products 6. Value Added Products (Coir Pot) from Coir Fibre
6.	Mr Satyavir Singh, Senior Research Scientist, Digital India Corporation, Varanasi, Uttar Pradesh. E-mail: satyavir@medialabasia.in , satyavir@digitalindia.gov.in	1. Digital art making Craft designing using CAD
7.	Sh. Sanjay Halder, Vivekananda Institute of Biotechnology, Sri Ramkrishna Ashram, Nimpith, Vill.: Nimpith, P.O.: Nimpith Ashram, Dist. South 24-Parganas, West Bengal-743 338 E-mail: bkdattasranvib@rediffmail.com ; vibsran@rediffmail.com	1. Fresh and Brackish Poly Culture
8.	Dr Ekta Menghani, Professor, Department of Bio-technology, JECRC University, Jaipur E-mail: ekta.menghani@jecrcu.edu.in	1. Training on Gem and Jewellery design for women and girls 2. Handicraft item preparation 3. Preparation of designer diya preparations and Handicraft items 4. Paper bags from Newspapers 5. Handmade paper making from wastepaper 6. Natural colour and herbal dye from herbal waste 7. Rose and other flowers oil extractions from waste flowers of temples

Sr. No	WTPs Contact Details	Technologies of WTPs
9.	Dr Manjita Mishra, Bhartiya Mahila Gramodyog Sansthan, Uttar Pradesh. E-mail: bmgsansthan291295@gmail.com	1. Terracotta craft 2. Moonj craft 3. Bamboo craft 4. Guava trade
10.	Dr V. Mahesh, SR Engineering College, Ananthasagar, Hasanparthy Warangal – 506 371, Telangana. E-mail: mahesh@srecwarangal.ac.in	1. Metal Craft Technologies 2. Construction and Habitat Technologies 3. Banana fibre extraction 4. Construction and habitat technology
11.	Dr E. Laxmi Narsaiah, Professor and Head of the Department, Basic Sciences and Humanities Department, B V Raju Institute of Technology (BVRIT), Narsapur, Telangana E-mail: laxminarsaiah.emmadi@bvrit.ac.in	1. Interventions in Handlooms and Handicrafts 2. NTFP (non-timber forest products) based livelihood interventions
12.	Shri. A. S. Suting, State Council of Science Technology and Environment (SCSTE), Meghalaya State Housing Financing Cooperative Society Ltd., Nongrim Hills, Behind Bethany Hospital, Shillong, Meghalaya- 733003 E-mail: stcouncilmegh@yahoo.com	1. Green building 2. Bamboo furniture and agarbatti sticks 3. Low-cost egg incubator
13.	Dr Modem Sai Leela, Department of Home Science, St. Joseph's College for Women (Autonomous), Gnanapuram, Visakhapatnam-530 004, E-mail: slmodem@gmail.com	1. Developing skills on video technology in young women 2. Value addition to NWFP process of adda leaf, tamarind, broom grass and wild tubers 3. Bio Sand Filter (BSF)
14.	Dr Jatin Kalita, Scientist, CSIR-North East Institute of Science and Technology, Jorhat-785 006, E-mail: kalitajk74@gmail.com	1. Extraction of banana fibre & product development 2. Herbal mosquito repellent incense stick and candle 3. Low dust chalk pencil and wax crayon coloured pencil 4. Solid deodorant freshener

Contd...

Sr. No	WTPs Contact Details	Technologies of WTPs
15.	Smt. Nupar Nag, Scientist B, Tripura E-mail: nag.nupur@gmail.com	1. Mechanised dhenki and grain puffing cum roasting machine 2. Bio-plates and leaf cup machine 3. Mosquito replant candle
16.	Technology Informatics Design Endeavour (TIDE), FF1, Sapthagiri Apartments, No. 30, 10th Cross, 15th Main Road, RMV Extension, Sadashiva Nagar, Bangalore- 560 003 E-mail- k.sumathy@tide-india.org	1. Oyster mushroom cultivation and value addition 2. Organic farming & sustainable agriculture and Cultivation of Dry land Crops and Developing Value Added Products 3. Green bricks and firing in LCBK 4. Minor miller value addition 5. Biomass dryer
17.	Mr. Vishakh, Malabar Social Service Society (MASSS), Sreepuram, Pallikkunnu, Kannur, Kerala – 670 004, E-mail: info@masss.in	1. Medicinal oil unit & Virgin oil unit 2. Coir Pith Composting 3. Micro hatchery unit & Pearl culture unit 4. Coconut shell craft unit & Bamboo craft unit 5. Arecanut Dehusker
18.	Mr Binal Mani, Peermade Development Society (PDS), P B No 11, Peermade PO Idukki Dist, Kerala-685 531 E-mail: binalmaruthukunnel@gmail.com ; www.pdspeermade.com	1. Nursery Techniques and Seed Production and Community Nursery 2. Vetiver (Vetiveriazizanioides) cultivation and production of value-added products 3. Cassava – Value added products 4. Passion fruit - Value added products
19.	Dr Hari Shankar Jain, Vardhaman College of Engineering, Hyderabad, Telangana E-mail: deanrnd@vardhaman.org , jhshankar@vardhaman.org	1. Low volume high value (LVHV) from Quinoa and Chia
20.	Mr. Randhir Singha, Resources Centre for Sustainable Development # 20, Bye lane-12 W, Rajgarh Road Guwahati-781007, Assam. E-mail: rsingha@rcsdin.org	1. Bamboo furniture and agarbatti sticks 2. Energy saving devices like Photovoltaic system (PV) repair and maintaining 3. Improved Cook Stove models 4. Biosand Filter (Plastic barrel) 5. Solar crop drier and value addition process of local agriculture and horticultural products

Sr. No	WTPs Contact Details	Technologies of WTPs
21.	Prof. A. Jyothi, Department of Home Science, Rural Women Technology Park, Sri Padmavati MahilaVisvavidyalayam, Tirupati, Andhra Pradesh-517502. E-mail: dstrwtp@gmail.com	1. Tulsi based products
22.	Dr Arvind Kumar, Division of Livestock Products Technology, Faculty of Veterinary Sciences and Animal Husbandry, Shere-e-Kashmir University of Agriculture Sciences and Technology, R.S Pura, Jammu – 181 102. E-mail: drarvindlpt@gmail.com	1. Value added Milk Products (Paneer, Value added Kaladhi, Value added Mozzarella Cheese, Khoa based value added sweets, Chhana based value added sweets, Milk beverages) 2. Value added Meat Products (Pickle, Nuggets, Patties, etc.)
23.	Sh. V. Manilal, Santhigram, Chappath, Kazhuvur, PO Pulluvia, Thiruvananthapuram, Kerala E-mail: manilal.v08@gmail.com	1. 33 Value added products from Jack fruit (jam, jelly, candy, cake, peda, halwa, squash, chips, jeggery and pickle)
24.	Dr Loveleen Kaur Brar, Pushpa Gujral science city, JalandharKapurthala Road, Punjab. E-mail: sciencecity@hotmail.com	1. Value addition to existing textile materials 2. Preparation of Cow Dung Logs 3. Mushroom Cultivation
25.	Dr R. Malathy, Vice Principal & Professor, Department of Civil Engineering, Sona College of Technology, Salem- 636 005, Tamil Nadu. E-mail: usha@sonatech.ac.in	1. Pulse Plating for Silver Anklet 2. Wastepaper Recycling 3. Sewing machine for differently abled women 4. Solar Food Processing
26.	Dr Daya Srivastava, Scientist, Krishi Vigyan Kendra-II, Village-Katiya, Post- Ulra (Manpur), Block & Tehsil- Biswan, District-Sitapur, Uttar Pradesh- 261145. E-mail: sitapurkvk2@gmail.com	1. Charcoal based Briquettes 2. Urea Molasses Mineral Block (UMMB) - Goat Special 3. Urea Molasses Mineral Block (UMMB) 4. Animal Dung Pot/Lac Coated 5. Lac coated Dung diya's

Contd...

Sr. No	WTPs Contact Details	Technologies of WTPs
27.	Dr Jatinder Kaur Arora, Executive Director, Punjab State Council for Science & Technology, Sector 26, Chandigarh. E-mail: jkarora20@rediffmail.com	1. Palletisation Technology
28.	Dr S Ayyappan, Department of Mechanical Engineering, Dr Mahalingam College of Engineering and Technology, Pollachi, Tamil Nadu- 642 003, E-mail- sayyappan2004@gmail.com	1. Production of Virgin Coconut Oil (VCO) 2. Minimal processing fresh-cut vegetables
29.	Dr Selvi Subramanian, Professor, Department of Biotechnology, PSG College of Technology, Coimbatore-641004, Tamil Nadu. E-mail: selvi.bio@psgtech.ac.in	1. Oyster mushroom production and Drying process 2. Azolla Cultivation for poultry feed
30.	Mr. Gurmeet Singh, Foundation for Revitalisation of Local Health Traditions (FRLHT), No.74/2, Jarakabande Kaval, Post Attur, Yelahanka, Bangalore -560 106, India. E-mail: gurmeet.singh@tdu.edu.in , sugandhi.rani@tdu.edu.in	1. Nursery techniques and homestead cultivation of medicinal plants 2. Vermi-composting techniques

Annexure VIII

List of Probable Linkages

1) List of Council of Scientific & Industrial Research (CSIR) Laboratories

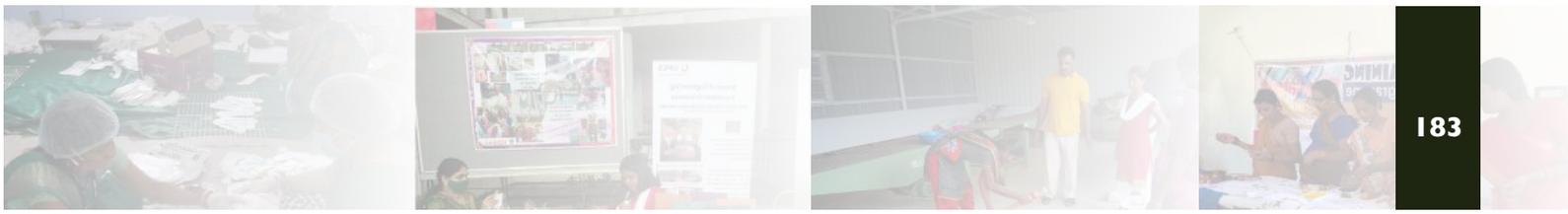
The Council of Scientific & Industrial Research (CSIR), known for its cutting-edge R&D knowledgebase in diverse S&T areas, is a contemporary R&D organization with a pan India presence of national laboratories, outreach centres and Innovation Complexes. WTPs can take up commercially available technological solutions from CSIR labs and can also engage these labs for customized solutions and trainings. List of CSIR laboratories can be accessed through the following link:

https://www.indiascienceandtechnology.gov.in/organisations/laboratories/csir-research-laboratories

2) Indian Council of Agricultural Research (ICAR)

Indian Council of Agricultural Research (ICAR) is determined to harness scientific advances for society's welfare and is committed to transforming itself into an organisation engaged thoroughly with the farmers, industry, entrepreneurs, and consumers through its more than 100 attached organisations. Since most of the WTPs work in the agriculture and allied sector, their nearby ICAR institutes can provide appropriate technology, trainings and other necessary support. List of the ICAR insitites can be accessed through the following link:

https://www.indiascienceandtechnology.gov.in/organisations/ministry-and-departments/indian-council-agricultural-research-icar



3) Indian Institutes of Technology and National Institutes of Technology

These national-level premier institutes work in development of technical solutions in various sectors. Some of the IITs also support Rural technology Action Group (RuTAG) for developing society centric technical solutions. Hence, they can be collaborated for customized technologies and related support.

List of IITs can be accessed through the following link:

https://www.indiascienceandtechnology.gov.in/organisations/centres-of-higher-learning/iits

List of NITs can be accessed through the following link:

https://www.indiascienceandtechnology.gov.in/organisations/nits

4) State Science & Technology Councils

State science and technology councils support various state-level technology development, training and support through various schemes and programmes. They have linkages with various marketing and banking supports, which can help them in sustainability. The list can be accessed through the following link:

https://www.indiascienceandtechnology.gov.in/organisations/state-st-organisations/st-councils

5) Industry Related Associations

WTPs can also form linkages with industry related associations for establishing technical, marketing and banking linkages for sustenance at various levels. A list of industry related associations can be accessed through the following link:

https://www.indiascienceandtechnology.gov.in/organisations/industry-related-associations

6) National Bank for Agriculture and Rural Development (NABARD)

The Government of India encourages farmers in taking up projects in select areas by subsidizing a portion of the total project cost. The mission is to promote sustainable and equitable agriculture and rural development through participative financial and non-financial interventions, innovations, technology and institutional development for securing prosperity. Since, WTPs' mission and vision match with that of NABARD's, linkage can be established with them for all the necessary support. The information can be

accessed through the following link.

https://www.nabard.org/

7) District Industry Centres

The District Industry Centres of MSME are committed to catalyse investments, accelerating inclusive economic growth and creating large scale employment opportunities for its people. WTPs can establish linkages with their nearby DIC for necessary linkage and support. The information can be accessed through the following link.

http://dic.dnh.nic.in/

8) Krishi Vigyan Kendra (KVK)

KVK, is an integral part of the National Agricultural Research System (NARS), aims at assessment of location specific technology modules in agriculture and allied enterprises, through technology assessment, refinement and demonstrations. WTPs which are focusing on such activities, they can seek support and collaboration for technologies, trainings, marketing and other kinds of support. The information can be accessed through the following link.

https://kvk.icar.gov.in/

9) Micro, Small & Medium Enterprises (MSME)

WTPs can collaborate with regional MSME centers as they are complementary to large industries as ancillary units and this sector contributes enormously to the socio-economic development of the country. The information can be accessed through the following link.

https://msme.gov.in/

10) Technology Business Incubators (TBIs)

Technology Business Incubators (TBI) help create technology-based new enterprises, value-added jobs & services, facilitate the transfer of technology, and foster the entrepreneurial spirit. The TBIs besides providing a host of services to new enterprises also facilitate an atmosphere congenial for their survival and growth. Collaboration with TBIs can help WTPs in supporting new entrepreneurs budding from their organisations in all the realted matters. A list of TBIs can be accessed through the following link:

https://www.indiascienceandtechnology.gov.in/listingpage/tbis

Annexure IX

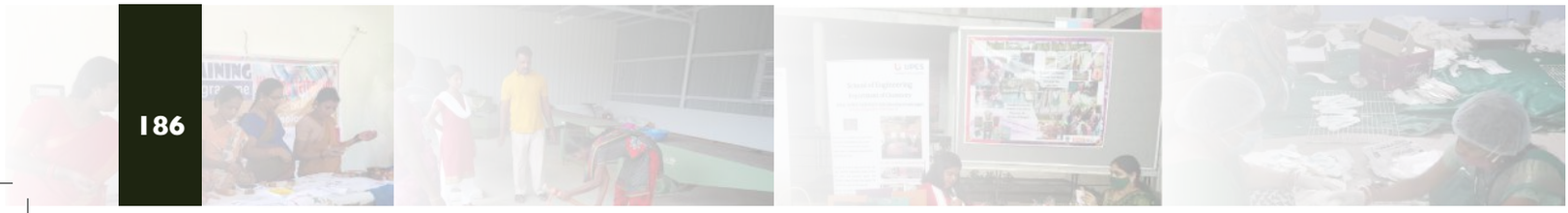
Existing Sustainable Models of WTPs

The WTPs have been conceptualised and designed with various modules like training, appropriate technologies, linkages to strengthen the weakest links and the strongest links of the predominant livelihood system of the region, etc. Two components – funding support and knowledge partner – are universal for any WTP Hub to function optimally. Once DST support gets over, the funding and technical support needs to be arranged for these WTPs to sustain. The different WTPs explored the different market and financing linkages. Some of the sustainability models implemented by some of the WTPs have been presented like KIIT-TBI, Odisha; VIB, West Bengal; Meghalaya State Council for Science, Technology & Environment, Meghalaya; Peramade Development Society, Kerala; UPES, Dehradun; and TIDE, Bengaluru, etc.

UPES-Enterprise Model

University of Petroleum and Energy Studies (UPES), Dehradun, has started a Women Technology Park to help the local and rural women from the surrounding regions become economically independent.

Under the WTP, women from identified target villages around Dehradun were identified, through formal survey processes, who are involved in arts and crafts activities in an unstructured way. Facilities have been set up at UPES campus, in the form of a dedicated



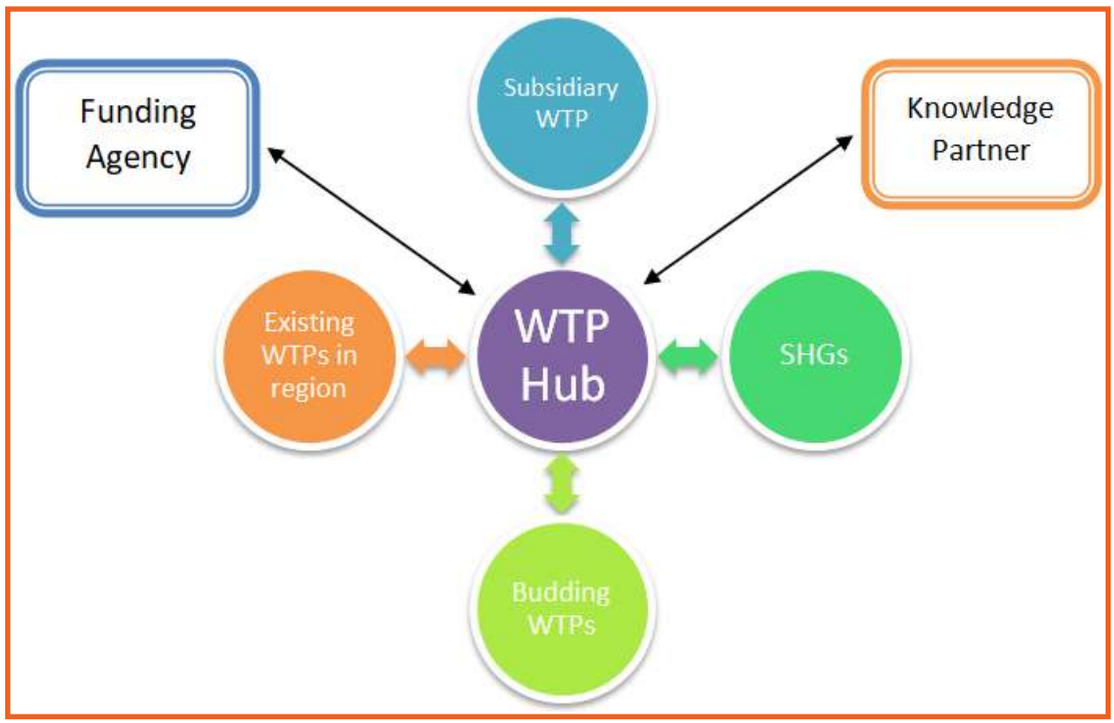


Fig. 29: Concept of a Sustainable WTP

computer laboratory and Craft Workshop-cum-Studio, for these women to undergo customised training programmes. The women, through this initiative, learn about computer basics, design software, craft development, and skills to sell their products. They have successfully delivered their products to the market through various trade events.

With the ICT-Assisted Art and Craft component of the project, around 200 rural women from target villages [Charba, Doonga, Mesraj, Patti, Dhakrani] were trained, with the help of about 10+ expert artisans and ICT trainers, across 30 hrs of ICT, and 40 hrs of craft training. Their products have got them satisfactory prices, befitting their labour, and immense self-confidence and feeling of economic independence. More than 40 trainees are engaged in using their skill-set gained through this programme, actively developing their products, looking for market avenues, and generating income opportunities. A cooperative society Reg-No, PV-13, is registered, with the trainees and support to reach out to the market and provide selling opportunities at shelf spaces, trade fairs, etc.

The WTP at UPES is sustainable based on the business model for trainees as given below, which is designed, keeping in consideration the revival of existing facilities developed under the project, supporting the existing 40 trainees, towards formal sustenance involving high-value product development, mincing with culture/heritage to develop signature products depicting unique identity of Uttarakhand, workmanship training, and providing them much needed practical exposure to entrepreneurial practices, and busi-

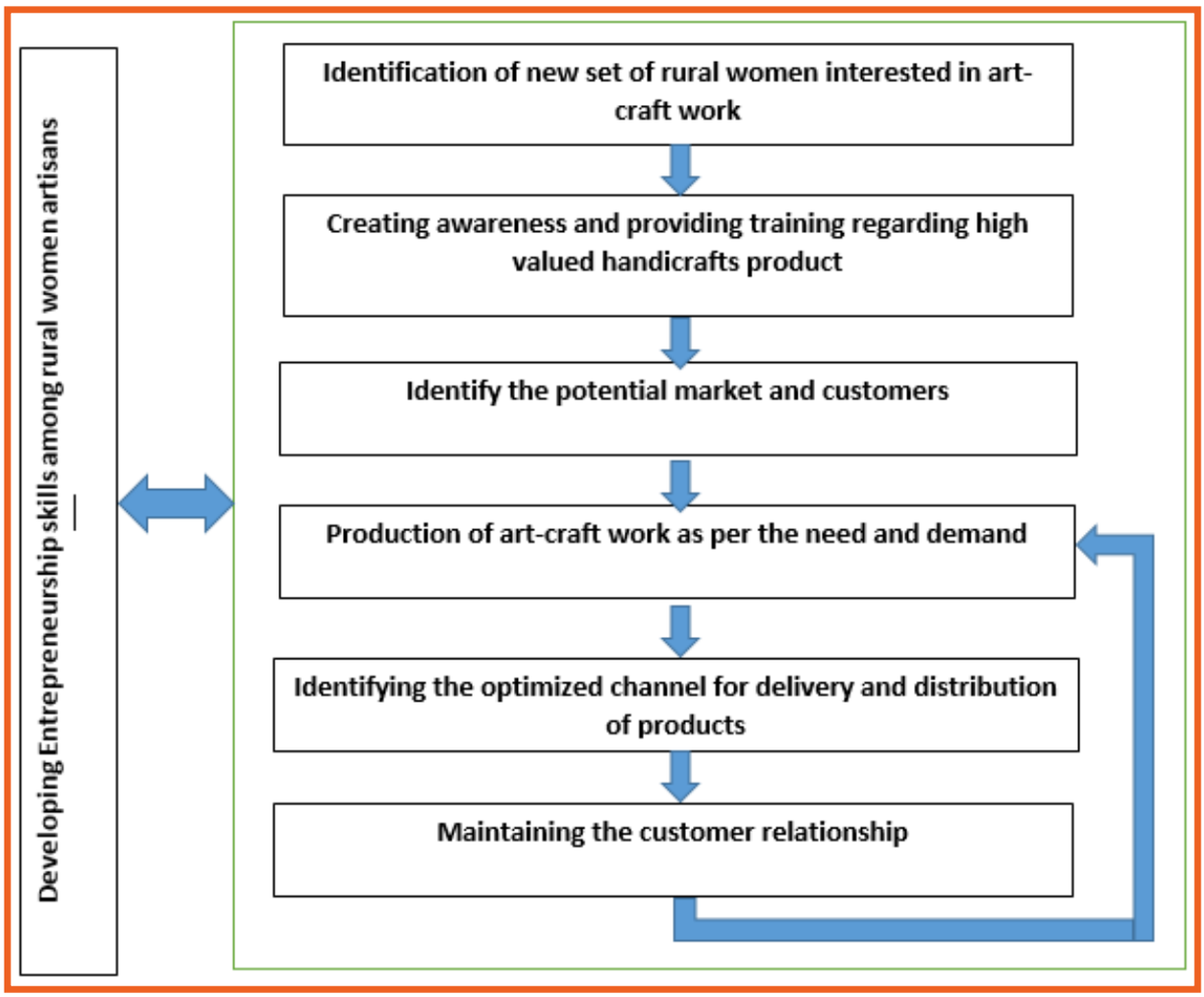


Fig. 30: Business Model of WTP at UPES Dehradun

ness skill development. Further, it is planned to add new trainees, about 25 in number, and taking them through this cycle.

Business Model for Trainees

The WTP works towards supporting trainees to develop a business model for sustainability, through which they can shape up/establish their own unit/start-up and bring-up a stable business and income generation. Preliminary work to visualize all the building blocks of starting a business, including customers, route to market, value proposition and finance, are presented below as a 'Business Model Canvas.'

The building blocks of this model are customers, value propositions, channels, customer relationships, revenue streams, unique strategies, key resources, key partnerships, and cost structure.

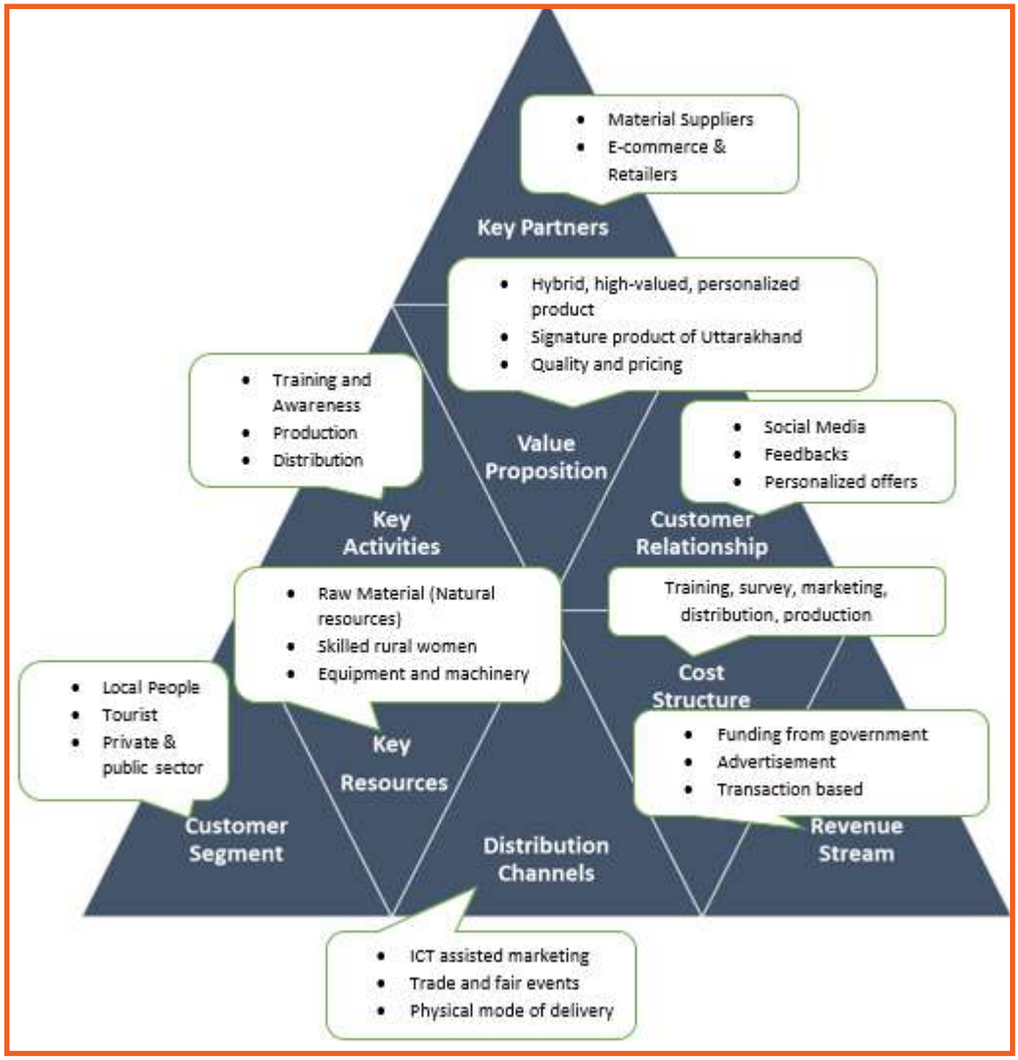


Fig. 31: Business Model for Trainees as Developed by WTP at UPES

VIB-Community Engagement Model

Dry fish production is one of the major livelihoods of the people of the target area of Sagar block. About 9000 people of Sagar block are engaged in either fishing or dry fish production as their main activity. During the season the people associated migrate to the activity site on the sea shore for whole season which last for about 6 months. The scope of solar dryer intervention was also surveyed and discussed with the CSMCRI, CSIR Institute, Bhavnagar, Gujarat, and it was assessed that the solar tunnel dryer would be an appropriate intervention in the WTP area.

Awareness programme with women fishermen of villages of Gangasagar GP and also member of Sagar Sangam Marine Matsya Jibi Sambay Samiti to implement the programmes at community level for the dryer installation, process of grading, segregation,

pretreatment and drying process. They have taken multiple strategies with collaboration of women fisherman and existing SHGs/ Society members to implement the programmes from planning to implementation, monitoring and evaluation time to time for economically and environmentally sustainable of the programme. The trainees take responsibility as producer group for the activities.

The market linkage is the only criteria for sustainability of the WTP at VIB. 75 trainees are using this system having an income of Rs 18500 in a 6 month cycle. Its potential users are fishermen and fish farmers of Sundarban can use this technology forming societies like, Self-help group, Fish farmers' Cooperative Societies, etc.

Bolmoram Technology Resource Centre Cum Knowledge And Innovation Park - Hub And Spoke Model

The State Council of Science Technology & Environment (SCSTE), Meghalaya, has incorporated the concept of sustainability of this intervention by inculcating the business aspects to the WTP staff as a whole. The WTP are earning revenue from the following:

1. Conduct of Training: The Centre is now considered as one of the training centres for conducting training on livelihood and life skills by various developmental organisations such as the State Rural Livelihood Mission, the District Administration and Concerned Line Departments. The approved rates for conduct of these trainings are charged from the respective departments. The earnings from these services (by experience, profit works out to 30% of the bill raised for a particular day with 25-30 participants capacity) is used to pay the staff salaries and purchase of new assets and creation of new infrastructure. The Centre is now working with the State Skill Council for Accreditation of these training modules by NSDC.

2. Exposure Visit: The Centre is being used as a Knowledge Partner where people from all walks of life visit on their own or are funded by various organisations. The service charge for conducting such an exposure visit is Rs. 1000/- for half day and Rs. 2000/- for full day. 50% of this service fee goes to the Resource Person, and 50% goes to the Centre. The Resource Persons are the staff of the Centre OR the SHG members already trained by the Centre.

3. Hub and Spoke Model: The Centre acts as the Hub and the people train on the various aspects of the value chain especially for honey, food processing, handicrafts, piggery, poultry, biofertilizer production, etc., acts as the Spokes. The trainees produce the products, do primary processing, and value addition at their respective village. The Centre aggregates these products and checks the quality before packing and selling them to the consumers. The Centre is presently doing trial marketing of these products for gauging

the market pricing, consumer feedback, etc. The Centre is also in the process of getting the necessary certification for these products, such as FSSAI Registration, Organic Certification, and Branding. The Centre will also earn form the sales of these products in future.

PDS-Joint Liability Group Promotion And Bank Linkage Programme

The novel idea in the rural women technology park project is the women training school. Women Training School as knowledge hub for dissemination and processing of location specific technologies by providing hands-on training and familiarizing successful technological operations to the women groups. These centers are functioning as demonstration cum training centers of the identified technologies. Trainings has been conducted in all the aspects of the identified technologies and other women friendly technologies suitable for enterprise development. External experts are hired to the center for taking classes for the training programmes.

Another great achievement of this Women Training school is that various schools approach the project team to link their entrepreneurship clubs for getting techno based training programmes. So this model gets wider acceptability among the public. Finan-

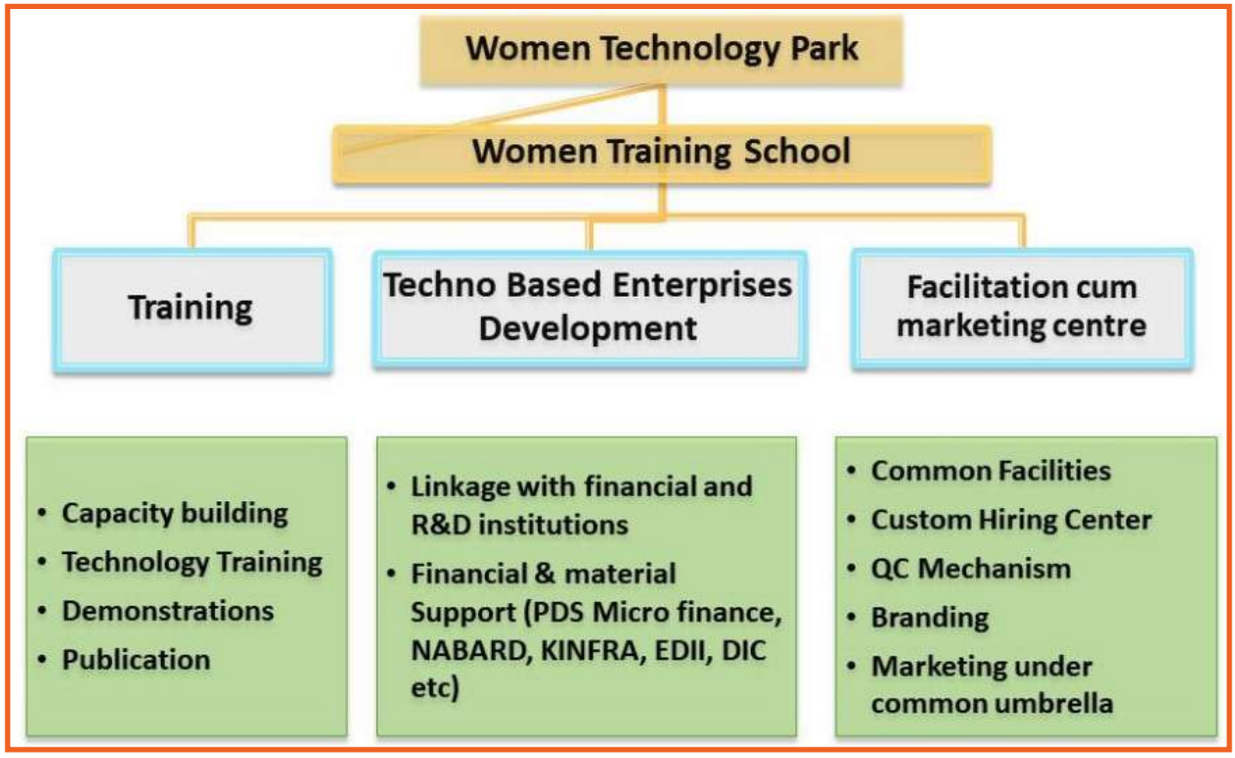


Fig. 32: Women Training School as Developed by WTP at PDS, Kerela

cial support is the base of starting an enterprise by small and marginal farmers, so the project team initiated JLG bank linkage programme for getting credit facility. So the women groups got two lakhs as loan for a period of three years with 11% interest.

To arrange credit facilities to entrepreneurs PDS has started implementing Joint Liability Group Promotion and Bank Linkage Programme in Idukki, Pathanamthitta, and Kottayam Districts of Kerala under the guidance and support of NABARD and collaboration with union bank of India. It is a project for establishing micro enterprises in rural areas with the financial and material support from various government and non-government institutions and banks. During the project period PDS has created and nurtured 740 Joint Liability Groups in the region.

Total Number of JLGs availed credit facility from Banks	134
Total Amount availed as credit from financial institutions	Rs. 250 lakhs
Total Number of Members	590
Women Groups	134
Credit Amount Availed	Rs. 250 Lakhs
Women Members	590
Tribal Groups	12

Business Model for the PDS WTP

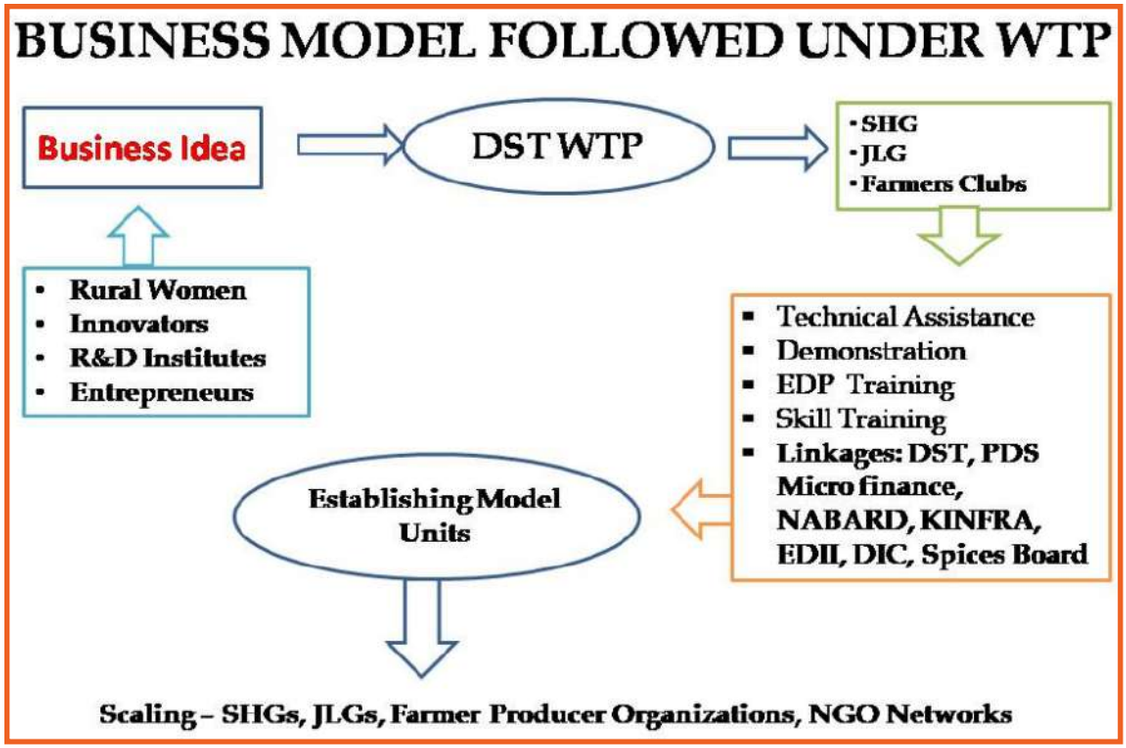


Fig. 33: Business Model of WTP at PDS, Kerela

KIIT- 5 PHASE MODEL

A 5 phase sustainability model has been designed for ensuring the sustainability of the micro enterprises created under the Women Technology Park. This model encompasses a holistic approach for engaging all the relevant stakeholders in the program and address the key bottlenecks in the translation of support-oriented technology driven activities to stand alone independent micro enterprises. The Schematic of the 5 phase model has been shared below along with a brief description of the key activities to be undertaken in each phase.

Phase 1: Vision setting

- Establishment of the goal of the project with all the stakeholders from the start
- Discussion of timelines, roles and responsibilities with the thought leaders of the community
- Clear Road map with benefits explained and Proactive front runners from the community onboarded for alignment of the rural women towards setting up of own enterprises.

Phase 2: 360 Degree Skilling

- The trainings will include the technical training, Business Skill training and Market immersion
- Bilingual Manuals for reference in later point
- Documentation templates (Easy to use cards) for Running the unit

Fig. 34: Business Model of WTP at KIIT-TBI, Orissa

Phase 3: Setting up of Model unit in the Community

- Model unit to be set in the location of operation to demonstrate feasibility in the similar ecosystem.
- Establishment of Market connects for ensuring Continued revenue stream
- Integration of Structured and Stringent Quality Protocols & Regulatory Compliances for ensuring sustained demand

Phase 4: Linkages to Govt. Schemes and Handholding for setting up own units

- Designing the Business Plans for leveraging Govt. Schemes and subsidies
- Providing Vendor Connects for Raw material procurement
- Refresh

Phase 5: Structured Monitoring and Phasing out hand holding support

- Monthly visits to each Micro enterprises in the first 6 months, phased out to quarterly visits in the next six months and bi-annual visits in the next year.
- Course Corrections and corrective inputs provided based on the visits made
- Complete handover at the end of two years

Annexure X

Testimonials

Testimonials

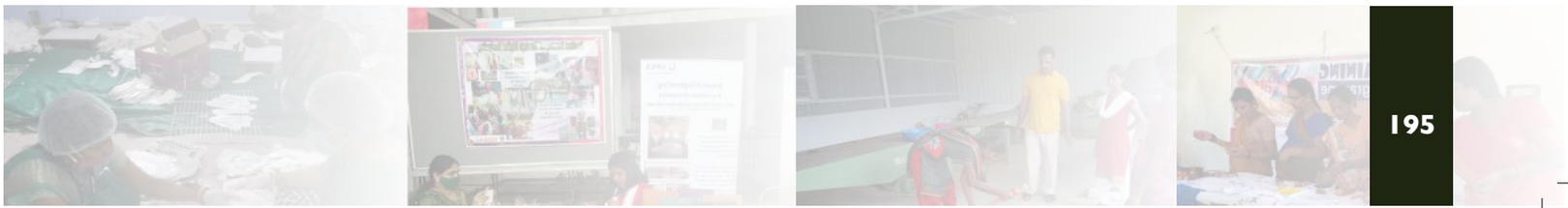
The section includes some of the feedback received from Trainees of WTPs in the form of Testimonials

Feedbacks from Trainee at Women Technology Park at University of Petroleum and Energy Studies, Dehradun, Uttarakhand

"It was hard to believe for us that we are so talented. A number of delegates and research teams observed and analysed our work. Their words were so supportive and inspiring that we feel blessed and proud. We did experiments using herbal products like seeds, bamboo, etc. and it really improved our work and products. Recently, we received an order of 2000 jewellery products from USA but because of smaller team size, we had to refuse it. We need to expand our team. We got suggestions from some of the visitors to market and promote our products through Amazon. We need to look in that way also. We feel very proud and recognized that people are looking to name our team now. This could have been possible because of the skills gained through this project."

— Najma

Local Entrepreneur and Trainee in ICT-assisted art and craft technology



"Now I know how to create an email id, and send an email. We will work hard to make this project successful because it is helpful for us (women) to learn computers."

-— Nisha Dhiman

(Village- Bharapur) Trainee in ICT-assisted art and craft technology

"Keeping in mind the less count employability these days, such activities are beneficial because it helps us be employed even if we are at home and then sell our product in market."

-— Reeta

(Village- Patti), Trainee

"Everything is explained here in such a way that we understand it quickly, no matter how complex they are."

-— Aarti Panwar

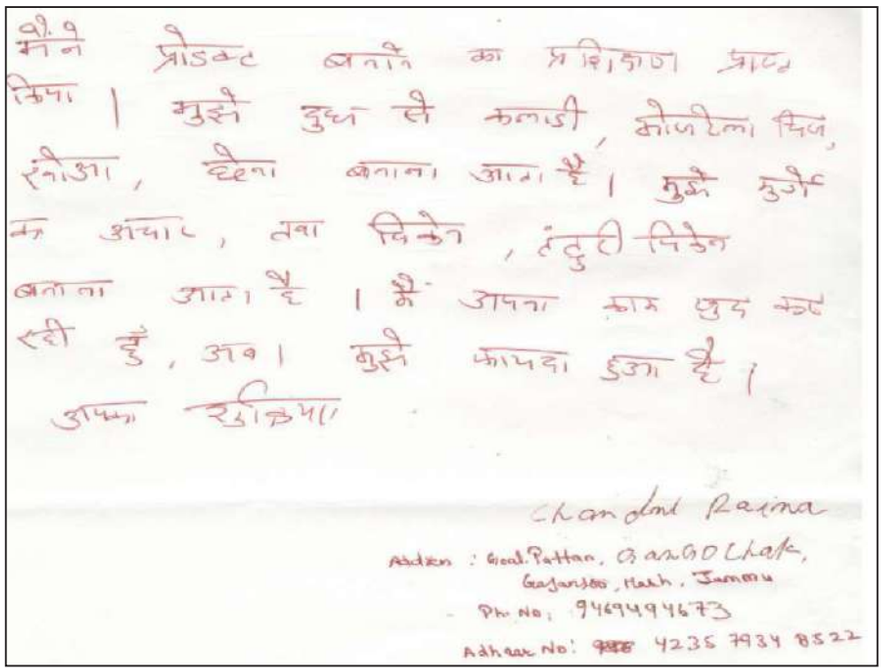
(Village- Patti Misraas), Trainee

"It makes us happy and feel proud that we are also contributing in making DIGITAL INDIA by working in this direction through this project."

-— Ranjana

(Village- Bidholi), Trainee

Feedback from Trainee in Value added products from milk, meat and fish products at Women Technology Park at Deoli village, Bishnah Block, operated by SKUAST, Jammu and Kashmir



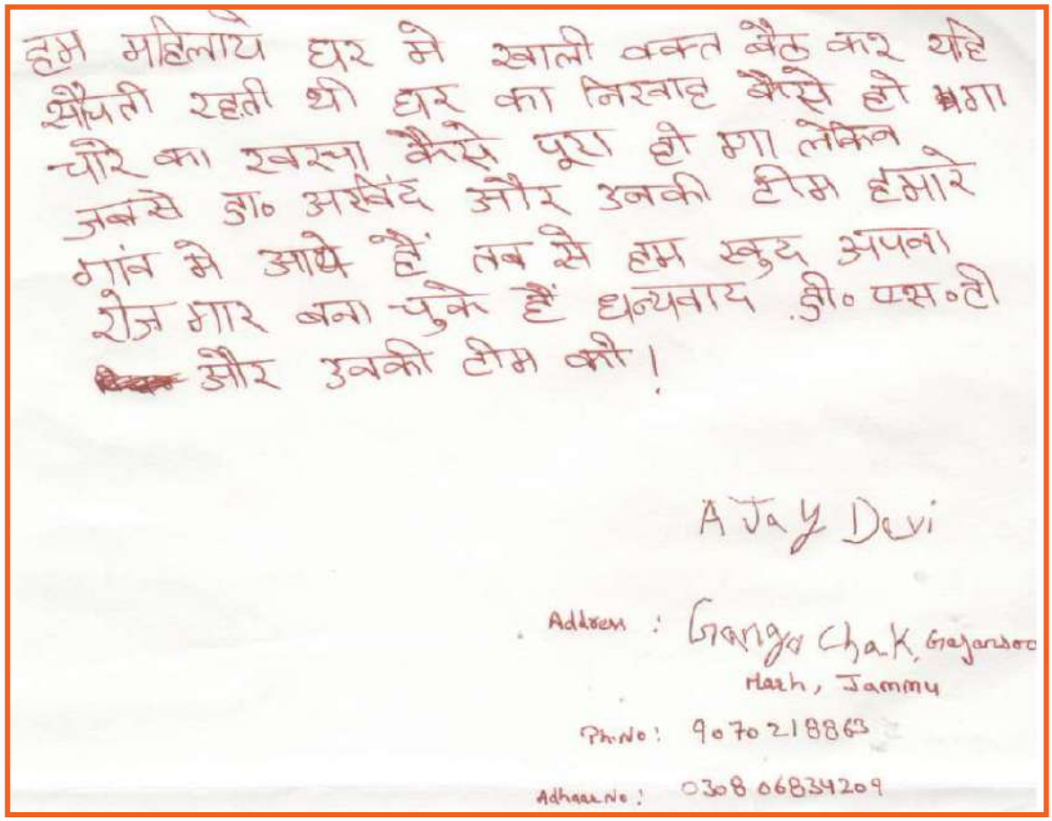
मैंने वी.ए.प्रोडक्ट बनाने का प्रशिक्षण प्राप्त किया। मुझे दुध से कलाडी, मोजरेला चिज, पनीर, दहीं बनाना आता है। मुझे मुर्गे के अचार, तथा चिकेन, तंदुरी चिकेन बनाना आता है। मैं अपना काम खुद कर रही हुं, अब। मुझे फायदा हुआ है। धन्यवाद।

Chandni Raina

Addres : Vill. Pattan, Ganga Chak, Gajansoo, Nagh, Jammu

Ph No: 9469494673

Adhaar No: 4235 7934 8522



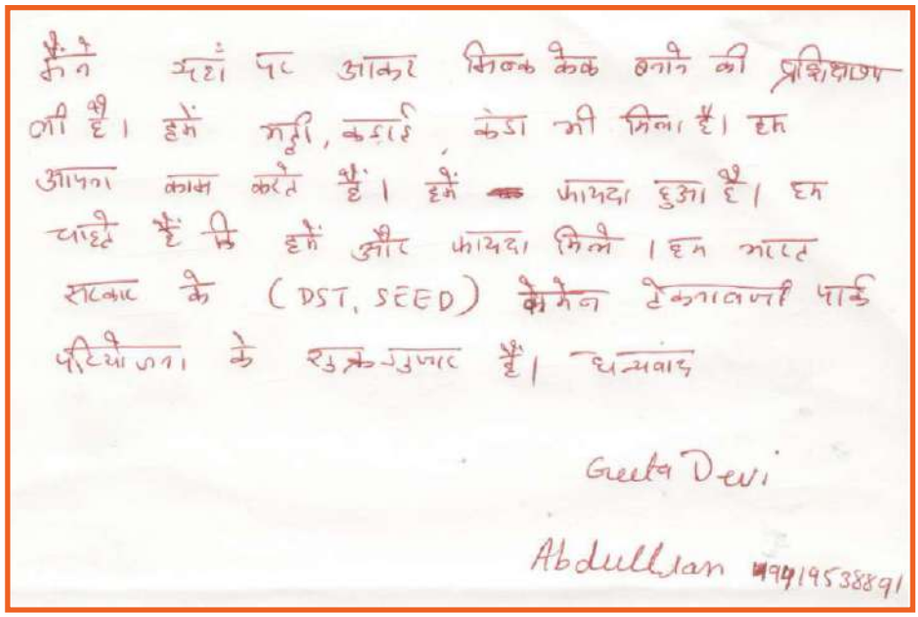
हम महिलाये घर मे खाली वक्त बैठ कर यहे सोचती रहती थी घर का निरवाह कैसे हो गा चौरे का खरचा कैसे पूरा हो गा लेकिन जबसे डा० अरविंद और उनकी टीम हमारे गांव मे आये हैं तब से हम खुद अपना रोज गार बना चुके हैं धन्यवाद डी० एस० टी और उनकी टीम को!

Ajay Devi

Address : Ganga Chak, Gajansoo Nagh, Jammu

Ph No: 9070218863

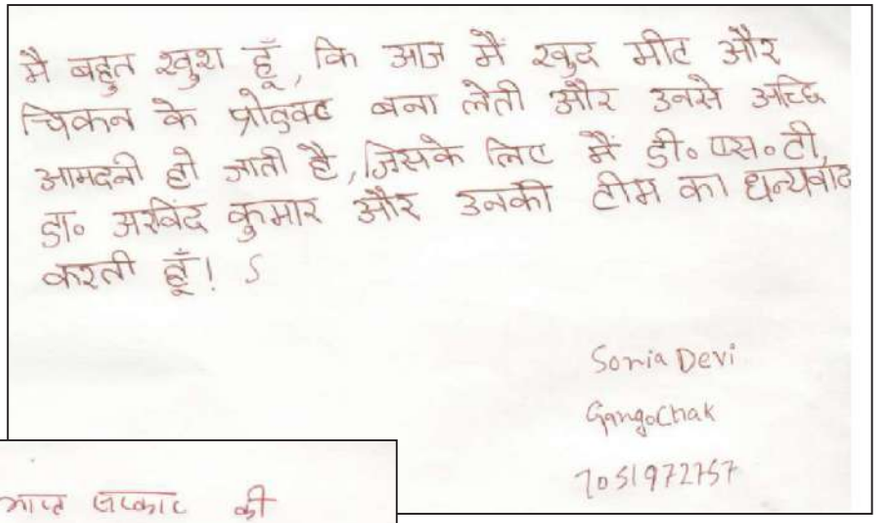
Adhaar No: 0308 0683 4209



मैंने यहां पर आकर मिल्क केक बनाने की प्रशिक्षण ली है। हमें मशीन, कड़ाई, कड़ा भी मिला है। हम अपना काम करते हैं। हमें फायदा हुआ है। हम चाहते हैं कि हमें और फायदा मिले। हम भारत सरकार के (DST, SEED) के तहत हैंडलूम पार्क परियोजना के शुक्रगुजार हैं। धन्यवाद

Geeta Devi

Abdullian 9491953889

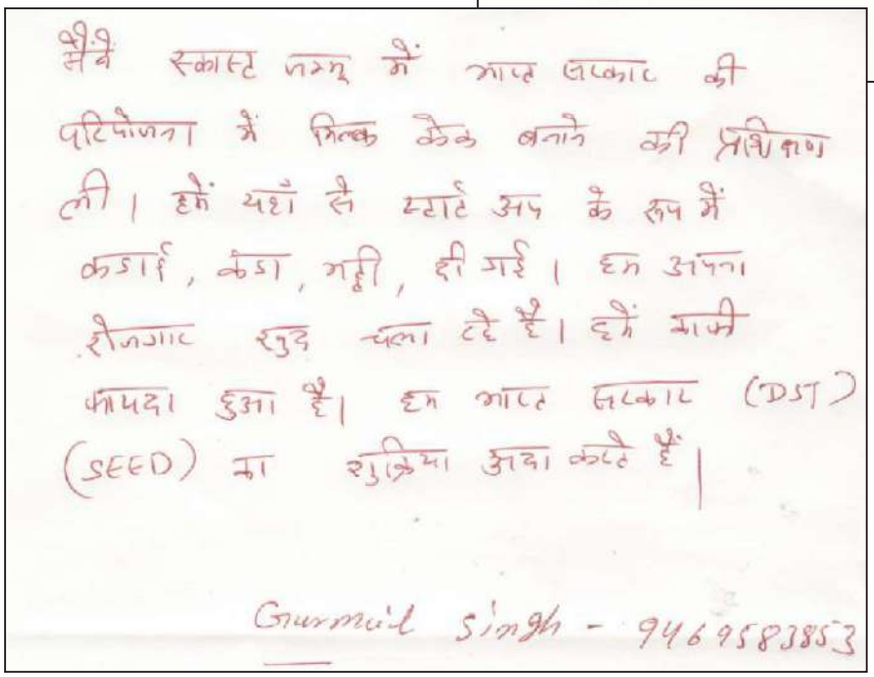


मैं बहुत खुश हूँ, कि आज मैं खुद मीट और चिकन के प्रोडक्ट बना लेती और उनसे अच्छि आमदनी हो जाती है, जिसके लिए मैं डी० एस० टी, डा० अरविंद कुमार और उनकी टीम का धन्यवाद करती हूँ! S

Sonia Devi

Gangochak

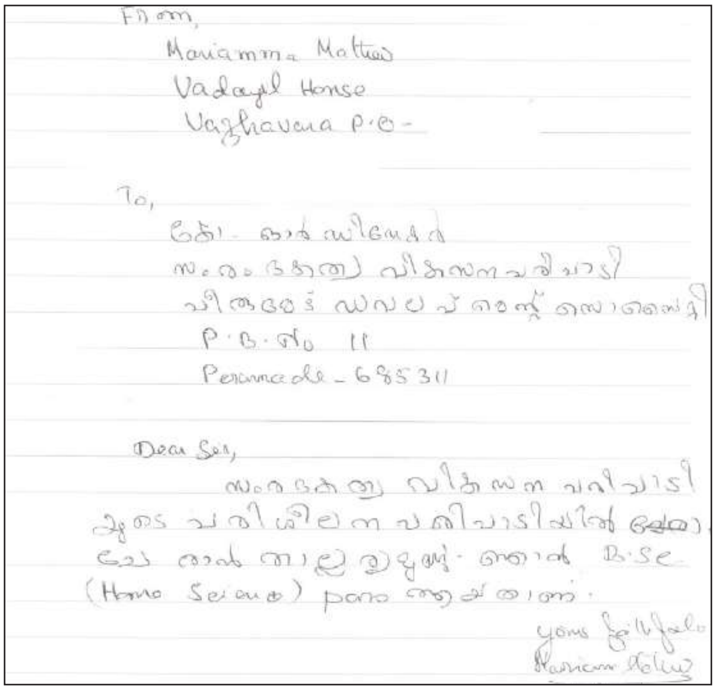
7051972757

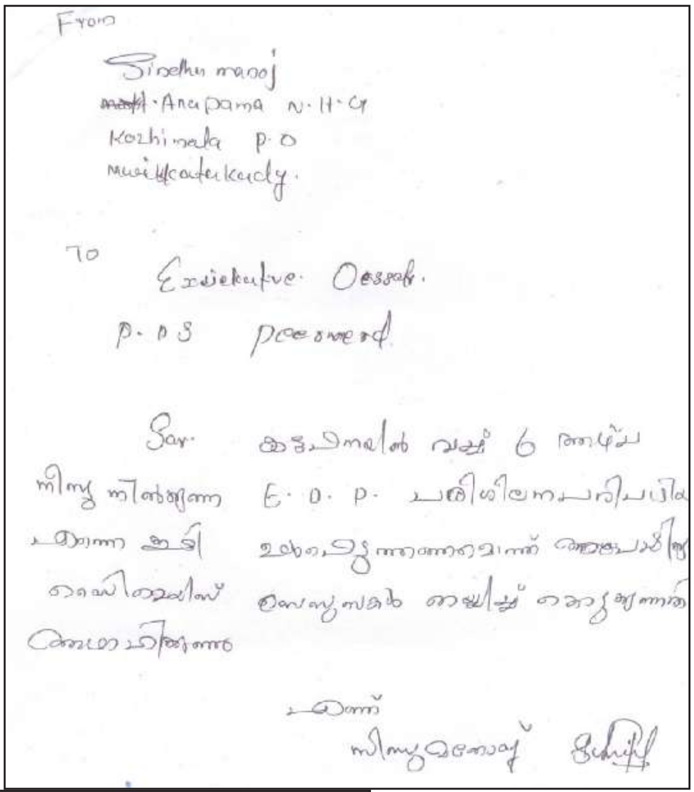


मैंने स्काल्ट जम्मू में भारत सरकार की परियोजना में मिल्क केक बनाने की प्रशिक्षण ली। हमें यहाँ से स्टार्ट अप के रूप में कड़ाई, कड़ा, मशीन, दी गई। हम अपना रोजगार खुद चला रहे हैं। हमें काफी फायदा हुआ है। हम भारत सरकार (DST) (SEED) का शुक्रिया अदा करते हैं।

Gurmail Singh - 9469583853

Feedback from Trainee at Women Technology Park at Idukki, Kerala operated by Peermade Development Society, Kerala





From

Sindhu manoj

Anupama N.H.G

Kozhimala P.O

Murikkattukudy.

To

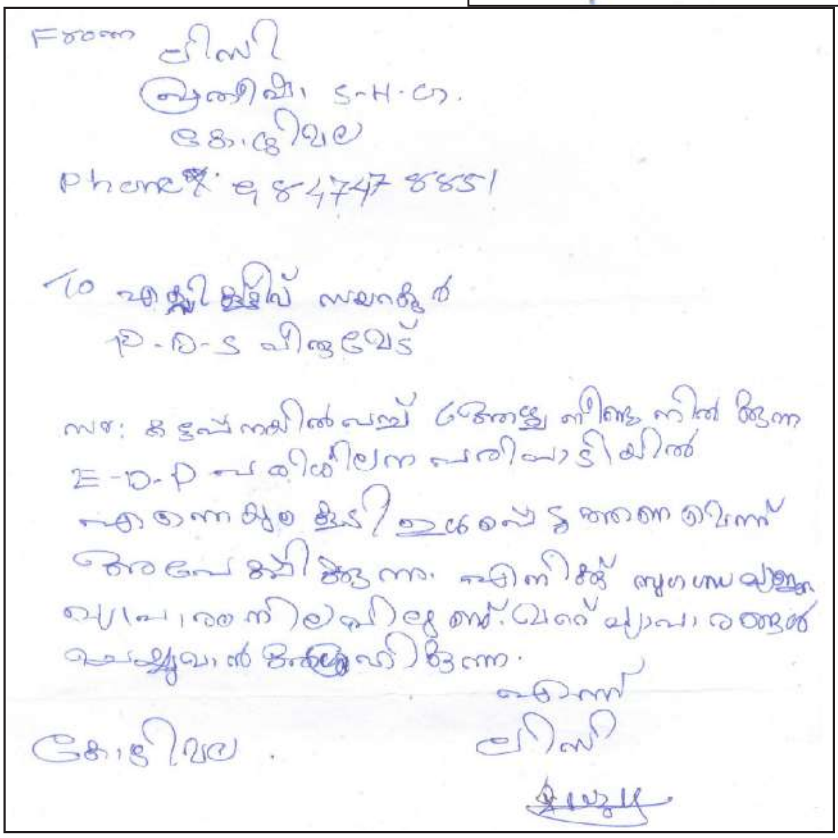
Executive Officer.

P.D.S Peermade

Sir. [illegible] E.D.P. [illegible]

[illegible]

[illegible]



From [illegible]

[illegible] S.H.G.

[illegible]

Phone: 9847478851

To [illegible]

P.D.S പീരുമേട്

സർ: [illegible]

E.D.P [illegible]

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