Independent Evaluation

of

Technopreneur Promotion Programme (TePP)

Sponsored by

Ministry of Science and Technology, Department of Scientific and Industrial Research (DSIR)

Conducted by

Indian Institute of Public Administration
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Project Directors

Dr. Roma Mitra Debnath Dr. Shyamli Singh

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LIST OF ABBREVIATIONS

Serial Number	Description
CERI	Central Electronics Engineering Research Institute
CEO	Chief Executive Officer
CGCRI	Central Glass and Ceramic Research Institute
CMERI	Central Mechanical Engineering Research Institute
CSIO	Central Scientific Instruments Organization
CSVTU	Chhattisgarh Swami Vivekananda Technical University
DSIR	Department of Scientific and Industrial Research
DST	Department of Science and Technology
EDP	Entrepreneurship Development Programme
eHealth TBI	eHealth Technology Business Incubator
ERDC	Electronics Research Development & Facilities Centre
FDP	Faculty Development Programme
FITT	Foundation for Innovation and Technology Transfer
HR	Human Resource
ICICI	Industrial Credit and Investment Corporation of India
ICRISAT	The International Crops Research Institute for the Semi-Arid-Tropics
IHBT	Institute of Himalayan Bio-resource Technology
IIPA	Indian Institute of Public Administration
IIP-IT BHU	Industry Institute Partnership Cell- Institute of Technology, Banaras Hindu University
IPR	Intellectual Property Rights
IISc	Indian Institute of Science
IIT	Indian Institute of Technology
JSSATE-STEP	Jagadguru Sri Shivarathreeshwara Academy of Technical Education Science & Technology Enterpreneurs Park
MT	MicroTechnopreneurship
NCL	National Chemical Laboratory
NDBI-NID	National Design Business Incubator -National Institute of Design
NEERI	National Environmental Engineering Research Institute
NEIST	North East Institute of Science and Technology
NInC	National Innovation Council
NIT	National Institute of Technology
NITK-STEP	National Institute of Technology- Science & Technology Entrepreneurs Park
NRDC	National Research Development Corporation

PRISM	Promoting Innovations in Individuals, Start-ups and MSMEs
REC	Regional Engineering College
ROI	Return on Investments
RTI	Right to Information
SIDBI-IIT	Small Industries Development Bank of India, Indian Institute of Technology
SINE	Society for Innovation and Entrepreneurship
SIRO	Scientific and Industrial Research Organizations
SPMVV	Sri Padmavati Mahila Visvavidyalayam
SRIC-IIT	Sponsored Research and Industrial Consultancy -Inidan Institute of Technology
SSIT	Sri Siddhartha Institute of Technology
TePP	Technopreneur Promotion Programme
TPDU	Technology Promotion Development and Utilization
TREC-STEP	Tiruchirappalli Regional Engineering College -Science and Technology Entrepreneurs Park
TSC	TePP Screening Committee
TUC	TePP Outreach Centers
TPB	TePP Promotion Board
TS	Micro Technopreneurship Support
TPF	TePP Project Fund
UCOST	Uttarakhand State Council for Science and Technology
USIC	University Science Instrumentation Centre
VIT-TBI	Vellore Institute of Technology- Technology Business Incubator
WHO	World Health Organization

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EXECUTIVE SUMMARY

While India was celebrating its Golden Jubilee on 15th August, 1998, Government of India started the initiative of TePP Scheme jointly operated by DSIR under its Programme Aimed at Technological Self Reliance (PATSER) Scheme and Department of Science and Technology (DST) under its Home Grown Technology (HGT) Programme of Technology Information Forecasting and Assessment Council (TIFAC) to promote individual innovators to become technology based entrepreneurs (Technopreneurs).

Both the agencies invested an initial amount of Rs. 25 lakhs each to operationalise the scheme. During Tenth Five Year Plan, they had a total of Rs. 2 Crores having Rs. 1 Crore each. During Eleventh Five Year Plan, they had a capital outlay of Rs. 5 Crore each.

This scheme consisted of two phases, Phase I and Phase II. Phase I further comprised of Microtechnopreneurship (MT) support and TePP project fund. Phase II is composed of supplementary TePP fund and Seamless scale-up support for TePP. The financial support was provided in two distinct phases: TePP Phase I which included innovation and incubation support of a maximum of Rs 15.00 Lakh and TePP Phase II included enterprise incubation support of a maximum of Rs. 45.00 lakh only.

The salient features of the study done by Indian Institute of Public Administration (IIPA) for an independent assessment of TePP programme are being highlighted in the next section.

To reach out to the people of India, TePP Outreach Centers (TUCs) were created by the ministry. It has been observed that TUCs are scattered all over India. Each TUC has adopted a mix of marketing strategies to identify and attract promising talents of India; enriching them; and turning them into commercially and financially viable, sustainable innovations. Nearly 54% of the TUCs have partnership with Indian research institutions and nearly 31% have networked with Indian colleges and Universities for facilitation of TePP scheme. Only 7.7% of the TUCs have network with foreign colleges and universities. To increase the visibility, promote and advertise the TUC centres, 15.4% of TUCs coordinators made use of print media and a same number of TUCs participated in seminars and conferences.14.1% TUC coordinators used national event as a platform to bring about awareness, around same number of TUC coordinators made use of radio to voice awareness regarding innovation and entrepreneurship.11.5% of TUC coordinators used

innovation camps as a platform to create awareness. 9% TUC coordinators tied up with NGOs, 7.7% used Entrepreneurship Development Programmes (EDPs) and 6.4% used Faculty Development Programmes (FDPs) to create awareness. Only 5.1% coordinators used internet to create awareness and only 1.3% used Kisan Melas as a platform to create awareness about innovation and entrepreneurship. TUC coordinators belong to varied age groups and experiential years, empowered with various skills, and provide expertise to the innovators and the entrepreneurs enrolled under TePP in their respective areas, despite the challenges faced.

This scheme was introduced to facilitate culture of innovation and entrepreneurship among citizens from all the sections of society. In Phase I, the majority of the innovators were the first generation of innovators. Only 9.2% belonged to second generation and the remaining 1.3 % of the innovators came from third generation whereas in Phase II, 95% of the entrepreneurs of Phase II belonged to the first generation of entrepreneurs. Only 5% of the innovators belonged to second generation. This indicates a growing interest in the current generation for innovation as per the data collected. In Phase I, the analysis of nature of innovation showed that 96.7% of the innovations undertaken were product innovations, 2% of the innovations were process innovations and only 1.3% innovations were service innovations, whereas, in Phase II, 95% are in product innovations and only 5% are in service area.

The analysis of area of innovation showed an interesting trend. In Phase I, 17.6% innovations were in healthcare, 13.7% were in mechanical, 10.5% were in biotechnology, 5.2% in consumer durable, 4.6% in electronic, 3.9% in nanotechnology, 3.3% in manufacturing, 3.3% in automobile, 2.6% in environment, 2% in communication and networking, 2% in defense, 1.3% in agriculture, 1.3% in agro technology, 1.3% in chemical engineering, 1.3% in consumer goods,1.3% in fire services, 1.3% in textile, 0.7% in insurance, 0.7% in multimedia, 0.7% in process, 0.7% in steel and 0.7% in robotics and 20.3% were in area of allied technology. In Phase II, 30% of innovations undertaken were in the area of healthcare, 15% in mechanical, 10% each in agriculture and textile and remaining 25% were in automobile; manufacturing and life sciences area and 20% innovations were in allied technology.

The impact of the scheme was captured during the study. It was observed that the outcomes derived have a substantial impact on the society, environment, science, technology, and on the economy as a whole. Some of the innovators/entrepreneurs have started with their own start-ups

or business ventures, also known as spin offs. To begin with, TePP scheme has improved upon the quality of life of many people. According to World Health Organization (WHO), millions of people die each year due to medical reasons. The innovators in the area of healthcare have come up with excellent techniques to curb these problems. For example, innovators have innovated in the field of oriental remedies that helps in the manufacturing of tonics, pediatric anti-diarrhoeal suspension etc; developed artificial cell culture manufacturing; plants that are used for treatment of skin and hair, and also used for washing garments that do not damage the skin of washing labour; helped the handicapped by developing communication devices for speech synthesis and message generation for people suffering from cerebral palsy, or have developed aids for patients who are visually impaired, or backbone problem; machines have also been developed that are eco- friendly yet protects the public from mosquito borne disease like malaria . Similarly in the field of cardiology, innovations have been developed to predict the risk of serious heart abnormalities or measurement of heart pumping.

In the field of mechanical, manufacturing process and allied technology; huge modifications in the processes have been done by innovators and entrepreneurs to increase production, lessen the number of hazardous accidents, reduce the dependency on foreign goods, increase exports, and save labour time and energy at the same time. For example, hydraulic disk brakes are created for vehicles; automated rickshaws were designed; pollution free starch processing plants have been developed; multi-level automated two wheeler parking units have been designed and developed in various cities; engines have been invented in which different fuels can be burnt and it is even possible to change the fuel while the engine is running; aerial surveillance has also been benefitted through the manufacturing of aerial vehicles. Apart from this eco-friendly printing ink, emergency manually working mobile chargers, holographic pulsed portrait cameras, technology for photographic films, wood cutters; and many more important innovations have been promoted and given shape under the TePP scheme.

In the field of agriculture, bio-technology, and life sciences, innovations have evolved that would increase the yield of crops, and provide basic amenities to the poor at low cost. For example, there has been development of extendable width cultivator for farmers; eco-friendly pesticides using plants like neem and sea algae; products to increase the yield; nut grading machine; have been developed which are cost effective as well as contributing to the exports.

The innovations have provided green revolution in paper and textile sectors. For example retrofit kit and scientific ruler that contains all the measurements in single ruler are some innovations worth mentioning here. Talking about electronics, devices like clima gear, MCARP, and Voice net have been developed to name a few.

TePP is a unique scheme that is supporting the innovators without any collateral security since its inception. It has paved way for innovation and entrepreneurship culture in the country. The scheme is potential to become more successful and sustainable in long run; however, with the passage of time, there is a need to modify the existing process. The scheme should be more innovators' centric. Providing maximum autonomy to the entrepreneurs would help in generating enthusiasm among the individuals. The existing network with the industries can be explored for a market driven approach to further strengthen the linkage between industry and innovation.

To promote an entrepreneurial approach, the scheme must reduce the processing time of various operations including disbursement of the fund to the beneficiary. The delay in the process escalates the project cost. The technology becomes obsolete, and the innovator becomes de-motivated. The views of the industry experts should be considered for the amount of funds to be disbursed as per the need of innovation. It has been witnessed at various instances; the paucity of funds has led to uncalled delays. The financial resources allocated for such a scheme which brings mind to market are very meagre. There is an immediate need to step up the money allocated for the same. The system should be flexible and should not be generalized as every innovation is unique in nature; so are their needs.

To have a better impact, the scheme can emphasize more on monitoring than on evaluation. The fund related issues may be simplified by smoothening the internal processes. This would also help in enhancing the satisfaction level of the beneficiaries and would motivate them to achieve their goals. Provision of training to impart technical and non-technical skills to the beneficiaries would encourage the involvement of the participants across society.

There must be an inclusion of experts from industry in the screening committee, this would help in creation of market driven flare for the innovation. The innovation would be more sustainable and demand driven. The industry -academia linkage would also help in opening up a plethora of avenues for the students particularly from the science and engineering streams. This would also foster the generation of self-employment.

An attempt should be made for in-depth promotional sessions to increase the visibility of the scheme by creating awareness at the regional as well as at national level too. Various academic institutes can be targeted and the media can also be exploited for the same purpose.

Since TUCs play a significant role in the success of the scheme, selection of the TUCs should be done judiciously. Institutions having innovation incubator cell viz, IIM, IITs and NID, should be given priority during TUC selection or else, their model may be replicated to make this scheme more successful. To increase the accountability of the TUCs, a continuous follow up of the TUC coordinators to improve the complete monitoring system so that more cases are approved instantly leading to reduction in the number of unsuccessful projects, and the increased conversion rate is achieved. IIPA recommends continuation of the scheme.

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1.0 CHAPTER OBJECTIVE

The objective of the chapter is to introduce Department of Scientific and Industrial Research (DSIR), TePP ecosystem, state the objectives of each, underline the eminent spin offs by the innovators, and illustrate the research methodology conducted. Over the years, TePP scheme has made a significant contribution in encouraging promising innovators and entrepreneurs to materialise their innovation, converting ideas into concrete form and have thus been working to pave way for innovation and entrepreneurial culture in the country.

1.1 DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH (DSIR)

The DSIR is a part of the Ministry of Science and Technology, which was announced through a Presidential Notification, dated January 4, 1985 (74/2/1/8 Cab.) contained in the 164th Amendment of the Government of India (Allocation of Business) Rules, 1961. One of the activities also relates to indigenous technology promotion, development, utilization and transfer.

DSIR is the nodal department for granting recognition to in-house R&D units in Industry, Scientific and Industrial Research Organizations (SIROs); and registration to public funded research institutions, universities, Indian Institutes of Technology (IIT), Indian Institute of Science (IISc), Regional Engineering College (RECs), other than hospitals. As on 31st December 2008, there were 1327 in-house R&D units having valid recognition, of these nearly 1245 were in private sector and the remaining were in public/joint sector. A complete directory of all recognized in-house R&D Units is available on the DSIR's website.

1.1.1 OBJECTIVES OF DSIR

The objectives of DSIR have been described below:

1. To enhance industry's R&D Intensity i.e. ratio of R&D expenditure to the annual turnover and industry's share in national R&D expenditure from the present level of around 25% to 30%.
2. To enhance R&D output, this is a function of mainly the following parameters:
    a. Research papers published in peer reviewed journals;
    b. Patents filed/sealed;
    c. R&D commercialization factor i.e. ratio of turnover based on R&D products/processes to R&D expenditure.
3. To enhance Innovation output, which is a function of mainly the following parameters

a. Number of new and innovative products/processes developed;

b. Awards/recognition for outstanding innovations;

c. Ratio of turnover based on innovative products/processes to overall annual turnover

(Source: Departmental Strategies Report, February 2011, page 3, given on DSIR website http://www.dsir.gov.in/aboutus/dsir_strategy.pdf)

1.1.2 IMPORTANT SCHEMES OF DSIR

DSIR has many programmes running under its umbrella. One such programme is TPDU (Technology Promotion Development and Utilization Programme) which aims at promoting technology development and industrial research in the country and encouraging its utilization by various sections of economy including industry, academic, scientific institution and the society at large. Technopreneur Promotion Programme (TePP) scheme was one of the components of this programme.

There have been various schemes as a component of TPDU since its existence. Following is the list of the specific components of the TPDU programme over the years. In the year 2011-2012, there are only four schemes under TPDU programme, one of which is TePP.

Table 1.1 Components of TPDU Programme

Components
• Industrial R&D Promotion Programme (RDI)
• Technology Development and Demonstration Programme (TDDP) • Technopreneur Promotion Programme (TePP) • Technology Management Programme (TMP) • International Technology Transfer Programme (ITTP) • Consultancy Promotion Programme (CPP) • Technology Information Facilitation Programme (TIFP) • Technology Development Utilization Programme for Women (TDUPW) • Information Technology & e-Governance (IT&eG) **(Source: Annual Report 2007-2008)** • Industrial R&D Promotion Programme (IRDPP)

• Technology Development and Innovation Programme (TDIP) • Technology Development and Demonstration Programme (TDDP) • Technopreneur Promotion Programme (TePP) • Technology Management Programme (TMP) • International Technology Transfer Programme (ITTP) • Consultancy Promotion Programme (CPP) • Technology Information Facilitation Programme (TIFP) • Technology Development Utilisation Programme for Women (TDUPW) • Information Technology & e-Governance (IT&eG) • **(Source: Annual Report 2008-2009)**
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• Industrial R&D Promotion Programme (IRDPP) • Technology Development and Demonstration Programme (TDDP) • Technopreneur Promotion Programme (TePP) • Technology Development Utilization Programme for Women (TDUPW) **(Source: Annual Report 2011- 2012)**

1.1.3 Hierarchical Structure of TePP

Figure 1.1 shows the Organizational Structure/Hierarchy for TePP under TPDU programme of DSIR.

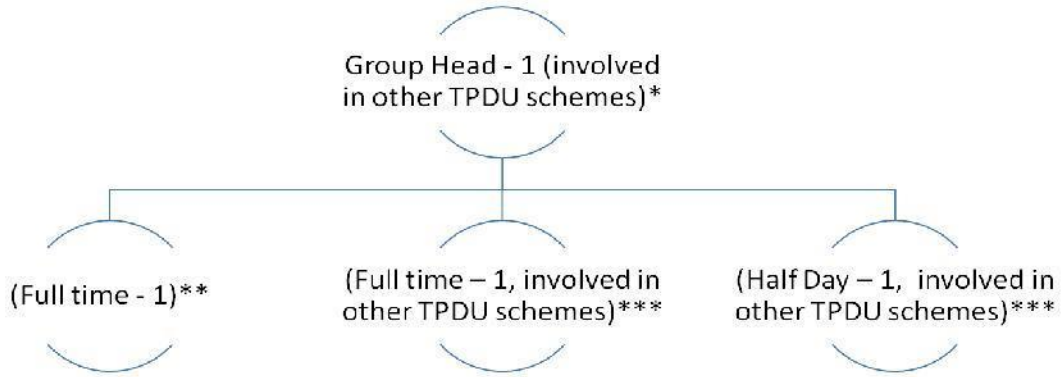


Figure 1.1 Organisational Structure of TePP

*The group head is responsible for overall guidance and supervision.

**Full time is responsible for operations and some administration activities (such as court cases and RTI for TePP).

***Full time and half day involved in other TPDU schemes is responsible only for operational activities.

1.1.4 Expenditure incurred by DSIR under TePP scheme

Table 1.2 gives the details of the expenditure incurred by DSIR over the years (2007-2012).

Table 1.2 Expenditure of DSIR under TePP sche me

Year	Total Expenditure (In Rs.)	Expenditure on TUCs (In Rs.)
2007-08	2,32,43,771	50,49,820
2008-09	6,96,12,034	1,38,00,000
2009-10	4,58,54,175	40,00,000
2010-11	6,07,35,198	1,93,07,174
2011-12	6,55,05,255	1,87,98,451

(Source: TePP, DSIR, 2014)

1.1.5 Analyses of DSIR

DSIR being the apex body of TePP has been analysed in the following text.

1.1.5.1 TePP Screening Committee Meetings

Number of TePP Screening Committee meetings held by DSIR in the XI Five Year Plan has been exhibited in Figure 1.2. It is observed that six meetings were held in the financial Year 2007-2008, seven in the financial Year 2008-2009, five in the financial year 2009-2010 and seven each in the financial years 2010-2011 and 2011-2012. Further, the dates on which these meetings were held has been exhibited in Table 1.3.

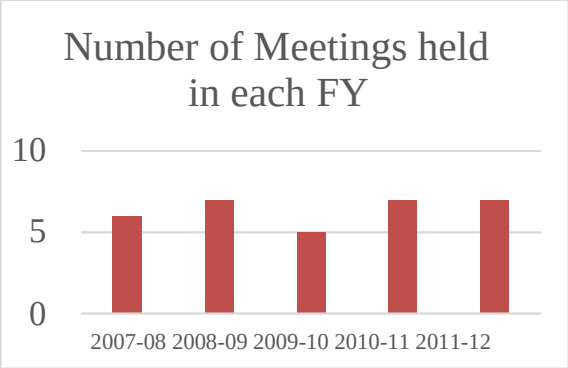


Figure 1.2 Meetings held in XIth Five Year Plan

Table 1.3 Dates of TePP Screening Committee Meetings

Financial Year 2007-2008						
Meeting No.	80	81	82	83	84	85
Date	11th June 2007	16th July 2007	10th Sept 2007	12th Nov 2007	20th Dec 2007	6th Feb 2008

Financial Year 2008-2009							
Meeting No.	86	87	88	89	90	91	92
Date	27th May 2008	27th July 2008	23rd Aug 2008	22nd Oct 2008	17th Nov 2008	26th Dec 2008	3rd Feb 2009

Financial Year 2009-2010					
Meeting No.	93	94	95	96	97
Date	17th Apr 2009	26th May 2009	3rd July 2009	11th Aug 2009	5th March 2009

Financial Year 2010-2011							
Meeting No.	98	99	100	101	102	103	104
Date	9th July 2010	3rd Sept 2010	29th Oct 2010	29th Dec 2010	11th Feb 2011	22nd Feb 2011	14th March 2011

Financial Year 2011-2012							
Meeting No.	105	106	107	108	109	110	111
Date	23rd May 2011	16th Aug 2011	23rd Sep 2011	29th Nov 2011	18th Jan 2012	27th Feb 2012	23rd March 2012

(Source: TePP Screening Committee Minutes of Meeting)

1.1.5.2 Analysis of Projects registered under TePP

Figure 1.3 depicts the total number of projects registered under TePP in XI Five Year Plan and their subsequent breakups. It is observed that the projects are divided into two broad segments, new projects in each year and carry forward projects from previous years. Under new projects category, 32% of the projects were approved, 35% were deferred, and 33% of the projects were rejected. Under carry forward projects category, 33% of the projects were approved, 28% were deferred, and 39% of the projects were rejected. Here, approved means that the application of the innovator has been approved and the support would be given to the innovator under TePP. Deferred projects would be further examined by TUCs, or are under the waiting category for submission of complete reports, or half funds have been released, or the projects are carried forward to next years.

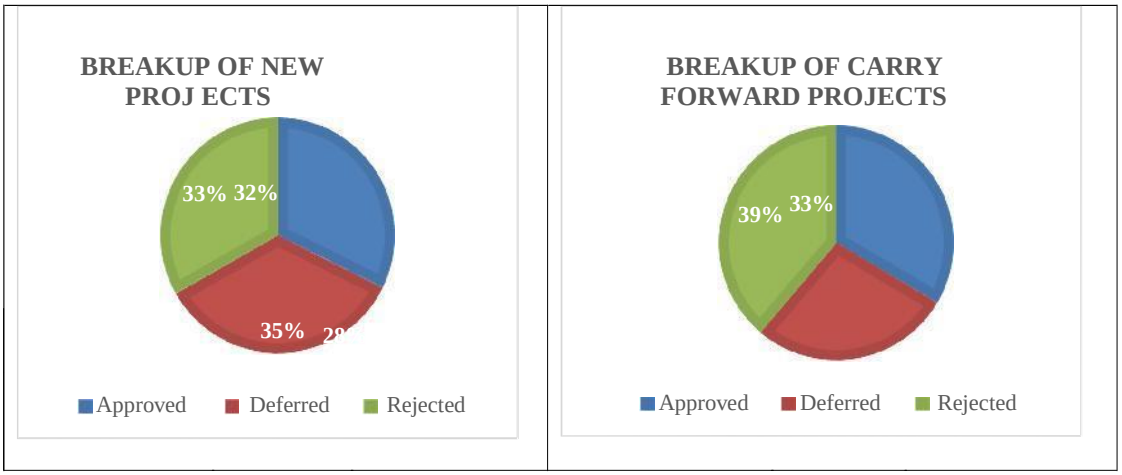


Figure 1.3 Breakup of Number of Projects under TePP in XIth Five Year Plan

According to the TePP scheme, if an innovator fails to demonstrate the working model/prototype, the project is declared unsuccessful and the application is rejected. As per the data collected from the TePP Screening Committee Minutes of Meeting, approximately there are 39 reasons due to which a project is declared unsuccessful, and as a result, it is rejected. These reasons have been depicted in Table 1.4.

Table 1.4 Reasons of Rejection

Particulars	Financial Year				
Reasons of Rejection	**2007-2008**	**2008-2009**	**2009-2010**	**2010-2011**	**2011-2012**
For scaling up (Beyond the scope of TePP)	7%	1%	3%	1%	-
Details are sketchy	4%	8%	9%	3%	-
Idea is not novel	15%	1%	3%	2%	4%
Not sufficient details/ incomplete report/ application incomplete	10%	8%	7%	5%	4%
Already supported by TePP previously	4%	-	5%	-	1%
For basic research/faculty research (beyond the scope)	4%	2%	1%	3%	2%
Forwarded to NIF	15%	2%	3%	-	-
Advised for further counselling by respective TUC	16%	44%	10%	1%	-
To be examined for sustainability	1%	-	-	-	-
Low business advantage	3%	-	-	-	-
Idea is not innovative	2%	-	11%	25%	24%
Already running own organization/small scale industry	4%	-	-	1%	-
Expert comments say not feasible	1%	8%	12%	24%	15%
Commercialization feasibility problem / Proposal for only commercialization	1%	3%	22%	1%	1%
Budget Problem (too low or too high)	1%	1%	-	1%	1%
No reason for closure	1%	4%	-	1%	3%
Project for software development/web activities (beyond the scope of TePP)	-	3%	-	1%	-
Applicant and innovator different/idea belongs to someone else	-	1%	-	1%	1%
Yet to be completed	-	6%	-	-	-
Completed projects - sent for phase II	11%	3%	4%	1%	-
Transferred to NABARD	-	1%	1%	1%	-
Apply again with single applicant	-	1%	-	-	-

Already submitted one proposal (many proposals not allowed)	-	1%	-	-	-
Submit new proposal (invalid, details not apt)	-	-	3%	1%	-
Innovator not responding	-	1%	1%	1%	-
Technically not feasible	-	-	2%	-	18%
Lateral entry in Phase II (no provision as	-	-	5%	1%	2%
Submitted by an industry/group of people (not	-	-	1%	2%	-
Application not received through TUC Mechanism	-	-	-	10%	-
More testing required	-	1%	-	1%	-
Already similar projects running	-	-	-	7%	5%
Innovator does not have domain expertise	-	-	-	1%	-
Innovator going abroad/went abroad	-	-	-	2%	1%
Not as per TePP Guidelines	-	-	-	4%	3%
Already got the funding/patented from third Party	-	-	-	2%	-
Innovator has withdrawn the application	-	-	-	1%	-
Could not be discussed with TUC/will continue in 12th five year plan	-	-	-	-	12%
Total Number of Cases	100	150	110	191	92

(Source: TePP Screening Committee Minutes of Meeting)

In 2011-2012 the major reasons of rejection of projects were idea was not innovative (24%), according to experts comments the project is not feasible (15%), and technically the projects are not feasible (18%). Since the data is not phase wise, no further explanation could be given on the same.

1.1.6. Challenges faced by DSIR

TePP (Technopreneur Pr o mo t i o n Programme) was carved out of Programme aimed at Technological Self Reliance (PATSER) Scheme of DSIR and HGT Scheme of TIFAC (DST) during 1998-99 to extend financial assistance to individual innovators.

However, no separate Secretariat was created to manage the programme.

(i) A major challenge/constraint in expanding the scope and reach of the programme is the crunch of resources in terms of man power. The entire work related to TePP Scheme; both Secretarial and Technical were being handled by a small group of officers in DSIR. This is a major challenge/constraint in expanding the scope and reach of the programme. Apart from this, there are other challenges mentioned as below.

(ii) The other challenge pertains to reach out more number of innovators, funding of more projects and time-bound monitoring of funded projects.

(iii) Since, in few cases, innovators are frequently shifting their place of work and activity as well, DSIR is facing acute problem in completion of such projects by the respective innovators within the stipulated time in spite of help rendered by TePP Outreach Centre (TUC).

(iv) The delay in submission of Progress-Report, Utilization Certificate (UC)/ Statement of Expenditure (SE) by innovators is another challenge. This results in poor conversion ratio of funded project into marketable products.

(v) The Scheme was very poorly staffed both in terms of technical and secretarial manpower. This is very crucial factor which impedes the growth of the scheme.

1.2 TECHNOPRENEUR PROMOTION PROGRAMME (TePP) ECOSYTEM

Innovation is the predominant source of new or improved products or services. TePP is one such scheme that promotes innovations and the brain child behind these innovations.

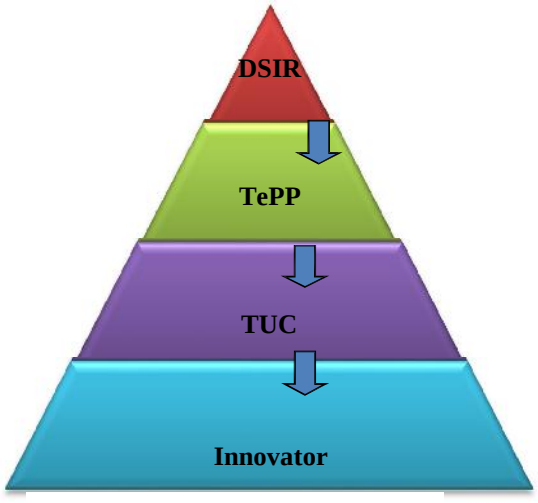


Figure 1.4 TePP Ecosystems

Parties to TePP ecosystem are depicted in Figure 1.4. It is a top- down approach. The parties as per the hierarchy are as follows:

1 DSIR: Apex body

2 TUC (TePP outreach centres): Agencies providing services to innovators and entrepreneurs registered under TePP.

3 Innovators: Citizens of India having innovative ideas.

1.2.1 HISTORICAL PERSPECTIVE OF TePP

While India was celebrating its Golden Jubilee on 15th August, 1998, Government of India started with the initiative of TePP Scheme jointly operated by DSIR under its Programme Aimed at Technological Self Reliance (PATSER) Scheme and Department of Science and Technology (DST) under its Home Grown Technology (HGT) Programme of Technology Information Forecasting and Assessment Council (TIFAC) to promote individual innovators to become technology based entrepreneurs (Technopreneurs).

Both the agencies invested an initial amount of Rs. 25 lakhs each to operationalize the scheme. During Tenth Five Year Plan, they had a total of Rs. 2 Crores, each having Rs. 1 Crore. During Eleventh Five Year Plan, they had a capital outlay of Rs. 5 Crore each. In all, Rs. 21 crores was spent during the period of Ninth Five Year Plan to Eleventh Five Year Plan.

TePP was introduced to tap the potential of the innovators and facilitate entrepreneurship among them. The criteria for the selection is that the innovator should be the citizen of India should have a novel idea, and innovation should be the main focus.

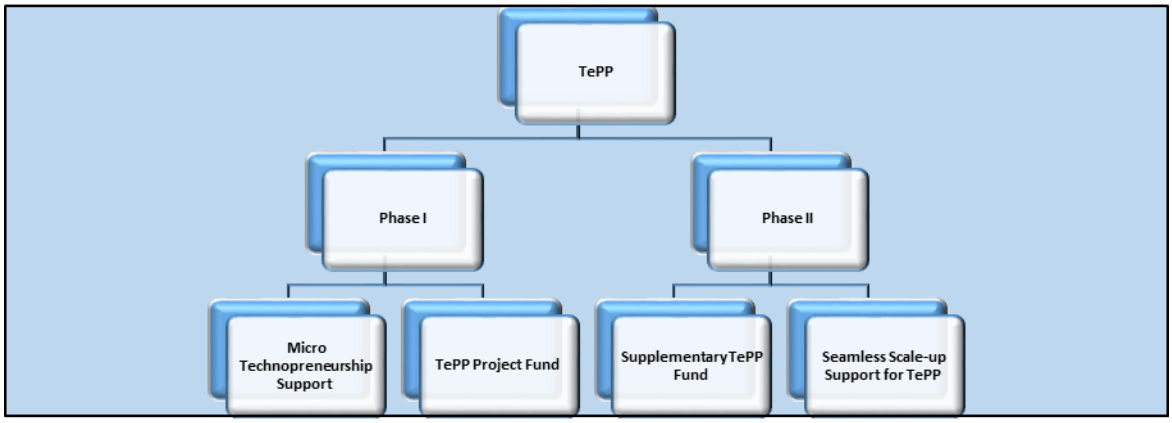


Figure 1.5 TePP Scheme

This scheme consisted of two phases, Phase I and Phase II as shown in Figure1.5. Phase I further comprised of Microtechnopreneurship (MT) support and TePP project fund. Phase

II is composed of supplementary TePP fund and Seamless scale-up support for TePP (as taken from Creative India Report Vol. V, 2010).

Table 1.5 TePP scheme and Eligibility

PROGRAMME	ELIGIBILITY
TePP Phase I (innovation incubation): 1.Micro Technopreneurship Support(TS) (Max support Rs 0.75 lakhs) 2. .TePP Project Fund (TPF) (Max support Rs 15 lakhs)	Any independent innovator testing radically new ideas with computer generated models. Any independent innovator/ start-up firm for developing function proving prototypes.
TePP Phase II(enterprise incubation): 1.Supplementary TePP Fund (STF) (max support Rs 7.50 lakhs) 2.Seamless scale-up support (S3T) (max support Rs 45 lakhs)	Successful TePP innovators of TePP Phase-I for licensing technology to a third party. Successful TePP innovators of TePP Phase-I for starting own enterprise.

Source: DSIR Annual Report, 2012

The financial funds given under different schemes are shown in Table 1.5. The support was provided in two distinct phases: TePP Phase I which included innovation and incubation support of a maximum of Rs 15.00 Lakh and TePP Phase II included enterprise incubation support of a maximum of Rs. 45.00 lakh only (as taken from TePP Operating Guidelines for XI plan period, May 2007, page 5). Details of different phases have been discussed in the subsequent text.

1.2.1.1 Micro Technopreneurship Support (TS) Guidelines

1.2.1.1.1 Scope and Support

- TS is for micro budget innovations and is also given an initial support to TPF (Technopreneur Project Fund) applicants to work further on their ideas to the point they can be considered under TPF.
- Selected projects will be provided financial support to initiate a promising development, prove functionality by a lab model/computer model, apply for patenting, etc.
- Maximum support under this category is Rs. 75,000/- subject to 90% of approved cost

1.2.1.1.2 Mechanism

- Initially the proposals will be screened for completeness at the point of receipt, by TePP secretariat or by the coordinators of TUCs
- The proposals after initial screening are assigned to officers at DSIR for evaluation
- Complete and evaluated proposals will be discussed in the TSC (TePP Screening Committee) and those recommended for support will be submitted on file to TePP Promotion Board for approval and finally sanction will be released to those that are approved by the board. The applicant has to sign "Terms and Conditions" prior to the actual release of grants-in-aid
- The first release is based on assessment of need by TSC and subsequent releases are based on the assessment by project monitoring committee/concerned TUC. Each of approved projects will be monitored by TUC/other network partner by including technical experts. TUC will be periodically reporting project status to the TSC.
- Project completion/closure will be reported to TSC for feedback and record.

1.2.1.1.3 Limiting Conditions

- The proposals involving software development, only patenting, and for basic scientific research having no immediate commercial implication will not be accepted for consideration under TePP. Software embedded projects and patenting along with prototype development are eligible for support. Innovative S&T delivery models will also be eligible.
- Faculty/student research projects will not be supported; however faculty start-ups and student entrepreneurs will be eligible if they have the right to commercially exploit the technology.
- Proposals of grass root innovators, herbal products (developed by grass root innovators), school children projects will be taken by NIF and not under TePP. Proposals to scientifically test the efficacy and toxicity of herbal formulations developed by innovator (other than grass root innovator) will be eligible for support. Process standardization will also be eligible for support after providing efficacy and non-toxicity.
- The proposals from the owner of a start-up company may be considered for TePP support, if the annual turnover does not exceed Rs. 45.00 lakhs per annum.

- Individuals working in organizations and having innovative ideas may apply for TePP support by furnishing a 'No Objection Certificate' from their employer.
- Manpower costs are based on actual and not exceeding 20% of the total project cost.
- Innovator's salary and rental expenses for use of own facilities are not eligible for support.
- Travel costs are based on actual and not exceeding 5% of the total project cost.
- TS is not an award for work done but a grant for the work to be done.

1.2.1.2 TePP Project Fund (TPF) Category Guidelines

1.2.1.2.1 Scope and Support

- Proposals to convert an original idea/invention/know how into working prototype/process.
- Proposals to demonstrate novel delivery models to take S&T innovations to rural India.
- Maximum support under this category is Rs. 1, 50, 000/- subject to 90% of approved cost.

1.2.1.2.2 Mechanism

- Initially the proposals will be screened for completeness at the point of receipt, by TePP secretariat or by the coordinators of TUCs
- The proposals after initial screening are assigned to officers at DSIR for evaluation
- Complete and evaluated proposals will be discussed in the TSC (TePP Screening Committee) and those recommended for support will be submitted on file to TePP Promotion Board for approval and finally sanction will be released to those that are approved by the board.
- The applicant has to sign "Terms and Conditions" prior to the actual release of grants-in-aid
- The first release is based on assessment of need by TSC and subsequent releases are based on the assessment by project monitoring committee/concerned TUC.
- Project completion/closure will be reported to TSC for feedback and record.

1.2.1.2.3 Limiting Conditions

- The proposals involving software development, only patenting, and for basic scientific research having no immediate commercial implication will not be accepted for consideration under TePP. Software embedded projects and patenting

along with prototype development are eligible for support. Innovative S&T delivery models will also be eligible.

- Faculty/student research projects will not be supported, however faculty start- ups and student entrepreneurs will be eligible if they have the right to commercially exploit the technology.
- Proposals of grass root innovators, herbal products (developed by grass root innovators), school children projects will be taken by NIF and not under TePP. Proposals to scientifically test the efficacy and toxicity of herbal formulations developed by innovator (other than grass root innovator) will be eligible for support. Process standardization will also be eligible for support after providing efficacy and non-toxicity.
- The proposals from the owner of a start-up company may be considered for TePP support, if the annual turnover does not exceed Rs. 45.00 lakhs per annum.
- Individuals working in organizations and having innovative ideas may apply for TePP support by furnishing a 'No Objection Certificate' from their employer.
- Manpower costs are based on actual and not exceeding 20% of the total project cost. Innovator's salary and rental expenses for use of own facilities are not eligible for support.
- Travel costs are based on actual and not exceeding 5% of the total project cost.

1.2.1.3 Supplementary TePP Fund (STF) Category Guidelines

1.2.1.3.1 Scope and Support

- Proposals aim at improving transferability potential of innovations supported under Phase I, by carrying out such value added work like adding product features, protection by patenting, aesthetic design, etc, as desired by the business partner.
- Maximum support under this category is Rs. 7,50,000/- subject to 90% of approved cost.

1.2.1.3.2 Mechanism

- The proposals will be submitted to TePP and will be screened and evaluated by TePP officials at DSIR.
- Evaluated proposals are put forth to the TSC (TePP Screening Committee) for consideration.
- The applicant has to sign "Terms and Conditions" prior to the actual release of grants-in-aid.

- TSC recommends the proposal for TePP support, while TPB (TePP Promotion Board) gives approval for TePP support on file for necessary grant. The first release is based on assessment of need by TSC and subsequent releases are based on the assessment by project monitoring committee/concerned TUC.
- Project completion/closure will be reported to TSC for feedback and record.

1.2.1.3.3 Limiting Conditions

- Only TePP Phase I innovations are eligible
- There is a need to involve business partner
- Funds will be released to innovator
- Manpower costs are based on actual and not exceeding 20% of the total project cost.
  - Innovator's salary and rental expenses for use of own facilities are not eligible for support.
- Travel costs are based on actual and not exceeding 5% of the total project cost.

1.2.2 GROWTH OF INNOVATORS

Since inception, 526 innovations of independent innovators have been supported. Out of these, 430 were supported by DSIR. Table 1.6 and 1.7 entails the details of the completed, on-going and approved projects supported under TePP over last five years (2007-2012).

Table 1.6 Approved proposals in TePP scheme

Number of approved proposal in the last five years			
Year	**TePP Phase I**	**TePP Phase II**	**Microtechnopreneurship**
2011-12	**29**	**3**	**56**
2010-11	**17**	**6**	**20**
2009-10	**50**	**2**	**16**
2008-09	**83**	**6**	**26**
2007-08	**12**	**NA**	**NA**

Compiled from Annual Report (2008-12)

Table 1.7 Project status in TePP scheme

Project status in the last five years				
Year	**Completed Projects**	**TePP Phase I ongoing**	**TePP Phase II ongoing**	**Microtechnopreneurship ongoing**
2011-12	**47**	**130**	**7**	**18**
2010-11	**54**	**158**	**7**	**23**
2009-10	**10**	**140**	**7**	**27**
2008-09	**20**	**47**	**2**	**NA**
2007-08	**15**	**55**	**2**	**NA**

Compiled from Annual Report (2008-12)

Further, Figure 1.6 shows the flowchart of TePP registration process.

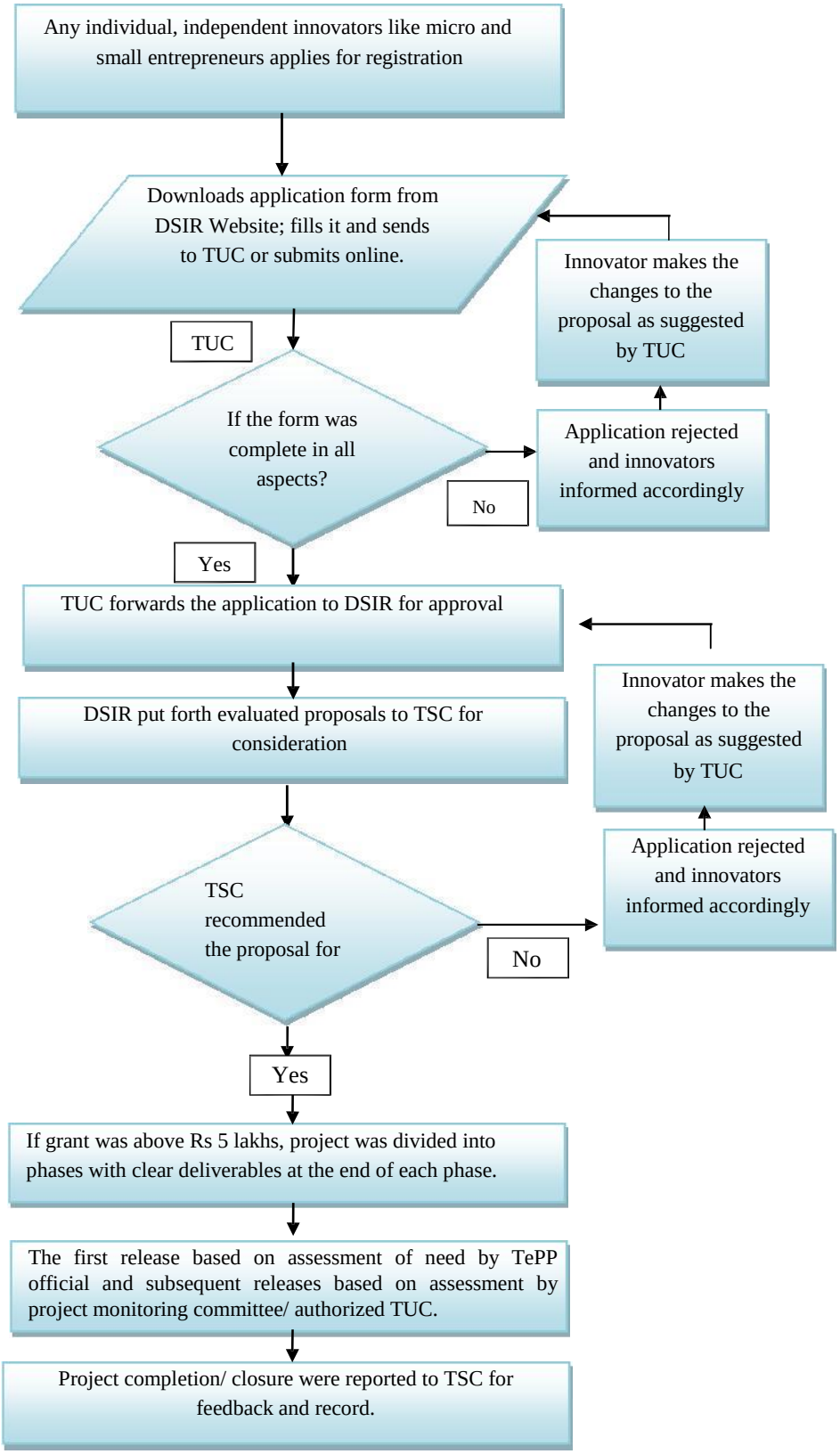


Figure 1.6 Flowchart of activity for registering for TePP scheme *Source:* http://dsir.csir.res.in/

1.2.3 TePP OUTREACH CENTERS (TUC)

The TePP scheme supported independent innovators and entrepreneurs across India. The network spread out with 34 outreach centres and 100 innovation managers to provide grants, pre-seed funds, technical guidance, incubation facilities and assistance to get a sound business plan, (source: Annual Report 2011-2012). A comprehensive list of TUC is shown Table 1.8.

Table 1.8 TUC in TePP scheme (2007-2012)

S.No	State	TePP Outreach Center (TUC)
1	**Kashmir**	i. USIC, University of Kashmir, Srinagar
2	**Himachal Pradesh**	i. IHBT, Palampur
3	**Punjab**	i. CSIO, Chandigarh
4	**Haryana**	i. ERDC-Hartron, Ambala Cant.
5	**New Delhi**	i. FITT, New Delhi
6	**Uttarakhand**	i. IPR cell, IIT, Roorkee ii. UCOST, Dehradun
7	**Uttar Pradesh**	i. JSSATE-STEP, NOIDA ii. IIP cell, IT-BHU, Varanasi iii. SIDBI, IIT Kanpur
8	**West Bengal**	i. SRIC, IIT Kharagpur ii. CGCRI, Kolkata iii. CMERI, Durgapur
9	**Assam**	i. NIT, Silchar ii. NEIST, Jorhat
10	**Andhra Pradesh**	i. ICRISAT, Patancheru ii. TePP Outreach Centre, Acharya Nagarjuna University , Guntur (Dt) iii. SPMVV, Tirupati iv. ICICI Knowledge Park, Hyderabad
11	**Tamil Nadu**	i. VIT-Technology Business Incubator, VIT University, Vellore ii. TREC-STEP, NIT Campus, Trichy iii. Technology Business Incubator (TBI) University of Madras, Taramani Campus, Chennai iv. PGS-STEP, Coimbatore
12	**Kerala**	i. Technopark-TUC, Technopark Campus, Trivandrum
13	**Karnataka**	i. S.S.I.T., TUMKUR ii. NITK-STEP, NIT, Srinivasnagar iii. TBI-e-Health, Bangalore
14	**Maharashtra**	i. SINE, IIT Bombay. ii. NEERI, Nehru Marg, Nagpur iii. Venture centre, NCL, Pune
15	**Gujarat**	i. NDBI, NID, Ahmedabad.
16	**Rajasthan**	i. College of technology and Engineering, Udaipur ii. CEERI, Pilani
17	**Chhattisgarh**	i. CSVTU, Bhilai

Compiled from Annual Report, 2012

1.3 TePP SCHEME OBJECTIVES

TePP along with its network partners provides grants, technical guidance and mentoring to independent innovators to emerge as entrepreneurs by incubating their idea and enterprise in two phases. Till date 400 innovations have been supported. Proposals are being invited for further support.

1.3.1 TePP SCHEME OBJECTIVES VIS-À-VIS NATIONAL PERSPECTIVE

As per Department of Science & Technology (DST), STI Policy 2013, India has declared 2010-20 as the 'Decade of Innovation'. The Government had stressed the need to enunciate a policy to synergize science, technology and innovation and has also established the National Innovation Council (NInC) for the support of the same. New structural mechanisms and models are needed to address the pressing challenges of energy and environment, food & nutrition, water & sanitation, habitat, affordable health care and skill building and unemployment. 'Science & technology and innovation for the people' is the new paradigm of the Indian STI enterprise. The national STI system must recognize the Indian society as its major stakeholder. Global innovation systems tend to bypass large sections of the community (DST website: www.dst.gov.in)

In the light of above discussion, the objectives have been aligned with national perspectives as follows.

1. **Spreading Science and Technology amongst all sections of society:** Government's policy on Science and Technology aimed to ensure that the message of science reaches every citizen of India, irrespective of gender and age, so that the nation advances scientific temper, emerges as a progressive and enlightened society, and made it possible for all our people to participate fully in the development of science and technology and its application for human welfare. In a nutshell, science and technology to be fully integrated with all spheres of national activity. TePP also aimed to aid in this by promoting technopreneurship at both grassroots and formal sector innovators including incubatees.
2. **Enhancing skill for applications of science among the young from all social strata:** The TePP scheme managed by DSIR aimed to support individuals from society. The scheme proposed to support individual both grassroots and formal sector innovators to take innovative idea up to pre-pilot scale. The vast networks of TUC centres are aided promising innovators in acquiring and applying skills in diverse area of science.

3. **Making careers in science, research and innovation attractive enough for talented and bright minds:** The TePP was a central plan grants-in-aid scheme managed by DSIR to support individuals from all sections of society. Also the funds were disbursed directly to the innovators. Year round conferences, workshops, talks and visits from eminent people in science and technology were organised to attract promising talent.
4. **Establishing the need for world class infrastructure for R&D and for gaining global leadership in some select frontier areas of Science:** TePP needs the support of vast network of R&D laboratory in diverse discipline to support individuals for converting innovative ideas into demonstrable working models.
5. **Positioning India as one of the global scientific powers:** TePP is contributing to help India achieve a position as one of the global scientific powers by extending its support through provision of launching pads to innovators, offering financial aids, opening up of new TUCs, and assisting innovators in every possible way.
6. **Linking contributions of science, research and innovation system with the inclusive economic growth agenda and combining priorities of excellence and relevance:** Entrepreneurship emanating from within the collective or having roots in indigenous cultural values is all about building capacity to harness the power of economic independence. In an effort to build on these successes, the TePP scheme intended to support proposals from the incubate companies (for the projects initiated during the first year of incubation) in public funded technology and business incubators for up-scaling their proof of concept. This initiative gave impetus to indigenous industries which in turn enabled national growth.
7. **Fostering resource-optimization, cost -effective innovations :** Through its various TUC centres and associated R&D laboratories, the scheme aimed to explore affordable and sustainable innovations across diverse technology domains. This also provided a competitive edge to innovators.
8. **Changing societal value system:** The scheme encouraged creativity in individuals and assisted incubates in demonstrating t heir innovative products and services. These efforts resulted in creation of new technology based venture, creation of new job opportunities and also improving national economy in the long run.
9. **Creating a robust national innovation system:** TePP aimed to strengthen linkages with knowledge partners, e.g. the institution hosting and other R&D laboratories, to create a robust system which would buttress the growth of innovation through-out the country.

1.4 ToR OF THE STUDY

Independent Evaluation of TePP study has been performed to review the current state of the policies & procedures of the scheme; conducting the strengths, weaknesses, opportunities, and threats analysis in order to assess the major outcomes; formulating the parameters of utility for personnel attached with TePP Outreach Centres; and recommending the continuation of the scheme or otherwise. The objectives under this review process are:

1. To analyze the business objectives of the scheme vis-à-vis National Perspectives,
2. To conduct Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis of the scheme,
3. To analyze the major outputs of the scheme vis-à-vis desired outputs,
4. To analyze/assess major outcomes of the scheme vis-à-vis desired outcomes with analysis of parameters such as utility to the end users, cost, optimization, environmental management and control etc.,
5. To assess utility/impact of erstwhile TePP Outreach Centres (TUC),
6. To justify/recommend about the continuation of the scheme or otherwise.

The scope of the project is to evaluate the current state of the TePP scheme, attached TUCs and the concerned innovators.

1.5 RESEARCH METHODOLOGY

Figure 1.7 displays the phases of research methodology adopted to review the current status of the processes. The element of engagement used during this period has been literature review, case studies, and field survey based on questionnaires.

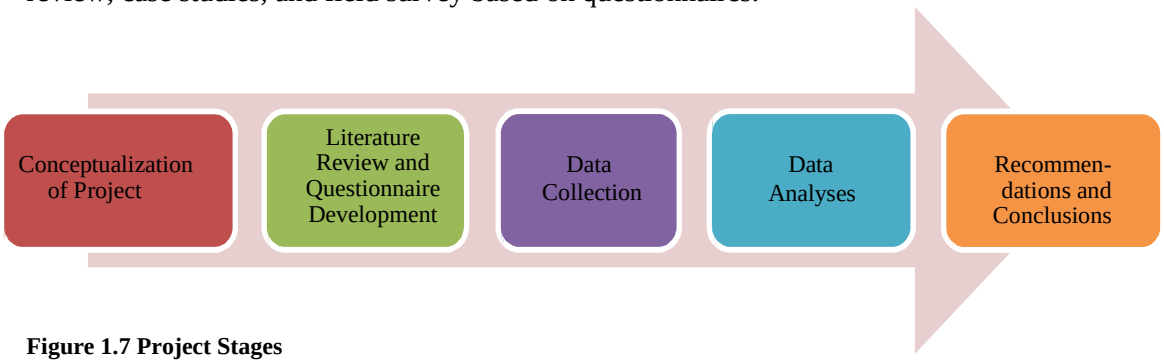


Figure 1.7 Project Stages

The phases have been discussed in detail as follows.

Stage 1. Conceptualization of the Project

The first step was meeting DSIR personnel, stating clear overview of the project, designing goals and objectives, and summarizing the expectations.

Stage 2. Literature Review and Questionnaire Development

The second step involved detailed planning of the project; literature review from secondary sources like Annual Reports, websites, etc; and developing questionnaires for various stages and for multiple stakeholders of the scheme.

Stage 3. Data Collection

The database provided by the ministry included the contact details of TUCs and innovators registered under the various TUCs. A combination of email, telephonic administration and field survey, with the help of field officers, were adopted to collect in-depth information from the TUC coordinators, innovators and entrepreneurs; gather their experiences, challenges faced and understand their views about the TePP programme respective TUC.

Stage 4. Data Analyses

Data analyses were the next step where the data collected from the field surveys were analyzed. The results were interpreted in both quantitative and qualitative formats by appropriate estimation methods.

Stage 5. Recommendations and Conclusion

The final stage would involve documenting the report; analyzing the gaps; and recording the recommendations for the road map ahead.

1.6 CONCLUSION

In order to ensure inclusive growth in the country, innovation should be the main focus. DSIR and TePP, in tandem, are working to promote technological innovations and change the face of India. This chapter focuses on the working of the DSIR, mechanisms and conditions of TePP, and the research methodology followed to evaluate the working of TePP.

CHAPTER II- SWOT ANALYSIS

2.0 CHAPTER OBJECTIVE

Innovation is the engine to a full grown and prosperous country. Entrepreneurs have an innovative notion to provide systematic, long-term, and sustainable solutions to the masses to meet the social and environmental challenges at hand. This involves aptitude to change, thinking beyond imagination, development of ideas, and its successful implementation. Some of the factors motivating entrepreneurship are innovative spirit, incremental differentiation, corpus of funds, financial viability, target market, sustainable idea, marketing strategies, dedicated team, infrastructural environment, planning, conceptualization, etc.

The following chapter aims to analyse the Strengths, Weaknesses, Opportunities and Threats (SWOT) of the policies and procedures of TePP to assess the factors facilitating future developments. SWOT analysis is based on the data received, collected and analysed through primary and secondary sources. Primary sources include documents provided by DSIR, TUCs, and the responses received from the TUC coordinators and the innovators. Secondary sources include government websites, Annual Report, and Creative India reports etc.

2.1 ABOUT SWOT

Figure 2.1 displays the SWOT analysis which aims to analyse the strengths worth being proud of, weaknesses or the pain points to be focused, opportunities worth diving into, and threats to be removed. Effective and multipurpose TePP ecosystem would be created once both the positive and the negative sides of the picture are taken into consideration, and the weaknesses are turned into strengths and threats into opportunities. Such a platform would provide employment opportunities, focus on the inclusive growth of the economy, meet technological advancements, and improve upon the environment on the whole.

Figure 2.1 SWOT Analysis

2.1.1 STRENGTHS

TePP was a unique programme that promoted innovators from all age groups, irrespective of educational backgrounds, status or gender. These personnel could be from any background of occupations like doctors, professors, technicians, professionals, agriculturists, businessmen, job, or self-employed and the innovations could be in areas like technology, bio-technology, healthcare, engineering processes, electronics, consumer durables, agriculture, defence mechanism, robotics, multimedia, communication, and networking to bring a change in the society. The only requirement being the personnel should be a citizen of India. The pillars of strengths are highlighted below.

1. **Inclusive Growth:** TePP was an engine engaged in developing individuals from all sections of society irrespective of age, gender, caste, creed, or religion. Any Indian citizen, who had an innovative idea, was eligible to apply.
2. **Infrastructural Support:** The ministry has a huge network of supported R&D laboratories in varied disciplines. TePP scheme worked to strengthen the links of TUC with knowledge partners, e.g. institutions hosting the TUCs like IIT Delhi, Mumbai, Kanpur, Kharagpur, etc.
3. **Innovation Focus:** The innovation agenda of TePP harnessed the core competencies, local talents, and resources to create new opportunities.
4. **Project Monitoring:** Innovators registered under the TePP scheme were imparted technical and non-technical mentoring in terms of proposal writing, patenting, Intellectual Property Rights (IPR), handholding sessions, commercialization, continuous monitoring at all stages of product development to develop innovative attitude and approach among the innovators. The funds were granted after the complete assessment by the ministry.
5. **Intellectual Property Rights resides with Innovator:** Intellectual Property Rights (IPR) received for the innovation, with the help and guidance of the ministry, resided with the innovator only. This helped in the development of innovation and entrepreneurship culture in the country by providing immense power to each individual.
6. **Creating awareness:** Personnel involved with the TePP scheme were also responsible for creating awareness among the public through marketing and advertising strategies like newspapers, magazines, pamphlets, websites, institutions, exhibitions, seminars, workshops, training programmes, and B-plan competitions.

7. **Sanction of Funds:** The grants sanctioned for a particular innovation was directly transferred to the innovator from DSIR. The concerned TUC had no play in the process, what-so-ever.

2.1.2 WEAKNESSES

1. **Fixed Financial Support:** The financial support provided to the innovators and entrepreneurs was fixed in nature with respect to each category and each phase. Thus it limited the scope of prototypes or models that required more financial support.
2. **Business plan:** A sustainable B-plan had to be submitted by the entrepreneurs registered under TePP Phase II in order to receive the next instalment of funds. This became a hindrance for the young talents and resources who had a drawback in area like proposal writing.
3. **One at a time Innovation**: Application to TePP was limited to one innovation at a time. There were people who had plethora of ideas and wanted to convert the ideas to unique products for the betterment of the society. However, they felt restricted because of the above said condition.
4. **Absence of Lateral Entries:** It was observed that innovators were not allowed direct entry in Phase II. They were required to go through the initial phases in order to enter into the phase of entrepreneurship. This clause should be amended and the innovators should be allowed to enter into Phase II on meeting the eligibility criteria. Further, the existing entries in Phase II should have been allowed for overhauling and modifications in their innovations which might have become obsolete due to delay in the administration procedures.
5. **Absence of Grievance Redressal:** Absence of a centralized grievance redressal systems de-limited the innovators in terms of communicating problems to the appropriate authority which resulted in delays in the decision making process. Proper guidance should have been provided at every step of innovator's development to limit the problems faced.
6. **Process Simplification:** The registration and application process (as discussed in the chapter I) under the TePP scheme involved a lot of paper work. More focus is on the mechanism and terms and conditions laid down. The process should be simplified in order to reduce the hassles of paper work, and save time and costs of the personnel involved. Timely procedures would motivate the innovators to enter into the field of entrepreneurship.

7. **Need for Women and Grass Root level Innovation:** Atrend of scholars, academicians, and professionals applying for the scheme was observed in the analysis. These personnel are literate and technically sound. They do not require mentoring at every step. However, women representation and innovation from the grass root section of the society is next to negligible. Hence, special assistance should be provided to people who are not self-equipped or are unaware of the technology up gradation. Women and the younger generation should also be promoted to enter the field of innovation.
8. **Training for TUCs:** Non availability of experts in TUCs was perceived during the research and data analyses. There was a need for training of TUC coordinators on technical area like expert guidance, piracy prevention, IPR, commercial viability etc. and non- technical areas viz proposal writing, product development, etc. only then proper mentoring and training could be imparted to the innovators and the entrepreneurs.
9. **Lack of uploading information:** Lack of uploading information on TUC was observed. In case there was non availability of experts of a specialised area in a particular TUC, then the innovator's case would have been forwarded to another TUC. This would have saved time of the TUCs as well as the innovators.
10. **Reflection of TePP Scheme:** Generally technical backlogs and in-appropriate help from TUC experts left a perception on innovators' mind that TUC teams are unaware of the ground realities that a common man faces. Hence, these dissatisfied innovators lead to negative reputation of TePP scheme.
11. **Delay in Fund Re-imbursements:** It was also observed that a lot of time was wasted in the administration delays and financial hassles. Sometimes, the fund was sanctioned but the grant was not approved till one to two years of time. As a result the innovators were de-motivated. Even the innovations' technology became obsolete.
12. **Conversion Rate:** Conversion rate of the number of projects from TePP Phase I to TePP Phase II is very low, near to 6%. This was the biggest hindrance to TePP scheme till date (as per the primary data collected and analysed in Chapter 5).
13. **Monitoring of TUCs:** Another observation was that TUCs were not being monitored by DSIR regarding the appointment of experts, evaluation criteria of innovations being followed, and the targets met, if any. As a result some TUCs were active, remaining were passive. Earlier semi-annual meetings were being conducted, which then shifted to annual meetings, and later on being scrapped completely.

2.1.3 OPPORTUNITIES

1. **Online Application Process:** With the advent of technology, t h e ministry should consider the opportunity to open up the online applications and registrations for the TePP scheme. The website could be designed in a manner that the innovators could access it with ease. Once the applications are processed, the innovators could be provided with User Ids to access their accounts wherein they could undergo the details of the TePP scheme; schedule meetings and follow ups with mentors; check status of funds; due dates; receive regular updates and important notifications, etc.
2. **Multiple Applications**: Innovators should be eligible to apply multiple times for the TePP scheme if they have prototype/basic working models/proposal for more than one unique idea.
3. **Division System:** In order to tap more potential of innovators in less time and cost, TePP scheme should be divided into several divisions in order to save the time of innovators as well as the TUC team. The divisions could be
    a) **Technical Division** for technical support
    b) **Non-Technical Division** for formal mentoring and providing knowledge about proposal writing, hand holding sessions, commercial viability, procuring raw material, etc
    c) **Finance Division** to provide only financial assistance to the innovators
    d) **Research and Development (R&D) Division** to help the innovators identify opportunities, suggest modifications, and more applications (by- product) in the existing technology (main-product).
    e) **Marketing Division** to provide advertising and marketing support, market research, help in pilot study, go to market strategy, and improve upon the visibility of the products/ services/ processes innovated.
    f) **Legal Division** for providing knowledge on patents, IPR, piracy prevention, and fix up a specific lawyer for each innovator or entrepreneur for further guidance.

    The innovators could be asked to specify the divisional help they would require at the time of enrolling for the scheme. Head of each division should ensure regular meetings among the innovators and the appointed TUC. Updates should be taken from respective TUCs about the interactions, and feedbacks about the mentoring received from the innovators. This would enable TePP to work as an organized team.

4. **Industrial Tie Ups**: Apart from institutional support, DSIR could also explore the opportunity of industrial tie ups. This would provide a direct platform to the innovators and the industry experts to communicate and get inputs on the areas yet to be explored, need of the hour, innovative techniques, and so on. The innovators would also get an opportunity to show case their talents in the industry apart from academic conferences like science congress, etc.
5. **Global Partnerships:** Presently the scheme is limited to national partnership with various institutions and organizations in different regions in India. Global partnerships should be considered to encourage multi-disciplinary and globally competitive innovations; expand operations and gain a name world-wide.
6. **Broad Spectrum of Experts:** Industrial experts should also be involved in TePP scheme rather than focusing only on academicians in order to understand the innovation and its related technology.

2.1.4 THREATS

1. **Department of Science and Technology (DST)–Lockheed Martin India Innovation Growth Programme:** Department of Science and Technology (DST), Government of India and Lockheed Martin Corporation USA launched the DST–Lockheed Martin India Innovation Growth Programme in March, 2007. They are also partners with Federation of Indian Chambers of Commerce and Industry and Stanford Graduate School of Business and other similar institutes. The programme a i m s to assist innovators, arranging technical workshops, and entrepreneurs in assessing the scientific and commercial value of their innovation, and market their products at the right time. They have a greater corpus of funds as compared to TePP.
2. **Innovation Exhibitions:** Variety of innovation exhibitions are being held all over in India to promote the promising talents of India. One such Annual Innovation Exhibition was held at Rashtrapati Bhavan from March 7 to 13, 2014, organized by the National Innovation Foundation-India. It aims to recognise, respect, and reward technological innovators and knowledge experts. The exhibition showcases the innovative technologies of people from different occupations like scientists, professor, scholars, or researchers. It provides an opportunity to the students, innovators, entrepreneurs, technology designers to join the innovation movement and take help from the society including the President of India, in every possible way.

2.2 CONCLUSION

The chapter covers the strengths of TePP like inclusive growth; continuous mentoring; infrastructural support; and marketing and advertising strategies. Weaknesses like fixed financial support; requirement of no objection certificate and business plans; and absence of central number for grievance redressal should be analysed effectively to turn them into pillars of strength. Various opportunities have also been discussed like online platform for innovators and industrial experts; system of multiple applications; industrial and global partnerships; and creation of separate division can be explored. Lastly, threats have been discussed which could be turned into areas of opportunities.

CHAPTER III - ASSESSMENT OF TePP Outreach Centers (TUC)

3.0 CHAPTER OBJECTIVE

The objective of this chapter is to assess the utility of erstwhile TePP Outreach Centers (TUCs).

3.1 General Guidelines for TePP Outreach Centers (as taken from TePP Operating Guidelines for XI plan period, Issued on May 2007)

3.1.1 Roles and Responsibilities

- To invite proposals by giving advertisements in regional languages as per the advertisement material provided by DSIR, and also through direct contacts, through press, cable TV, etc;
- To meet all the innovators showing interest in TePP and receive proposals from innovators;
- To allocate minimum half day every week for counselling – the counselling dates and time should be displayed prominently of a notice board outside the TUC coordinating cell and near the entry points to the institute;
- To check the proposals for completeness such as description of innovation with sketches, drawings, photographs, how it benefits the user, innovativeness compared to existing products, resources and capabilities to make a prototype, details of prior work done, etc;
- To get the clear proposals evaluated by minimum two technical experts and also inspect the working of models developed by the innovator;
- The expert evaluation should include theoretical base behind the innovation, state of art on the subject, advantages and disadvantages of the approach given by innovator and suggestions to improve the plan;
- TUC coordinator will also evaluate the proposal and give him/her report, giving innovators background, his past achievements, inspection report on the work so far done, innovators capabilities in design and arrangements made for fabrication and testing, justification for the costs eliminated, milestones for review;
- To forward evaluated proposals with expert comments and TUC coordinator comments to TePP, Delhi under intimation to innovator;

- For the supported projects, organize project review committee meetings with minimum of two technical experts per each project;
- Coordinate with innovator for submission of complete report, audited utilization certificate, etc;
- To pay TA/DA and Honorarium to technical experts for screening the proposals and for attending the project review meetings;
- Any other issue as per the guidance of TePP Promotion Board

3.1.2 Compensation

The agency should not depend on TePP grant for its existence. Support of Rs. 8.00 lakhs per annum would be given to TUC to cover expenses as listed below and in addition 10% of the grants released to the innovators supported by the TUC will be given to the agency per project for monitoring the project execution. However, in the 102nd PRC Meeting, this support was increased to Rs. 15.00 lakhs. The breakup of the same is exhibited in Table 3.1.

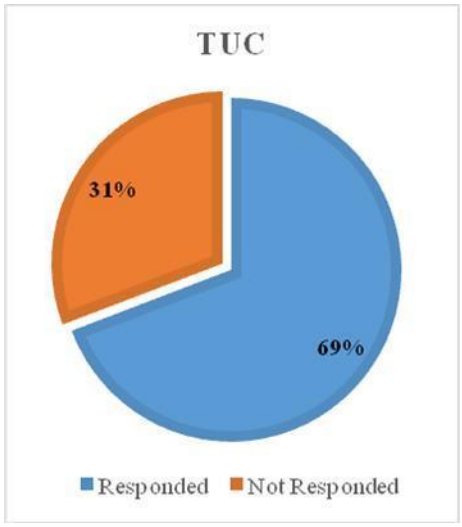
Table 3.1 Compensation breakup of TUCs

Particulars	**Old Amount (in lakhs)**	**New Amount (in lakhs)**
Advertisement and Publicity	1.00	1.00
Honorarium to TUC coordinators and Facilitators	2.00	2.00
Overheads to organization hosting the TUC	1.00	
Office expenses (postage, local travel, OT for staff, compensation for part time /contractual staff)	1.00	3.5
Local travel	1.00	
Payment of Honorarium to experts for screening of proposals	1.00	
Provision for exhibition/ workshop/ symposium etc	1.00	1.00
Manpower/Consultants	-	7.5
Grand Total	**8.00**	**15.00**

(Source: Operating Guidelines for XI plan period, Issued on May 2007 and 102nd TePP Screening Committee Minutes of Meetings)

3.2 TUC ANALYSIS

All the Twenty Six TUCs were contacted from the list provided by the DSIR with the structured questionnaire. Figure 3.1 depicts that there has been a response rate of 69%, classified zone wise. The responded TUCs have been categorized in different zones. Major contribution is from South zone as seven centres have provided with the responses followed by North zone (six responses).



Zone	TUC
North	Chandigarh
	Noida
	Ambala
	Roorkee
	Kanpur
	Palampur
East	Jorhat
	Silchar
	Kharagpur
South	Trivandrum
	Tumkur
	Vellore
	Tiruchirappalli
	Hyderabad
	Surathkal
	Bangalore
West	Udaipur
	Nagpur

Figure 3.1 Response rate from TUCs

Phase wise breakup of number of projects under each TUC has been exhibited in Table 3.2. It is observed under Phase I that maximum projects have been covered by TBI-Chennai, followed by SINE Mumbai, IIT-Kanpur, and ERDC Ambala. Under Microtechnopreneur (MT) Phase, maximum projects are covered by CSIR-NEIST, Jorhat and SINE, Mumbai. Under Phase II, maximum projects are covered by College of Technology and Engineering, Udaipur.

Table 3.2 Breakup of Number of Phase Wise Projects under each TUC (2007-2012)

State	TUC	TePP Phase I	MT	TePP Phase II
Andhra Pradesh	Sri Padmavati Mahila Visvaidyalam, Tirupati, AP	6	0	2
	ICRISAT, Patancheru, AP	1	0	0
	Nagarjun University, AP	0	0	0
Assam	CSIR-NEIST, Jorhat	3	2	0
	NIT, Silchar	0	0	0
Karnataka	TUC-SSIT Tumkur	8	0	1
	NITK-STEP, Surathkal	6	1	1
Kerala	Technopark, Kerala	3	0	2
Maharashtra	SINE, Mumbai	24	2	1
New Delhi	FITT, IIT Delhi	11	1	0
Punjab	CSIR-CSIO, Chandigarh	12	0	2
Rajasthan	College of Technology and Engineering, Udaipur	6	0	6
Tamil Nadu	TBI-Chennai	24	0	1
	VIT-TBI , Vellore	2	0	0
	TUC-TREC-STEP, Trichy	9	0	3
Uttar Pradesh	IIT, Kanpur	18	1	0
	JSSATE-STEP, NOIDA	0	0	0
Uttarakhand	Indian Institute of Technology Roorkee	2	0	0
West Bengal	CMERI, Durgapur, WB	3	0	0
Haryana	ERDC, Ambala	15	0	1
TOTAL		**153**	7	**20**

3.2.1PROFILE ANALYSIS

Moving onto the profiling of the TUC coordinators, all of them are males. Figure 3.2 classifies the age groups of the TUC coordinators. Majority (55%) belongs to the age group of 45-55 years, 28% belong to the age group of more than 55 years, and only 17% belong to the age group of 34-44 years. Figure 3.3 shows the classification of the number of years of experience of the coordinators. Majority (61%) have an experience of 22-32 years, 22% have experience even more than 32 years, and only 17% have experience up to 10 years. There are no coordinators with the experience of 11-21 years.

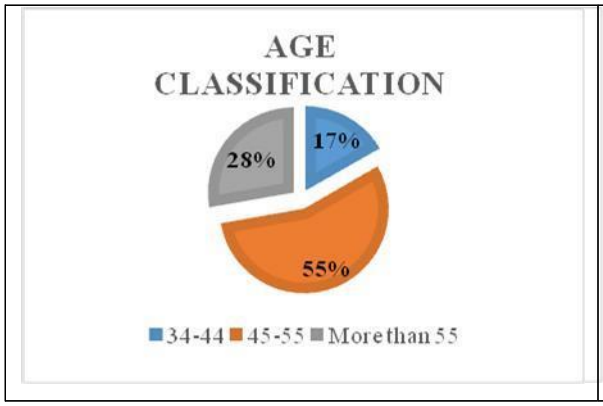


Figure 3.2 Age Distribution

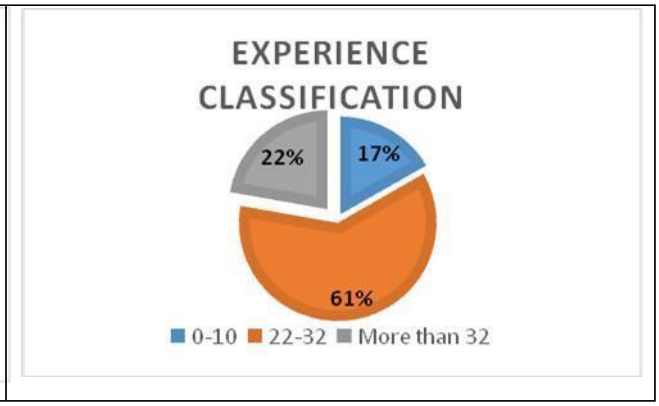


Figure 3.3 Experience Classification

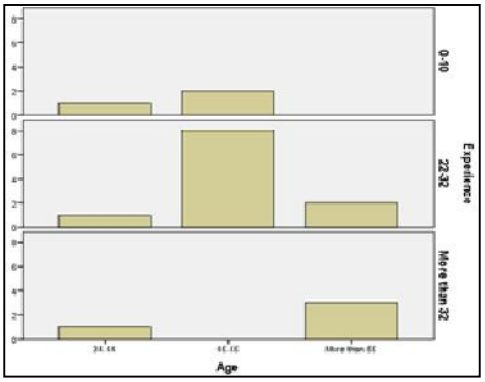


Figure 3.4 Relationships between Age and Experience

Figure 3.4 illustrates the relationship between the age groups and the years of experience of the TUC coordinators. It is observed that majority of the TUC coordinators belong to the age group of 45-55 years and have experience worth 22-32 years. Personnel who have experience more than 32 years, belong to the age group of more than 55 years.

3.2.2 EVALUATION OF TUC COORDINATORS

To assess the performance of TUC coordinators, questions pertaining to organizing various programs, ways to keep updated to new technology, network with various agencies, and their success rate of mentoring were asked. A substantial amount of information was provided by them regarding the workshops and training seminars conducted; extensive marketing strategies adopted to attract the talents of the country; and various packages offered to the innovators. Figure 3.5 depicts that 42% of the coordinators organized seminars, business conclaves and conferences, 40% organized as well as attended training programs and workshops with respect to imparting technical skills, 13% held familiarization camps at local and national level, and only 5% arranged exhibitions. Figure 3.6 refers to the different ways adopted by TUC coordinators to update themselves to latest technology as per the industry standards. 27% form part of in depth group discussions, 25% each are in constant touch with social media, journals, newspapers, and magazines, and 23% attend conferences, seminars, and workshops regularly.

Figure 3.5 Organizing Programs

Figure 3.6 Ways to Update Technology

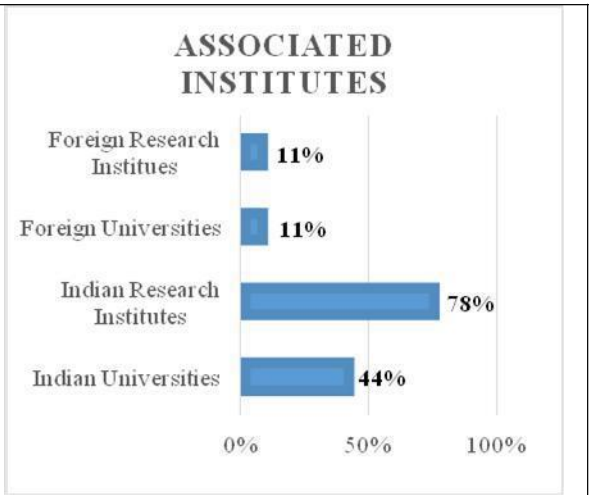


Figure 3.7 Associated Institutes

Figure 3.8 Success Rate of Mentoring

Figure 3.7 shows the network of TUCs with other agencies. Majority (54%) has tie-ups with various Indian research institutes, and 31% are in touch with other Indian Universities. Further, only 15% are in touch with Foreign Research Institutes and Universities. On measuring the success rate of mentoring of coordinators, it was observed that majority (56%) of coordinators belong to the category of very good performance (71%-100%), 39% belong to average performance category (41%-70%), and only 5% belong to low performance category (0-40%). This has been exhibited in Figure 3.8.

3.2.3 EVALUATION OF TUCs

Figure 3.9 shows the growth in number of TUCs over the years (as per the year wise list provided by DSIR). It is observed that there is 50% growth from the year 2007 to 2008, 61% from year 2008 to 2009, stagnant in 2010, 28% growth from year 2010 to 2011, and 14% decline

in the year 2012. The TUCs discontinued are from Noida, Pilani, Nagpur, Silchar, and Palampur due to either non-performance or not keen to take up further activities. Although TUC at Kolkata has also been observed as one of the non-progressive TUCs, it has been asked to continue due to change in the coordinators. Figure 3.10 indicates the growth in number of TUCs vs the growth in the number of approved projects under each phase respectively. It is observed that in the year 2008-2009, there is 61% increase in the number of TUCs but 90% increase in the number of projects. In 2009-2010, there is 69% decline in the number of projects but the number of TUCs is constant. In 2010-2011, there is 28% increase in the number of TUCs but 58% decline in number of total projects. However, a completely different picture is observed in 2011-2012. Although there is 14% reduction in the number of TUCs, 51% increase in the number of approved projects can be observed.

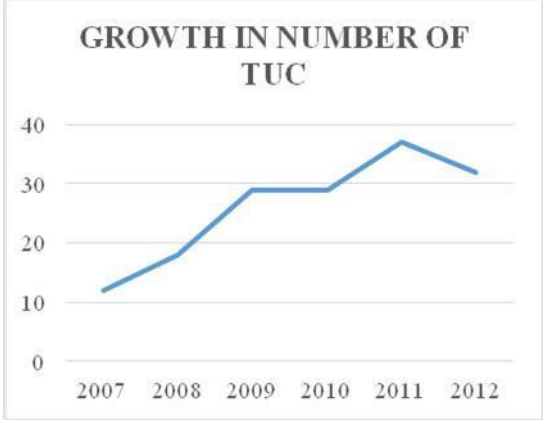


Figure 3.9 Growth in TUCs

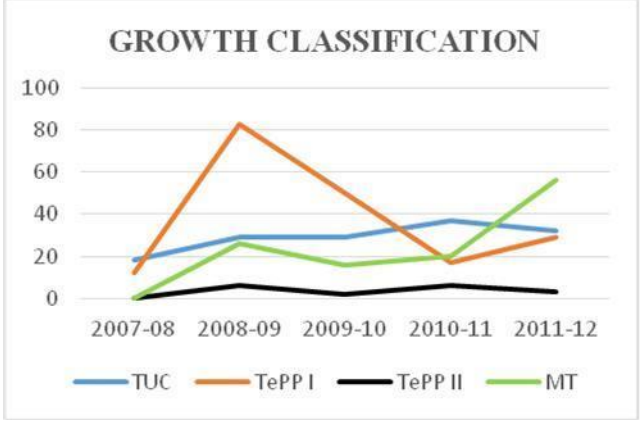


Figure 3.10 Growth of TUC vs Projects Phase Wise

Figure 3.11 exhibits the growth in the number of projects versus the growth in the number of TUCs. A linear growth is observed over the years. However, in the year 2009-2010, number of TUCs remains the same but there is increase in the number of projects due to extra work done by other TUCs. In the year 2011-2012, there is drop in the number of TUCs as well as the number of projects undertaken.

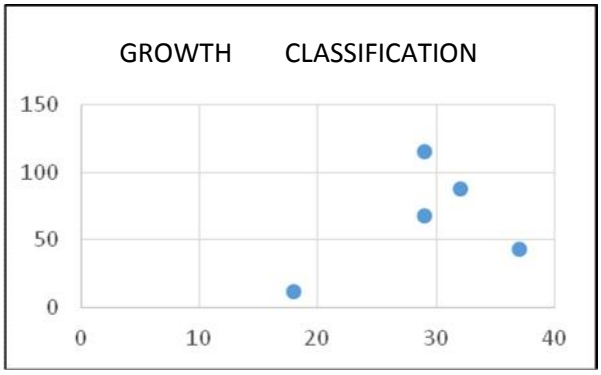


Figure 3.11 Growth of TUC vs Total Projects

Marketing strategies adopted by TUCs to increase visibility is illustrated in Figure 3.12. Major contribution is from Print Media (67%) like Newspapers and Pamphlets, Seminars and Conferences (67%), Nation-wide Events in B-Schools, Business Conclaves (61%), Radio and Television (61%), and Familiarization Camps and Workshops (50%). Other strategies are association with NGOs, Faculty and Entrepreneurship Development Programs, Internet and DSIR Website Open-Days, and *Kisan Melas.*

Medium of Communication	Percentage Coverage
Print Media	67%
Seminars/Conferences	67%
National Events	61%
Radio/TV	61%
Camps/Workshops	50%
Association with NGOs	39%
Entrepreneurship Development Programs	33%
Faculty Development Programs	28%
Internet/DSIR Website	22%
Kisan Melas	6%

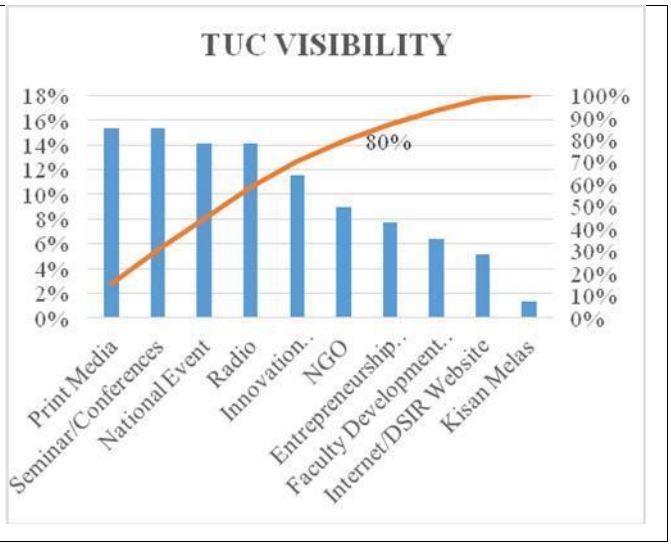


Figure 3.12 Coverage of Marketing Strategies

Figure 3.13 displays the measurements taken up by various TUCs to create awareness about innovation among the public. Around 80% of the activities involved seminars, business conclaves, conferences, workshops and training programs. Remaining 20% activities were familiarization camps and exhibitions which shows that the awareness campaigns adopted do not reach the grass roots level.

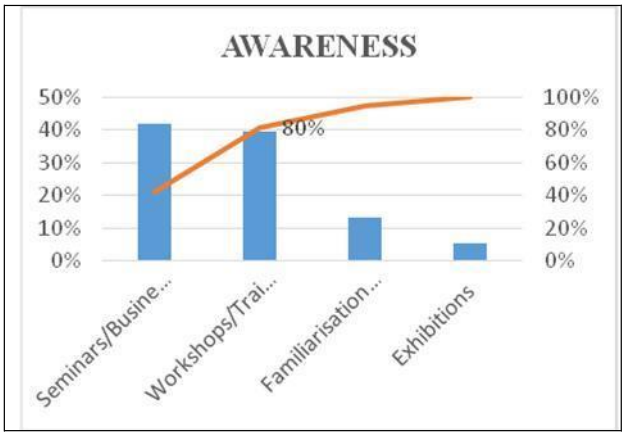


Figure 3.13 Awareness Campaigns

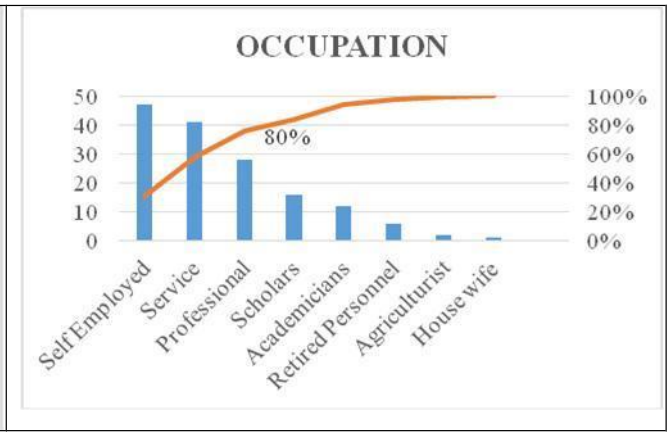


Figure 3.14 Occupations of Innovators

Occupation of the innovators is exhibited in Figure 3.14. 80% of the contribution is from self-employed, service, professionals, and scholars. There is a trend observed that more number of scholars, academicians, and professionals getting enrolled under TePP. The least representation is of house wives. Further, as per the latest guidelines of DSIR, every TUC is under the obligation to provide technical and non-technical guidance to the innovators. Figure 3.15 shows that 100% TUCs imparted knowledge to the innovators about Piracy Prevention, Patenting, and Intellectual Property Rights, 78% and 89% provided help regarding legal issues and possible barriers respectively. Figure 3.16 emphasizes on the ways used to provide non-technical assistance to the innovators. 80% contribution is from fund estimation and management, providing market access and marketing facilities, assistance in setting up business, and document preparation. Other adopted ways are survey assistance and problem solving.

Figure 3.15 Non-Technical Mentoring

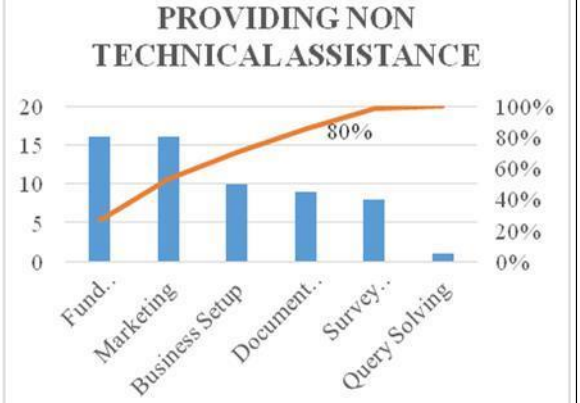


Figure 3.16 Ways to Provide Non-Technical Mentoring

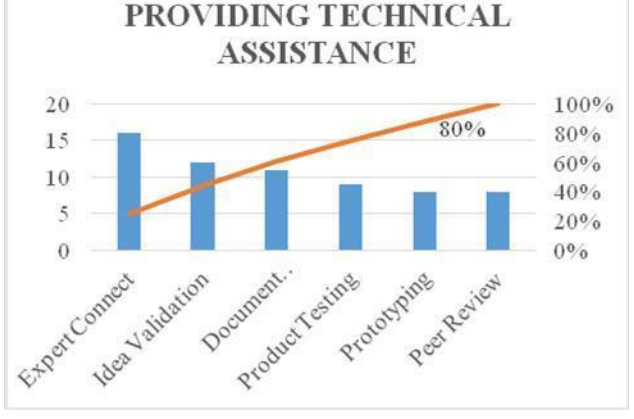


Figure 3.17 Ways to Provide Technical Assistance

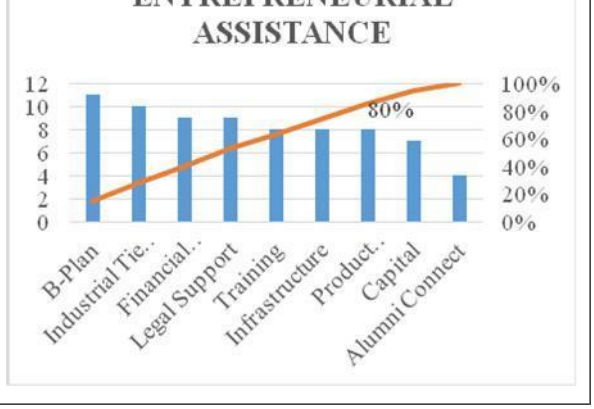


Figure 3.18 Ways to Provide Entrepreneurial Assistance

Figure 3.17 indicates the methods adopted to provide technical assistance to the innovators. 80% of the contribution is from expert connect, idea validation, document preparation, product testing, and prototyping. Figure 3.18 focuses on the methods adopted to provide entrepreneurial assistance to the innovators. 80% of the contribution is from providing B-plan assistance, industrial tie-ups, financial information, legal support, technical training, infrastructural support, and product development. Other options are initial capital provision, and alumni network. There is a limit on the technical and non-technical guidance provided to the innovators and entrepreneurs due to lack of support and training facilities provided by DSIR.

Figure 3.19 shows the ways adopted by TUCs to provide environmental assistance to the innovators. Major contributing ways are supporting innovators in their daily needs, helping them in filing accounts, meeting labour requirements for product development. Other ways are updating knowledge about government incentives and market competitiveness.

Figure 3.19 Ways to Provide Environmental Guidance

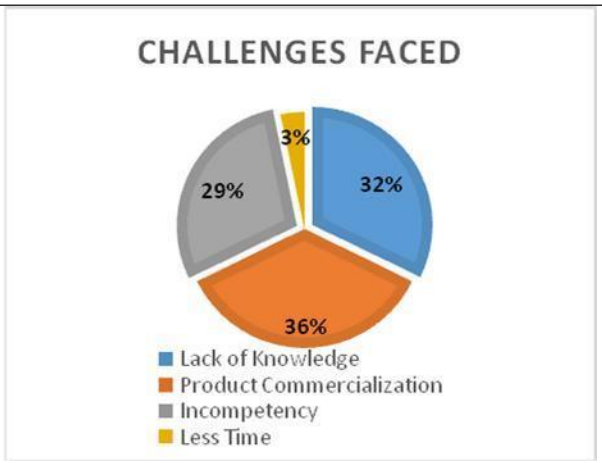


Figure 3.20 Challenges Faced

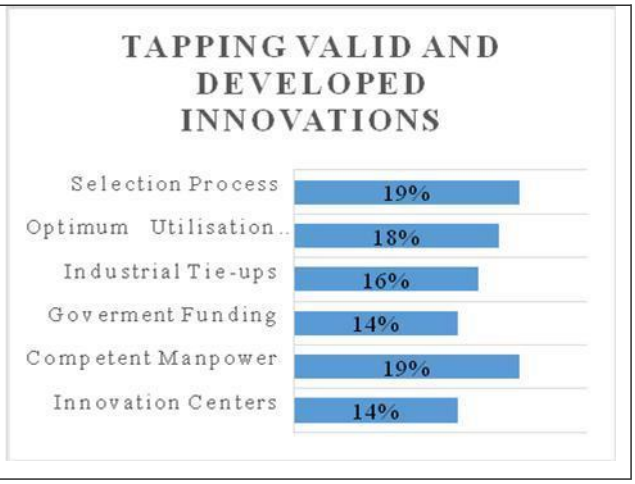


Figure 3.21 Ways to Tap Valid Innovations

Figure 3.20 displays the challenges faced in the process of innovation. 36% TUCs faced the problem of product commercialization, 32% had lack of knowledge of awareness in a particular field of innovation and its subsequent impact, 29% were incompetent in providing assistance, and only 3% were challenged with less time due to engagement with other official responsibilities. Figure

3.21 exhibits that fully developed and validated technologies are tapped from different sources and have huge market potential. This is ensured through rigorous selection process (19%), optimum utilization of resources (18%), industrial tie-ups (16%), having competent manpower (19%), and establishing efficient incubation & innovation centers (14%).

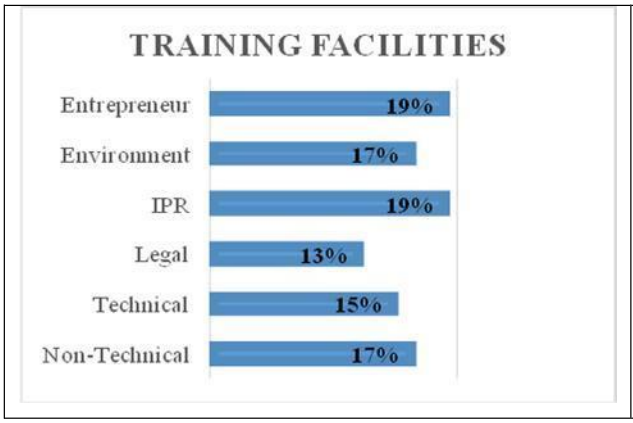


Figure 3.22 Training Facilities

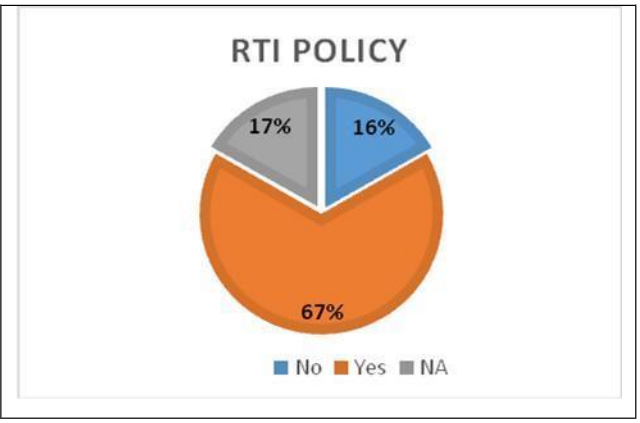


Figure 3.23 RTI Policy

Figure 3.22 demonstrates the types of training imparted to the TUC coordinators. Some of them are Entrepreneurial skills (19%), laws related to Environmental Regulations (17%), IPR (19%), Legal issues (13%), Technical (15%) and Non-Technical skills (17%). Figure 3.23 reveals that some TUCs (67%) are under the purview of Right to Information Policy (RTI) while some (16%) are resulting into lack of transparent and efficient working of TUCs. Further, Figure 3.24 illustrates that 67% TUCs have full time trained manpower in selected areas of technology for mentoring the innovators. While, 5% have part time manpower, remaining 28% do not have trained manpower.

Figure 3.24 Trained Manpower

3.3 CONCLUSION

The analysis provides information about the responses received from various TUCs. It is being observed that TUCs are scattered all over India. Each TUC has adopted a mix of marketing strategies to identify and attract promising talents of India; enriching them; and turning them into

commercially and financially viable, sustainable innovations. TUC coordinators belong to varied age groups and experiential years, empowered with various skills, and provide expertise to the innovators and the entrepreneurs enrolled under TePP in their respective areas, despite the challenges faced. It is also observed that the growth of the number of TUCs versus growth in the total number of approved projects is not consistent. A trend of scholars, academicians, professionals, and other literate level joining TePP has been observed. There is much more potential to spread the to the grass root level.

CHAPTER IV- MAJOR OUTPUTS OF THE SCHEME VIS-À-VIS DESIRED OUTPUTS

4.0 CHAPTER OBJECTIVE

The objective of this chapter is to analyze the major outputs of the scheme vis-à-vis desired outputs. A phase wise analysis of the major outputs of the scheme vis-à-vis desired outputs is undertaken to illustrate the overall success of the scheme and benefits to its stakeholders. A result oriented scheme depends on synchronized inputs and process that leads to desired outputs and sustainable outcomes. These various stages are interwoven as illustrated in Figure 4.1. Technopreneur Promotion Programme (TePP), designed by DSIR had a similar approach to achieve the goal. The various inputs were transformed to outputs with help of structured and defined processes. The inputs are mainly resources in terms of financial, expert's opinions for mentoring and other necessary help to the innovators. The processes are the actions taken through the schemes. Outputs are the products and services that result from development interventions. Outcomes are the actual conditions described and achieved during the tenure of the scheme.

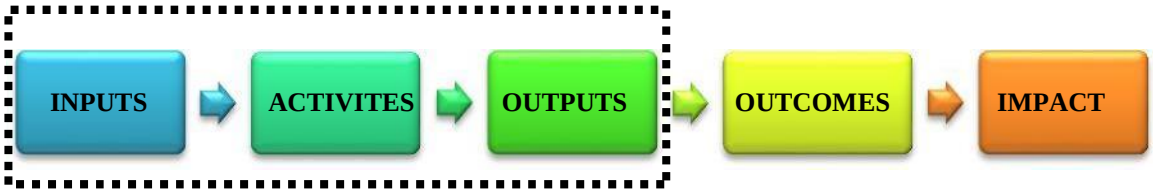


Figure 4.1 TePP result chain

4.1 PROMOTION OF INNOVATORS AND ENTREPRENEURS

Input: The TePP scheme was introduced to promote innovation and entrepreneurship among citizens of India.

Processes: This scheme consisted of two phases, Phase I and Phase II. Phase I further comprised of Microtechnopreneurship (MT) support and TePP project fund. Phase II is composed of supplementary TePP fund and Seamless scale-up support for TePP.

Output: Since inception TePP scheme has supported, five hundred and twenty six innovations of independent innovators. Out of which, four hundred and thirty were supported by DSIR.

Table 4.1 Approved proposals in TePP scheme

Number of approved proposal in the last five years			
Year	**TePP Phase I**	**TePP Phase II**	**Microtechnopreneurship**
2011-12	**29**	**3**	**56**
2010-11	**17**	**6**	**20**
2009-10	**50**	**2**	**16**
2008-09	**83**	**6**	**26**
2007-08	**12**	**NA**	**NA**

Compiled from Annual Report (2008-12)

Table 4.1 and 4.2 entails the details of the completed, on-going and approved projects supported under TePP over last five years. Data for the year 2007-08 includes information carried forward from previous year (as compiled from Annual Reports 2008-2012).

Table 4.2 Project status in TePP scheme

Project status in the last five years				
Year	**Completed Projects**	**TePP Phase I ongoing**	**TePP Phase II ongoing**	**Microtechnopreneurship ongoing**
2011-12	**47**	**130**	**7**	**18**
2010-11	**54**	**158**	**7**	**23**
2009-10	**10**	**140**	**7**	**27**
2008-09	**20**	**47**	**2**	**NA**
2007-08	**15**	**55**	**3***	**NA**

Compiled from Annual Report (2008-12)

4.2. PROMOTION OF PARTNERSHIP WITH SCIENCE & TECHNNOLOGY INSTITUTES

Input: TePP scheme promoted partnership with science & technology institutes. **Processes:** A vast network formed as a result of partnership with various institutes and their respective incubation centers. A country wide network of TePP outreach centers or TUC were established to facilitate the scheme.

Output: Table 4.3 displays the total number of TUC during the year 2012. Several TUCs have also networked with foreign college and research institutions besides networking with Indian universities and research institutions for facilitation o the TePP scheme. As depicted in Table 4.4 nearly 54% of the TUCs have partnership with Indian research institutions and nearly 31% have networked with Indian colleges and Universities for facilitation TePP scheme. Only 7.7% of the TUCs have network with foreign colleges and universities as per the data collected. Similar is the situation for network with foreign research institutions as well.

Table 4.3 TUC in TePP scheme

S.No	State	TePP Outreach Center (TUC)
1	Kashmir	i. USIC, University of Kashmir, Srinagar
2	Himachal Pradesh	i. IHBT, Palampur
3	Punjab	i. CSIO, Chandigarh
4	Haryana	i. ERDC-Hartron, Ambala Cannt.
5	New Delhi	i. FITT, New Delhi
6	Uttarakhand	i. IPR cell, IIT, Roorkee ii. UCOST, Dehradun
7	Uttar Pradesh	i. JSSATE-STEP, NOIDA ii. IIP cell, IT-BHU, Varanasi iii. SIDBI, IIT Kanpur
8	West Bengal	i. SRIC, IIT Kharagpur ii. CGCRI, Kolkata iii. CMERI, Durgapur
9	Assam	i. NIT, Silchar ii. NEIST, Jorhat
10	Andhra Pradesh	i. ICRISAT, Patancheru ii. TePP Outreach Centre, Acharya Nagarjuna University , Guntur (Dt) iii. SPMVV, Tirupati iv. ICICI Knowledge Park, Hyderabad
11	Tamil Nadu	i. VIT-Technology Business Incubator, VIT University, Vellore ii. TREC-STEP, NIT Campus, Trichy iii. Technology Business Incubator (TBI) University of Madras, Taramani Campus, Chennai iv. PGS-STEP, Coimbatore
12	Kerala	i. Technopark-TUC, Technopark Campus, Trivandrum
13	Karnataka	i. S.S.I.T., TUMKUR ii. NITK-STEP, NIT, Srinivasnagar iii. TBI-e-Health, Bangalore
14	Maharashtra	i. SINE, IIT Bombay. ii. NEERI, Nehru Marg, Nagpur iii. Venture centre, NCL, Pune
15	Gujarat	i. NDBI, NID, Ahmedabad.
16	Rajasthan	i. College of technology and Engineering, Udaipur ii. CEERI, Pilani
17	Chhattisgarh	i. CSVTU, Bhilai

Compiled from Annual Report, 2012

Table 4.4 Network partners/ Network with other agency

Network partners/ Network with other agency	Responses
	Percent
Indian college and Universities	30.8%
Indian research institutions	53.8%
Foreign college and Universities	7.7%
Foreign research institutions	7.7%

Source: Primary data analysis for the period 2007-2012

4.3 PROMOTING CITIZENS

Input: This scheme was introduced to facilitate culture of innovation and entrepreneurship among citizens from all the sections of society grassroots level innovation.

Processes: Any Indian citizen having innovative idea who wished to translate the same into working prototypes/models/processes; public funded institutions or organizations viz. Autonomous Organizations or Society registered under the Societies Registration Act, 1860 or Indian Trusts Act, 1882 engaged in promotion of innovation could avail this scheme. DSIR was the funding agency that granted funds directly to the innovator.

Output: Following are the phase wise outputs of this process.

4.3.1 TePP Phase I

Phase I of the TePP scheme was aimed at promoting innovation among Indian citizens by providing them with grant to conceptualize or prototype their innovative ideas. The primary data analysis of Phase I innovators is as follows:

Table 4.5 Gender analysis

Gender	Composition
Male	93.50%
Female	6.50%

Source: Primary data analysis for the period 2007-2012

As illustrated in Table 4.5, the majority of innovators who registered for TePPscheme in Phase I were males, totalling 93.5% of the entire innovator population. Females formed only 6.5% of the innovator population in Phase I as per the data collected

Table 4.6 Age analysis

Age	Composition
25-35	30.70%
36-46	30.10%
47-57	20.30%
More than 58	19.00%

Source: Primary data analysis for the period 2007-2012

The Phase I of the TePP scheme experienced participation from innovators of different age groups. As illustrated in Table 4.6 those in the age group of 25-46 formed nearly 60% of the entire population while those in the age group of 47 to more than 58 formed the remaining

40% of the population as per the data collected. This is indeed a positive indication that there is a growing acceptance among younger generation for innovation and entrepreneurship.

While the state and gender wise participation as depicted in Table 4.7 revealed that both male and female participation was highest form the state of Tamil Nadu. 21.68% males and 40% female innovators were registered from here. The next highest female innovator participation was from state of Punjab, total to 20% of the entire female innovator. The next highest innovator participation came from the state of Maharashtra as 13.29% males and 10% females registered from here. The next state was Uttar Pradesh from where 12.59% male participation was registered. Goa had lowest participation among all the states with only 0.70% male innovator registered with Phase I as per the data collected.

Table 4.7 State and Gender analysis

State	Male	Female
Andhra Pradesh	4.20%	10.00%
Assam	2.10%	-
Goa	0.70%	-
Gujarat	2.80%	-
Haryana	9.79%	10.00%
Karnataka	8.39%	10.00%
Kerala	2.10%	-
Maharashtra	13.29%	10.00%
New Delhi	7.69%	-
Punjab	6.99%	20.00%
Rajasthan	4.20%	-
Tamil Nadu	21.68%	40.00%
Uttar Pradesh	12.59%	-
Uttarakhand	1.40%	-
West Bengal	2.10%	-

Source: Primary data analysis for the period 2007-2012

Table 4.8 Generation stage analysis

Generation stage	Percent
First generation	89.50%
Second generation	9.20%
Third generation	1.30%

Source: Primary data analysis for the period 2007-2012

Majority of the innovators were the first generation of innovators. Only 9.2% belonged to second generation and the remaining 1.3 % of the innovators came from third generation as tabulated in Table 4.8. This indicates a growing interest in the current generation for innovation as per the data collected.

Table 4.9 Occupation distribution

Occupation	People
Agriculturist	1.30%
Business	0.70%
Consultant	0.70%
House wife	0.70%
Professional	17.00%
Academician	7.80%
Researcher	7.20%
Retired Personnel	3.90%
Self Employed	30.80%
Service	26.10%
Scholar	3.30%
Technician	0.70%

An occupation wise analysis showed that innovators belonged to varied streams like business, technicians, doctors, scholars, researchers, scientists, or are housewives. Table 4.9 demonstrates that 80% of the contributors belong to the occupations of self-employed, in service, professionals (CEO, Directors, and Managers), researchers, and academicians. There are few retired personnel also.

Table 4.10 Nature of Innovation for Phase I

Nature of Innovation	Percent
Product	96.70%
Service	1.30%
Process	2.00%

Source: Primary data analysis for the period 2007-2012

Nature of innovation analysis of Phase I innovator responses showed that 96.7 % of the innovations undertaken were product innovations, 2% of the innovations were process innovation and only 1 .3% innovations were in service as shown in Table 4.10.

4.3.2 TePP Phase II

The Phase II of the TePP scheme provided grant for commercialization and scaling up of the innovative idea of the entrepreneurs registered under this scheme. The primary data analysis of Phase II entrepreneurs is as follows. Male population was predominant in Phase II as well, as shown in Table 4.11, 95% of the entrepreneurs were male. Females formed only 5% of the population.

Table 4.11 Gender analysis

Gender	Percent
Male	95.00%
Female	5.00%

Source: Primary data analysis for the period 2007-2012

Table 4.12 Age analysis

Age (years)	Percent
25-35	10.00%
36-46	30.00%
47-57	30.00%
More than 58	30.00%

Source: Primary data analysis for the period 2007-2012

Age wise entrepreneurs' analysis showed that only 10% of the entrepreneurs were in the age group of 25-35 years. Entrepreneurs from higher age group were found to be in equal proportions a depicted in Table 4.12. This shows that fewer entrepreneurs in the age group of 25-35 years are going for commercialization or scaling up of their innovation.

Table 4.13 Generation stage analysis

Generation stage	Percent
First generation	95.00%
Second generation	5.00%

Source: Primary data analysis for the period 2007-2012

95% of the entrepreneurs of Phase II belonged to the first generation of entrepreneurs. Only 5% of the innovator belonged to second generation as indicated in Table 4.13.

An occupation wise analysis of the innovator showed that 62.4% of the entrepreneurs were self-employed, the remaining population of entrepreneurs consisted of academicians or technician by occupation as displayed in Table 4.14.

Table 4.14 Occupation analysis

Occupation	Percent
Academician	14.30%
Self Employed	62.40%
Technician	14.30%

Source: Primary data analysis for the period 2007-2012

Table 4.15 Nature of Innovation

Nature of innovation	Status of project
Product	95.00%
Service	5.00%

Source: Primary data analysis for the period 2007-2012

The analysis of innovation shows that majority of the entrepreneurs are in product innovation and a few are in service area. As illustrated in Table 4.15, 19 entrepreneurs were registered for product innovation and only one entrepreneur was registered for service innovation.

4.3.3 Microtechnopreneuship (MT)

The Microtechnopreneuship (MT) programme of the TePP scheme provided grant for micro budget innovations, to help convert ideas into demonstrable models. The primary data analysis MT innovators are as follows.

Table 4.16 Family generation and gender

Family generation stage	Gender	Percent
First generation	Male	100.0%

Source: Primary data analysis for the period 2007-2012

Table 4.17 Age wise innovator analysis

Age	Percent
25-35	42.90%
36-46	28.60%
47-57	28.60%

Source: Primary data analysis for the period 2007-2012

As displayed in Table 4.16, MT programme had only male innovators registered as per the data collected. More needs to be done to seek women participation in this scheme. All the innovators of MT belonged to first generation of innovators.

An age wise analysis of MT innovators showed that 42.9% innovators were from age group of 25-35, 28.6% innovators were from 36-46 and the remaining 28.6% innovators were from 47-57 years of age group. Hence there is almost equal participation from innovators of all the age groups as illustrated in Table 4.17.

As demonstrated in Table 4.18, occupation wise MT innovator analysis showed that, 62.4% of them were self employed, 14.3% were academicians and the remaining 14.3% were technician.

Table 4.18 Distribution of Occupation

Occupation	Percent
Academician	14.30%
Self Employed	62.40%
Technician	14.30%

Source: Primary data analysis for the period 2007-2012

Table 4.19 Nature of Innovation for MT

Nature of innovation	Status of project
Product	100%

Source: Primary data analysis for the period 2007-2012

The analysis of innovation showed that all the innovations registered under MT scheme were product innovation as shown in Table 4.19.

4.4 PROMOTING SUSTAINABILITY

Input: The TePP scheme promoted sustainable innovations and sustainability.

Processes: Innovation proposals that were sustainable in nature are greater than the less sustainable one.

Output: An analysis of response of Phase II innovators showed that 60% of the entrepreneurs said that their innovation was sustainable in the long-run (as per the responses received by innovators through questionnaires, annexure 2.0).

Table 4.20 Sustainability of innovations

Sustainability	Percent
1-2 years	5.00%
2-5 years	5.00%
5-10 years	5.00%
Sustainable	60.00%

25% of the innovators did not answer or were not aware about the sustainability of their innovation.15% said their innovation was sustainable for either 1-2 years, 2-5 years , 5-10 years as exhibited in Table 4.20

Source: Primary data analysis for the period 2007-2012

4.5 PROMOTING INNOVATION COMMERCIALIZATION

Input: The scheme promoted commercialisation of innovation.

Processes: Innovations were assessed for their commercial viability and preferred during proposal scanning phase by TePP Outreach Centers (TUCs).

Output: An analysis of response of Phase II entrepreneurs showed only 80% of the innovations were assessed to be commercially viable by TUC. 20% of the innovations were not assessed for their commercial viability as displayed in Table 4.21

Table 4.21 Innovation commercialisation

Innovation commercialisation	Response	Percentage
Whether your innovation can be commercialised	No	20.00%
	Yes	80.00%

Source: Primary data analysis for the period 2007-2012

4.6 CREATING AWARENESS THROUGH TUC

Input: Creating awareness about innovation and entrepreneurship among citizen through it various programs conducted by TUCs.

Processes: TUCs carries out various awareness generating programs.

Output: An analysis of TUC coordinators response regarding how they increase their visibility, promote and advertise themselves showed that 15.4% of TUC coordinators made use of print media and a same number of TUCs participated in seminar and conference to promote awareness.14.1% TUC coordinators used national event as a platform to bring about awareness, around same number of TUC coordinators made use of radio to voice awareness regarding innovation and entrepreneurship.11.5% of TUC coordinators used innovation camp as a platform to create awareness. 9% TUC coordinators tied up with NGO, 7.7% used Entrepreneurship Development Programme (EDP) and 6.4% used Faculty

Development Programme (FDP) to create awareness. Only 5.1% coordinators used internet to create awareness and only 1.3% used *Kisan Melas* as a platform to create awareness about innovation and entrepreneurship as shown in Table 4.22.

Upon analysis of TUC coordinator response for question regarding awareness programmes organised by the showed that 42.15% TUC coordinators organised seminars, business conclaves and conferences. 39.5% TUC coordinators organised workshops and training programmes and 13.2% organised familiarisation camps to create awareness. Only 5.3% TUC coordinators organised exhibitions to create awareness about innovation and entrepreneurship among citizens as illustrated in Table 4.23.

Table 4.22 TUC visibility

Increasing visibility	Responses Percent
National Event	14.10%
Kisan Melas	1.30%
Innovation Camp	11.50%
Entrepreneurship development programme (EDP)	7.70%
Faculty development programme (FDP)	6.40%
Print Media	15.40%
Radio	14.10%
Internet	5.10%
NGO	9.00%
Participation in Seminar and conferences	15.40%

Source: Primary data analysis for the period 2007-2012

Table 4.23 Creating awareness

Workshops and training programs by TUCs for creating awareness.	Responses Percent
Organise workshops and training programs	39.50%
Organise seminars, business conclaves, and conferences	42.10%
Organise exhibitions	5.30%
Organise familiarisation camps	13.20%

Source: Primary data analysis for the period 2007-2012

4.7 PROMOTING GROWTH OF TUCs

Input: TePP scheme promoted growth of TePP outreach centres (TUC).

Processes: New TUC are being opened over the years in different part of the country to facilitate TePP scheme.

Output: There were only 17 TUCs in the year 2008 and 37 by the year 2012.

Table 4.24 Growth in number of TUC over the years

Growth in number of TUC over the years.		
Year	**New TUC added**	**Total Number of TUC**
2007-2008	17 (10 by DSIR, 7 by TIFAC)	17
2008-2009	11	28
2009-2010	1	29
2010-2011	0	29
2011-2012	8	37

Source: PRISM Division, DSIR

TUCs were registered for TePP scheme as displayed in the Table 4.24. The TUC were reviewed for their performance regularly and new TUC were added over the years.

4.8 PROMOTING AREA OF INNOVATION

Input: TePP scheme promoted innovation in some critical area from national perspective.

Processes: Through primary data collection and analysis it was found that innovations were promoted in major areas like healthcare, mechanical engineering, biomedical sciences, electrical engineering, allied technology and other sectors like automobile, defence, communication and networking.

Output: An analysis of innovator's responses from Phase I, Phase II and MT showed that in Phase I, 17.6% were in healthcare, 13.7% were in mechanical, 10.5% were in biotechnology, 5.2% in consumer durable, 4.6% in electronic, 3.9% in nanotechnology, 3.3% in manufacturing, 3.3% in automobile, 2.6% in environment, 2% in communication and networking, 2% in defense, 1.3% in agriculture and 20.3% innovations were in area of allied technology, 1.3% in agro technology, 1.3% in chemical engineering, 1.3% in consumer goods,1.3% in fire services, 1.3% in textile, 0.7% in insurance, 0.7% in multimedia, 0.7% in process, 0.7% in steel and 0.7% in robotics as illustrated in Table 4.25. Phase II innovator response analysis showed that 30% of innovation undertaken were in the area of healthcare, 15% in mechanical, 10% each in agriculture and textile, 25% were in automobile, manufacturing and life sciences area and remaining 20% Innovations were in allied technology, as shown in Table 4.26.

Table 4.25 Area of Innovation for Phase I

Area of Innovation	Percent
Agriculture	1.30%
Agro technology	1.30%
Automobile	3.30%
Biotechnology	10.50%
Chemical Engineering	1.30%
Communication and Networking	2.00%
Consumer Durable	5.20%
Consumer Goods	1.30%
Defence	2.00%
Electronics	4.60%
Environment	2.60%
Fire services	1.30%
Healthcare	17.60%
Insurance	0.70%
Manufacturing	3.30%
Mechanical	13.70%
Multimedia	0.70%
Nanotechnology	3.90%
Process	0.70%
Robotics	0.70%
Steel	0.70%
Technology (mechanical, solar, etc.)	20.30%
Textile	1.30%

Source: Primary data analysis for the period 2007-2012

Table 4.26 Area of Innovation wise innovator analysis for Phase II

Area of innovation	Percent
Agriculture	10.00%
Automobile	5.00%
Healthcare	30.00%
Life Sciences	5.00%
Manufacturing	5.00%
Mechanical	15.00%
Technology	20.00%
Textile	10.00%

Source: Primary data analysis for the period 2007- 2012,,

Table 4.27 Area of Innovation wise innovator analysis for MT

Area of innovation	Percent
Agriculture Sector	28.60%
Automobile	14.30%
Manufacturing	14.30%
Mechanical	14.30%
Technology	28.60%

Source: Primary data analysis for the period 2007-2012

MT innovator response analysis showed that 28.6% innovations were done in the area of agriculture and similar numbers of innovations were undertaken in the area of technology. 14.3% innovations were in the area of automobile and similar was the number for manufacturing and mechanical as illustrated in the Table 4.27.

4.9 CONCLUSION

The phase wise analysis of various outputs has shown that over the years TePP scheme had gradually extended in boundaries in terms of innovation proposal being accepted, or number of TUCs being opened across the country. More initiatives were taken to partner with science & technology institutes and research laboratories to assist innovators in their innovation. Initiatives were also taken to extend TePP scheme to innovators from all sections and strata of society. Some of the areas of innovations are namely health sector, agriculture sector, manufacturing, textile sector etc. Innovative ideas that were sustainable, had high technology potential and commercially viable were preferred.

CHAPTER V- EVALUATING TePP ECOSYSTEM

5.0 CHAPTER OBJECTIVE

The objective of this chapter is to elaborate on the methodology adopted for TePP program; to present the profile of the respondents in Phase I, Phase II and MT Phase; and to analyze the TUCs from innovators' point of view. It also focuses on the major outcomes of the TePP scheme vis-a-vis desired outcomes along with the analysis of parameters like utility to the end users, cost, optimization, environmental management and control.

5.1 RELATIONSHIP BETWEEN RESOURCES AND RESULTS

The previous chapter focused on the inputs of the various resources, activities undertaken to perform specific tasks, and the outputs thus generated. The following chapter focuses on the effects of these outputs due to changes in the development conditions, and its impact on the society, environment, economy, technology and science. Figure 5.1 depicts that how the resources viz, inputs and activities are transformed into desired outputs and the results i.e. outcomes and the impact developed during the final implementation phase.

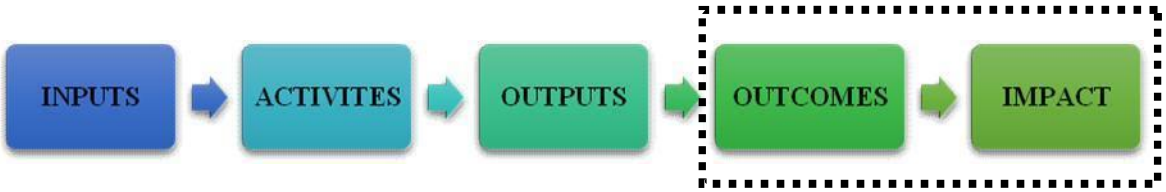


Figure 5.1 Outputs vs Outcomes

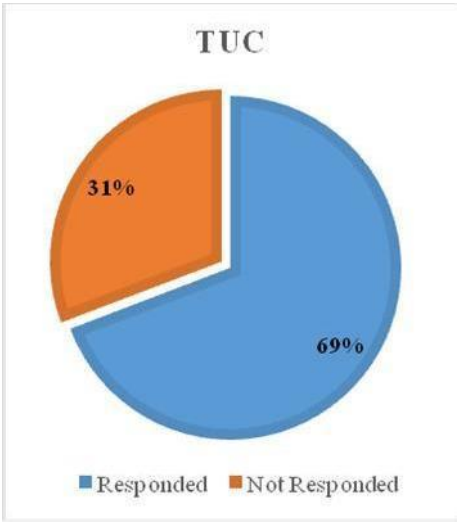
5.2 PROFILE ANALYSIS

Phase wise profile analyses of TUCs, innovators, entrepreneurs have been covered in this chapter in order to assess the outcomes and the various impacts. The data analyses is based on the response received from the innovators via questionnaires, annexure 2.0)

5.2.1 TUC Analysis

All the Twenty Six TUCs were contacted from the list provided by the DSIR with the structured questionnaire. Figure 5.2 depicts that there has been a response rate of 69%, classified zone wise. The respective TUCs have provided great deal of information regarding

the workshops and training seminars conducted; extensive advertisement and marketing strategies adopted to attract the talents of the country; and various packages offered to the innovators. Personnel employed under TUCs majorly belong to the age group of 45-55 years, with work experience varying from two years to forty years, and 100% of them being males. The responded TUCs have been categorized in different zones. Major contribution is from South zone as seven centers have provided with the responses followed by North zone (six responses).



Zone	TUC
North	Chandigarh
	Noida
	Ambala
	Roorkee
	Kanpur
	Palampur
East	Jorhat
	Silchar
	Kharagpur
South	Trivandrum
	Tumkur
	Vellore
	Tiruchirappalli
	Hyderabad
	Surathkal
	Bangalore
West	Udaipur
	Nagpur

Figure 5.2 Response rate from TUCs

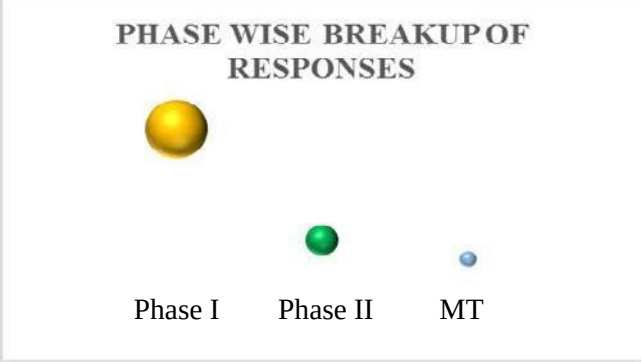


Figure 5.3 Phase Wise Breakup of Respondents

The final distribution of responses received is depicted phase wise in Figure 5.3. It is observed that 85% of the responses are in Phase I, 11% from Phase II, and 4% from Phase MT. State wise distribution of data collected is represented in Figure 5.4.

Tamil Nadu has the maximum number of Phase I projects followed by Maharashtra, Uttar Pradesh, Haryana, Karnataka, Punjab, and New Delhi. However, Rajasthan has an equal distribution of Phase I and Phase II projects. Major contributions under Phase II have come

from Southern and Western region. MT Phase is scarcely distributed among Assam, Maharashtra, New Delhi, Uttar Pradesh and Karnataka. The conversion rate of innovators (Phase I) to entrepreneurs (Phase II) is of only 6% (as per the figure 5.4 analysed).

Zone	States	Phase I	Phase II	MT
North	New Delhi	11	0	1
	Haryana	15	1	0
	Punjab	12	2	0
	Uttar Pradesh	18	0	1
	Uttarakhand	2	0	0
South	Andhra Pradesh	7	2	0
	Karnataka	13	2	1
	Kerala	3	2	0
	Tamil Nadu	35	4	0
West	Maharashtra	20	1	2
	Rajasthan	6	6	0
	Goa	1	0	0
	Gujarat	4	0	0
East	Assam	3	0	2
	West Bengal	3	0	0
	Total	**153**	**20**	**7**

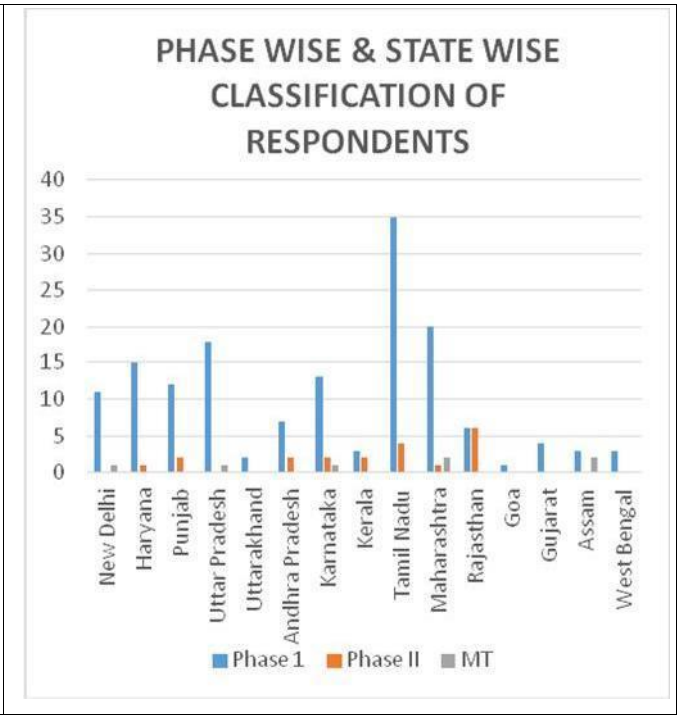


Figure 5.4 Zonal and State Wise Classification of Respondents under each Phase

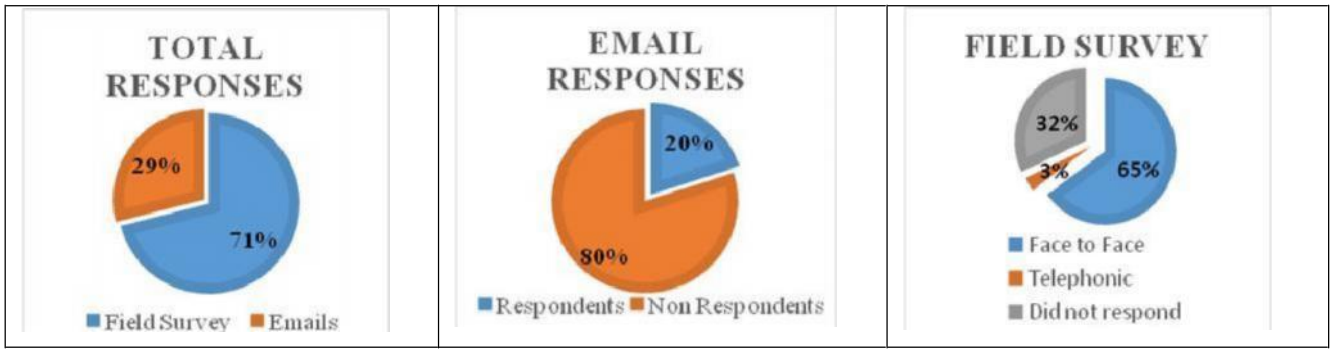


Figure 5.5 Percentage Breakup of Responses

Out of the list of some 400 innovators received from DSIR, only 303 were contacted due to non-availability of valid contact details (Annexure 4.0). Further, the questionnaires were administered in two stages. In stage I, candidates registered with TUCs were emailed structured questionnaires. Only 20% responded out of 303 candidates through mail. In stage II, the questionnaires were self-administered. Few respondents preferred telephonic administration (3%) as they were either busy or not accessible. There were face to face

conversations with 65% of the respondents. The complete percentage breakup of the responses is exhibited in Figure 5.5.

5.2.2 TePP Phase I Analysis

One hundred and fifty three responses have been received in phase I. Figure 5.6 demonstrates the breakup of the responses under all four zones and fourteen states. 80% of the responses are from the states of Tamil Nadu, Maharashtra, Uttar Pradesh, Haryana, Karnataka, Punjab, and New Delhi.

Zone	States	Number of Innovators
North	New Delhi	11
	Haryana	15
	Punjab	12
	Uttar Pradesh	18
	Uttarakhand	2
South	Andhra Pradesh	7
	Karnataka	13
	Kerala	3
	Tamil Nadu	35
West	Maharashtra	20
	Rajasthan	6
	Goa	1
	Gujarat	4
East	Assam	3
	West Bengal	3
	Total	**153**

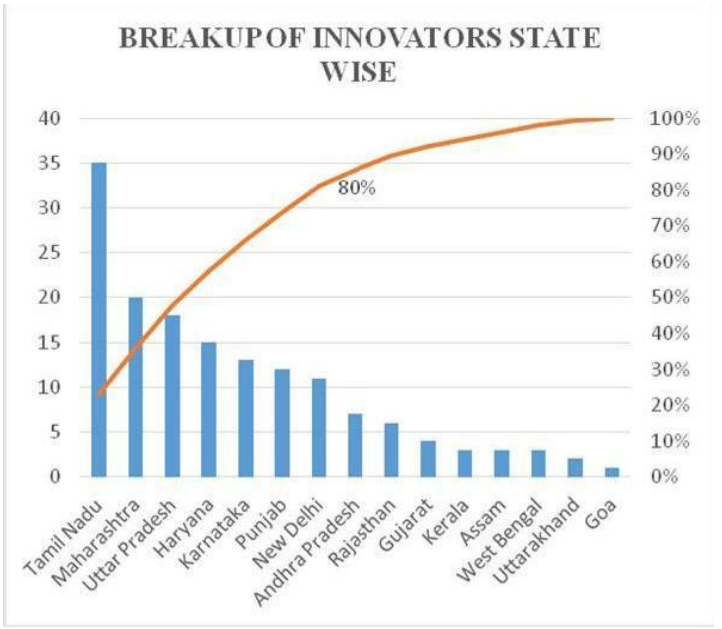


Figure 5.6 Percentage of Innovators State Wise

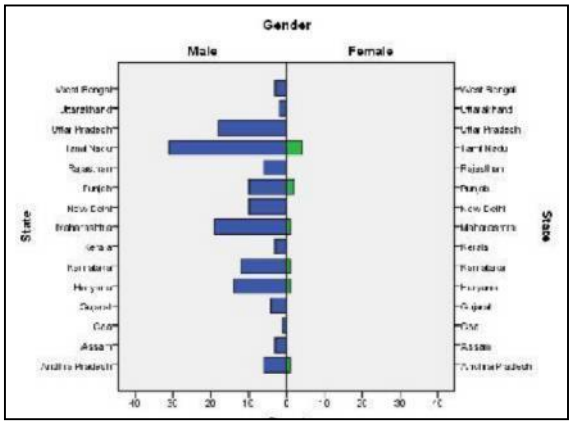
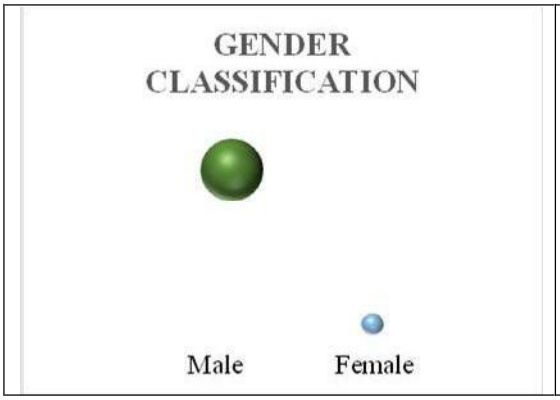


Figure 5.7 depicts age versus gender Classification of innovators in phase I. Out of fourteen states studied; only Tamil Nadu, Punjab, Maharashtra, Karnataka, Haryana, and Andhra Pradesh represent women entrepreneurs in Phase I. Other regions should also aggressively adopt marketing strategies in order to attract woman innovators.

Figure 5.7 Inter relationship between States and Gender of Innovator

The respondents have been classified in terms of gender and age. Figure 5.8 displays 93% of innovators are men and only 7% are women. This indicates a growing trend of innovators towards men as compared to women. Figure 5.9 shows that maximum number of innovations in Phase I are done by people in the age group of 25-35 years (31%), followed by age group of 36-46 years (30%), age group of 47-57 years (20%), and the least being in more than 58 years age group (19%). This indicates that elderly people (more than 58 years) are highly active in terms of new innovations.



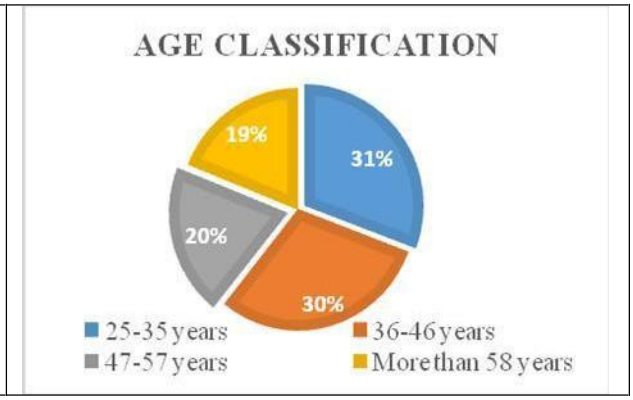
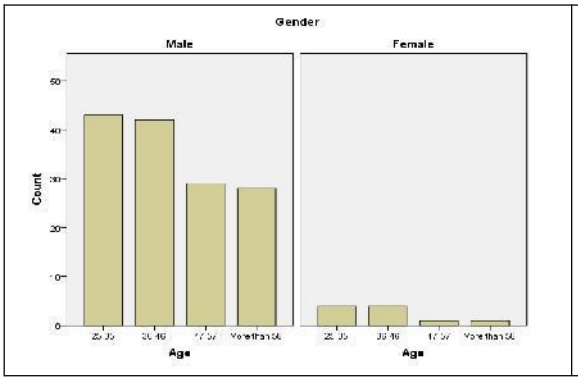


Figure 5.8 Gender Classification **Figure 5.9 Age Distribution**

Decomposition of gender in terms of age groups shows an interesting trend among men. It can be observed in Figure 5.10 that maximum number of males is from the age group of 25-35 years, followed by 36-46 years age group, then 47-57 years. Major contributors under the female group are from 25-35 years age group and 36-46 years age group.



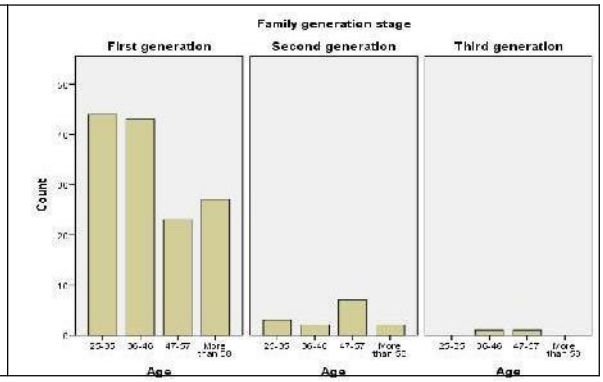
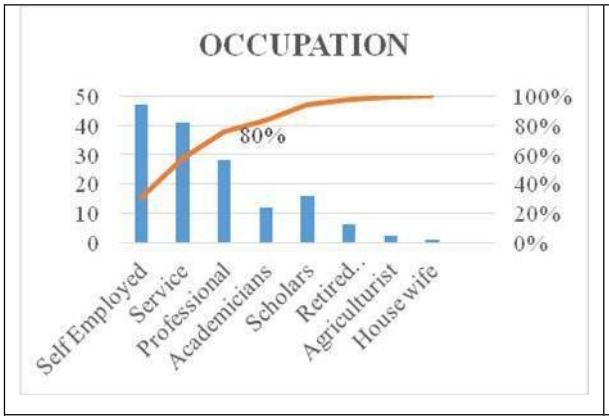


Figure 5.10 Gender and Age Classification **Figure 5.11 Family Generation of Innovators**

Decomposition of generations involved in innovation (family generation stage) in terms of age groups is exhibited in Figure 5.11. Majority of the innovators are from first generation

stage, maximum being in the age group of 25-35 years, followed by 36-46 years age group, and then the elderly group (more than 58 years). Major contributors among the second generation stage come from the age group of 47-57 years. Third generation stage is equally distributed among the age groups of 36-46 years and 47-57 years.

Moving onto the profiling of the respondents, it was observed that innovators belong to varied streams like family business, technicians, doctors, scholars, researchers, scientists, or are housewives. Figure 5.12 demonstrates that 80% of the contributors belong to the occupations of self-employed, in service, professionals (CEO, Directors, and Managers), academicians, and scholars. There are few retired personnel (government employee, professors, and scientists), house wives, and agriculturists who are also in the field on innovation. The areas of innovations examined by the innovators are displayed in the Figure 5.13. It has been observed that 80% of the innovations have been done in the area of healthcare, mechanical processing, bio-technology, consumer durables, electronics, nanotechnology, automobile sectors and allied technology. Other area touched upon were environment studies, manufacturing processes, agriculture, communication and networking, textile, robotics, consumer goods, multimedia, steel, and fire services.



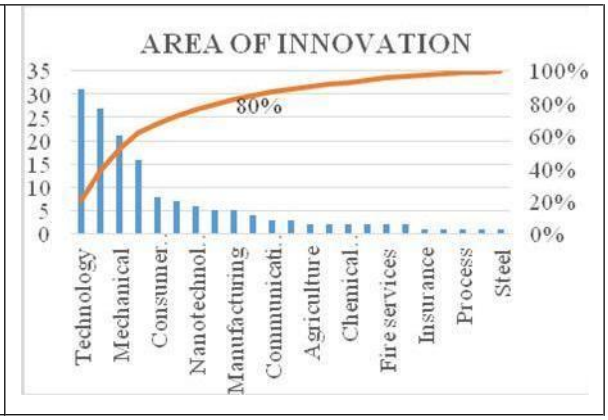


Figure 5.12 Occupation of the Innovators

Figure 5.13 Area of Innovation

Areas of innovation have been segregated into different age groups. It is interesting to observe in Figure 5.14 that area of innovation like biotechnology, electronics, healthcare, consumer durables and allied technology are the major contributors under the age group of 25-35 years. Age groups of 36-46 years and 47-75 years have been more involved in healthcare, manufacturing, mechanical processes, and allied technology. Further, people more than 58 years old have found technology, mechanical processes, and healthcare as their area of innovation.

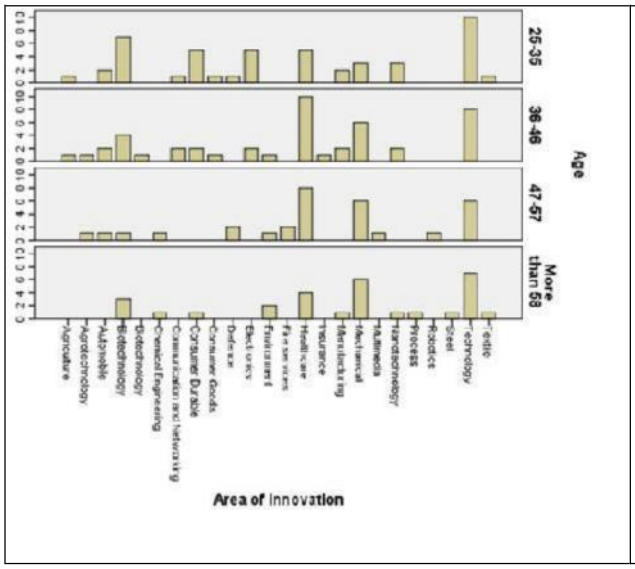


Figure 5.14 Relationship between Age Groups and Area of Innovation

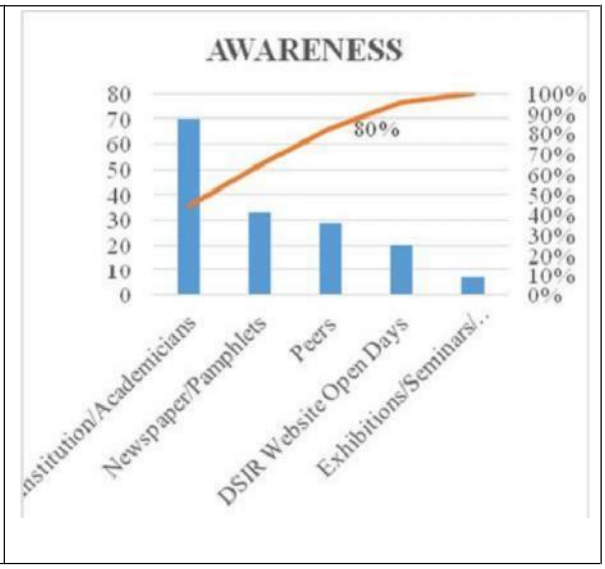


Figure 5.15 Level of Awareness

Marketing strategies that attracted the innovators are depicted in Figure 5.15. 80% of the innovators were attracted through academicians and professors involved with any reputed institution, print media like newspapers and pamphlets, and peers. Other dominant strategies are internet like DSIR Website (Open Days), exhibitions, seminars, and workshops. Further, different categories of innovations have been illustrated in Figure 5.16. It is observed major innovations are in product category (96%), followed by 3% in process, and 1% in service categories. Types of innovations are displayed in Figure 5.17. There is a trend of new innovations (80%) i.e. the innovations that never existed before. While the remaining 20% of the innovations, are modifications in the existing products and processes.

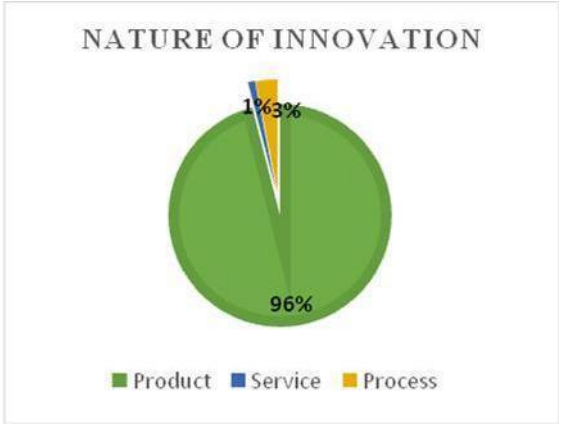


Figure 5.16 Nature of Innovation

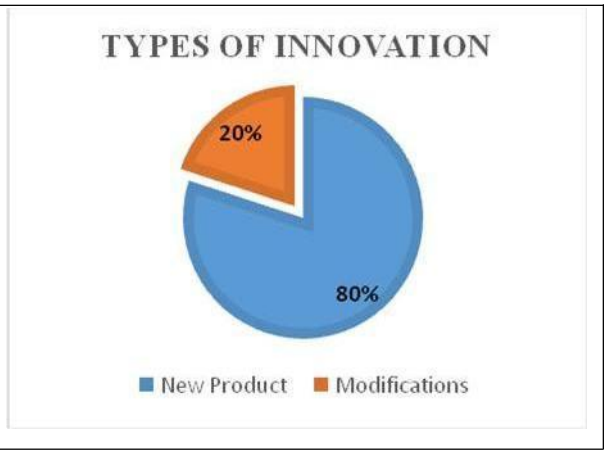


Figure 5.17 Type of Innovation

Sources of innovation are segmented into work experience (54%), daily observations (24%), and studies (22%) in Figure 5.18. Further, Figure 5.19 demonstrates the inter relationship between the source of innovation and the type of innovation. Majority of the contributors under new product category got the idea of innovation during work experience, followed by studies, and then daily observations. The least contribution under modified category is during studies.

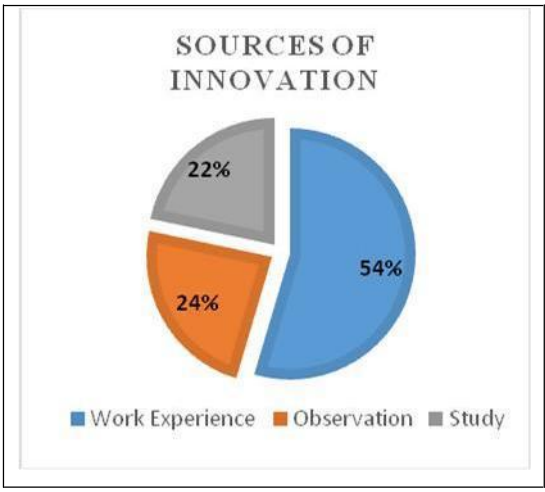


Figure 5.18 Source of Innovation

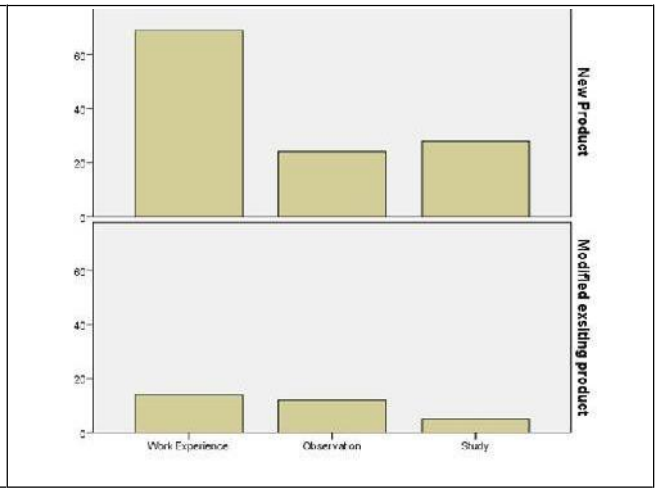


Figure 5.19 Relationship of Sources and Nature of Innovation

Figure 5.20 illustrates the relationship between the source of innovation and occupation. According to the illustration, majority of the contributors who are self-employed, or are in service, or are doctors who got the idea during their work experience. On the other hand, 80% of the innovators, who got the idea through daily observations are self-employed, service, or scholars. Personnel who got their idea during studies are researchers, professors, self-employed, and professionals.

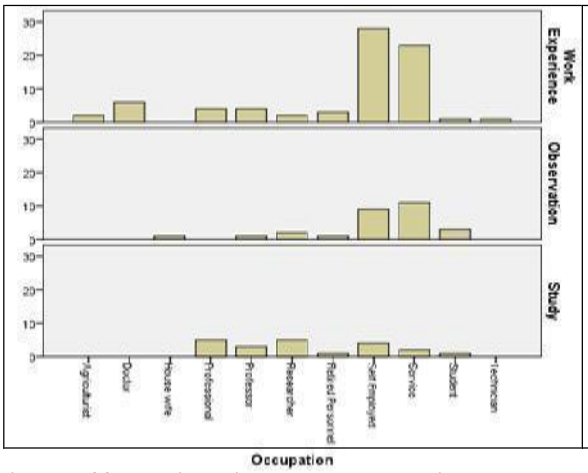


Figure 5.20 Relationship between Innovation and Occupation

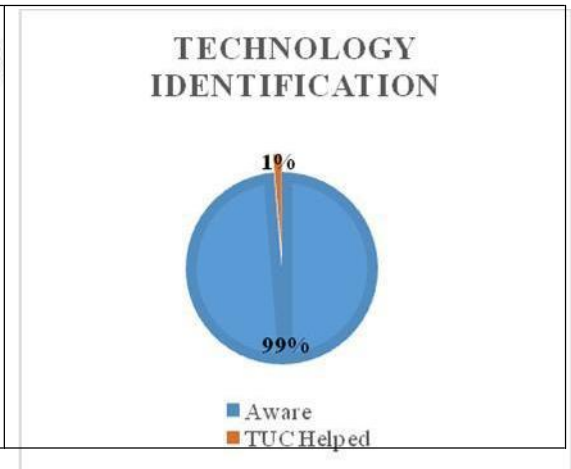


Figure 5.21 Technology Identification

Figure 5.21 shows that 99% of the innovators were already aware of the technology/concept behind their innovation. Only 1% of them were helped to identify the hidden technology in order to innovate. Figure 5.22 shows the various issues faced by the innovators, majorly financial issues, mentoring/ technical guidance, product commercialization/ outsourcing/ manufacturing, product marketing, lack of raw material, infrastructural facilities, and prototyping. Other problems faced were lack of in depth knowledge, environmental issues, sampling, administration issues, cost handling and estimation, and legal terms and conditions (as per the data collected from the innovators through questionnaires, annexure 2.0). Figure 5.23 indicates the satisfaction level of the innovators. 77% innovators are highly satisfied with the technical help, non-technical guidance, and support provided to them. 10% innovators are dissatisfied due to the delay in grants, proper mentoring not provided in terms of technical expertise, project management, and product development, or administration hindrances faced.

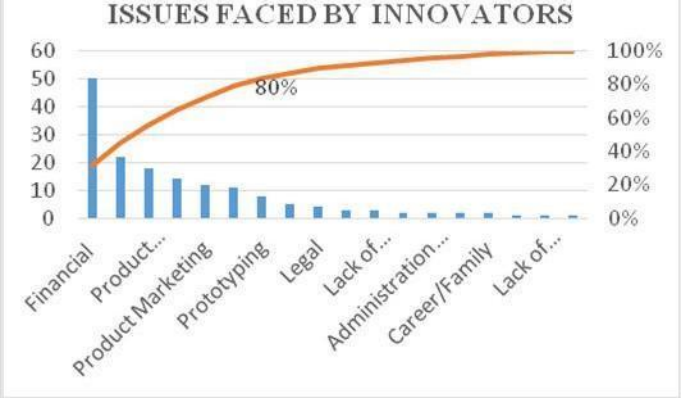


Figure 5.22 Issues faced by Innovators

Figure 5.23 Satisfaction Level of Innovators

Figure 5.24 exhibits the support policy clarity among the innovators. 88% of the innovators were clear regarding the support policies, when and how will they be provided their instalment money and at what stages. However, 12% were not clear of the same. These innovators majorly belong to the states of Goa, Gujarat, Karnataka, Tamil Nadu, and Uttar Pradesh. Figure 5.25 unveils the reality of professional training imparted to the innovators. Apart from the 19% innovators who were self-equipped, only 37% of them were provided training and handholding sessions, information booklets, and interacted with expert professionals. Remaining 44% were not imparted any kind of professional training.

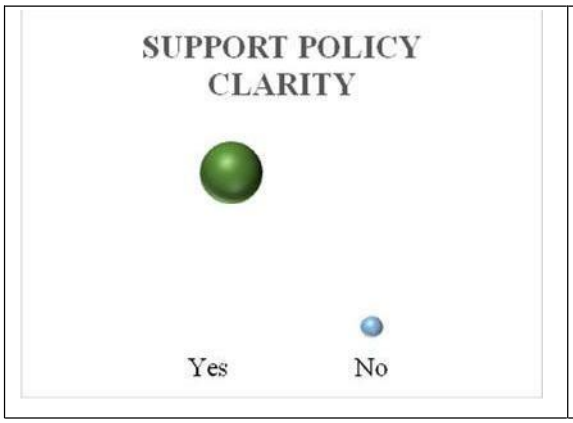
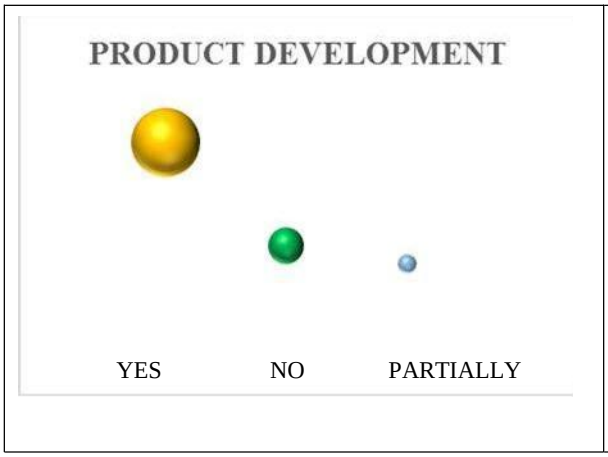


Figure 5.24 Support Policy Clarity **Figure 5.25 Professional Training**

Figure 5.26 demonstrates the monitoring done by TUC coordinators and mentors at all stages of product development. 82% of the innovations were monitored at each and every stage of product development. 5% were partially monitored, i.e. at some stages the innovations were carefully analyzed and then left abandoned. 13% were not monitored at all. Figure 5.27 illustrates the help received by the innovators in terms of raw material procurement. Only 22% of the innovators were provided such help. Remaining either did not require (23%) or were not provided such help (55%).



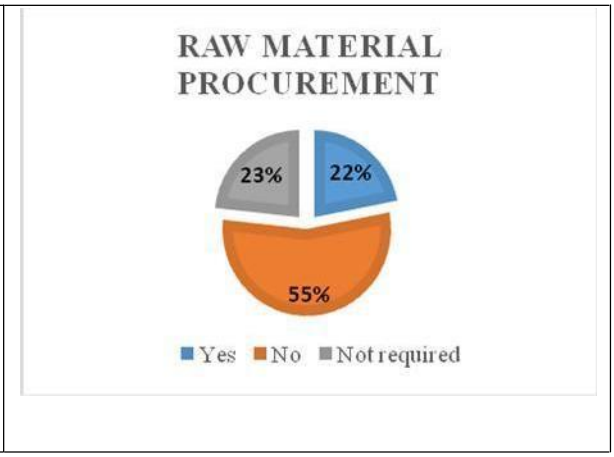


Figure 5.26 Monitoring during Product Development **Figure 5.27 Raw Material Procurement**

Figure 5.28 shows the impact of innovations on the environment. 45% of the innovators were informed that their innovations were at par with environmental standards. 29% of the innovations were not under the regulations of the environment, and the remaining 26% did not require environmental regulations i.e. these innovations were complete on their own. They did not require any kind of conformance from the environment.

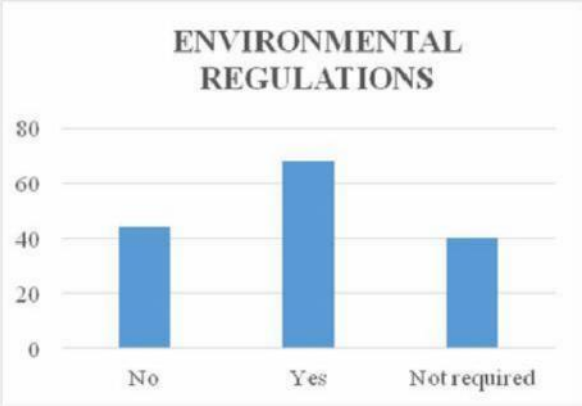


Figure 5.28 Environmental Regulations

Figure 5.29 demonstrates the relationship between the entrepreneurial skills possessed by the innovators. 97% of the innovators possess financial management, labour management, as well as human resource management skills. 3% possess only financial management and human resource management but not labour management skills. 93% possess labour management and human resource management but not financial management. 33% possess financial management and labour management but not human resource management. Further, 7% possess only human resource management, 18% possess only labour management skills, and 67% possess only financial management skills.

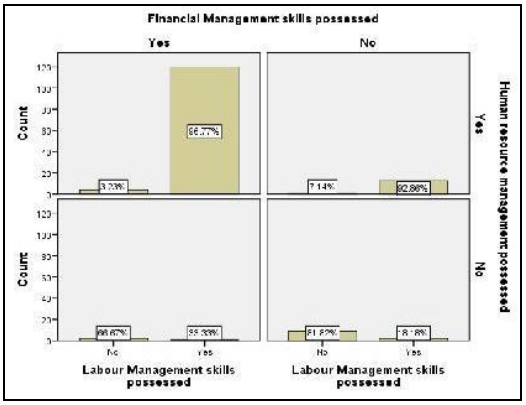


Figure 5.29 Entrepreneurial skills

Skills	Technical Mentoring		
	Science & Technology	**Commercial**	**Financial Viability**
HR Management Skills possessed	28%	38%	34%
Labour Management Skills possessed	27%	38%	34%
Financial Management Skills possessed	27%	37%	35%

Table 5.1 Entrepreneurial Skills and Technical Mentoring

Table 5.1 shows the decomposition of the entrepreneurial skills in terms of technical mentoring. It is observed that out of the innovators who possess Human Resource

Management skills, 28% were imparted knowledge about the scientific and technological concepts, 38% were guided about the commercialization of the innovation, and 34% were informed about the financial viability of the innovations, Similar situation is found in Labour Management and Financial Management skills. Figure 5.30 indicates the non-technical mentoring provided to the innovators in terms of proposal writing, legal issues, barriers, piracy prevention, patent, and IPR. 5.31 exhibits the status of the projects covered so far. The projects have been broadly classified into three categories, completed (80%), ongoing (16%), and fore-closure (4%).

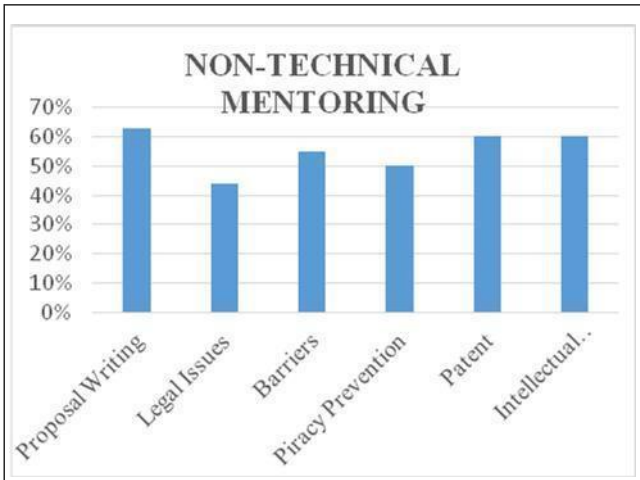


Figure 5.30 Non-Technical Mentoring

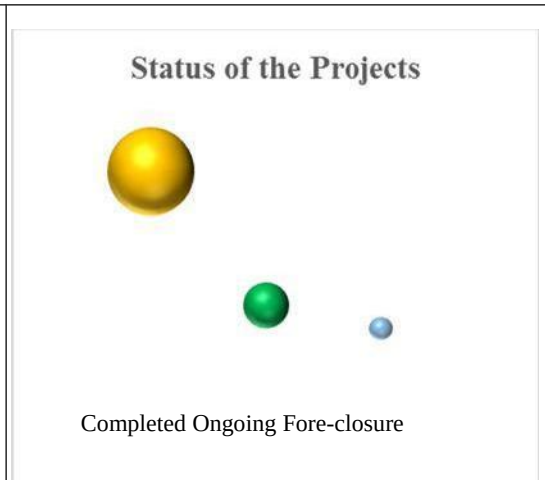


Figure 5.31 Status of the Projects

The research also intended to study the commercial viability of the innovations. It is highly commendable to state that 99% of the Phase II innovations are commercially viable having huge market potential; saves labour time and cost; pricing competitiveness; are environment friendly; saves different forms of energy; have huge market potential; are socially beneficial and are sustainable in long term too. The major problems observed among the innovators were lack of funds or delay in grants received, which either led to lack of motivation, obsolete technology, or non-meeting of laws and environmental rules and regulations on time.

5.2.3 MT Phase Analysis

There are seven responses received in MT Phase. Table 5.2 depicts the breakup of the responses state wise. 100% of the responses are males and belong to first generation stage. Figure 5.32 shows that highest participation is from age group of 25-35 years (43%) followed by equal participation

Table 5.2 Breakup of Innovators State Wise

Zone	States	Innovators
North	New Delhi	1
	Uttar Pradesh	1
South	Karnataka	1
East	Assam	2
West	Maharashtra	2
	Total	**7**

from age groups of 36-46 years and 47-57 years. Age group of more than 58 years has not been touched upon under this phase. The profile of the respondents has been distributed among self-employed, business, professor, and technician streams. The areas of innovation are agriculture, technology, automobile, manufacturing process, and mechanical process. 100% of the innovations are in the product category under the nature of innovation. Further, Figure 5.33 depicts that 85% innovations are new under the nature of innovation and 15% are modifications of the existing product.

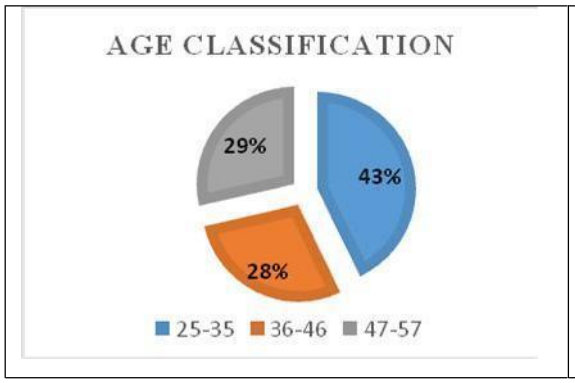


Figure 5.32 Age Distribution

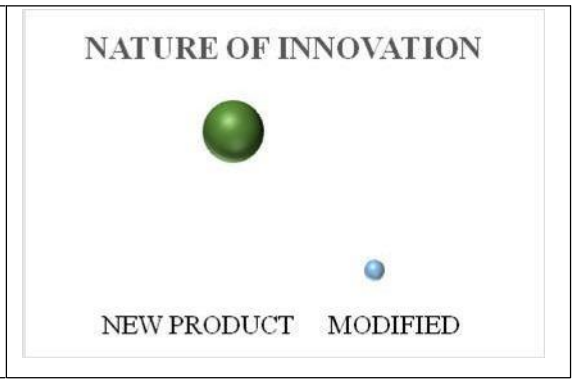
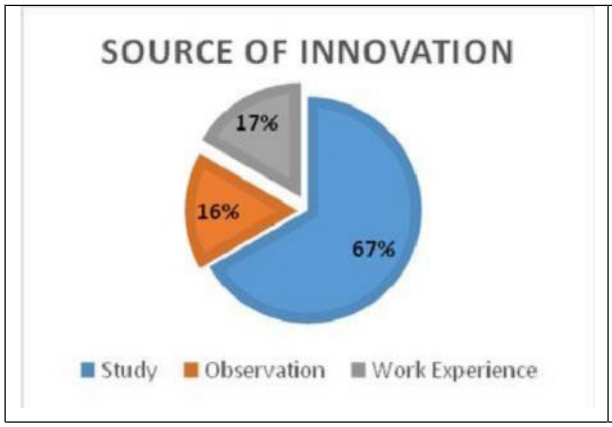


Figure 5.33 Nature of Innovation

Figure 5.34 displays the source of inspirations for the innovators segmented into three classifications such as study (67%), daily observation (17%), and work experience (16%). Figure 5.35 demonstrates the relationship between the occupation of the innovators and their source of inspiration of innovation. It is observed that the entrepreneurs got their idea of innovation during daily life observation. Innovators who are self-employed had their Eureka Moment either during work experience or during studies.



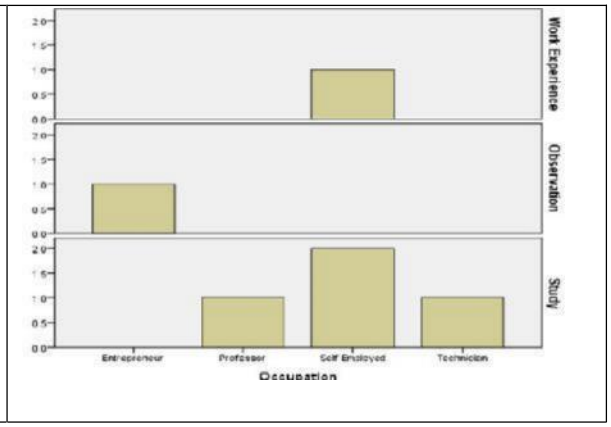


Figure 5.34 Source of Innovation **Figure 5.35 Source of Innovation and Occupation**

Figure 5.36 indicates the satisfaction level of the innovators. 85% of the innovators are highly satisfied but 15% are dissatisfied due to delay in grants, technical guidance, and hence lack of motivation. Figure 5.37 exhibits the issues faced by the innovators. 86% of the innovators faced financial and technical guidance or lack of knowledge problem. Other problems were technical or non-technical guidance or mentoring.

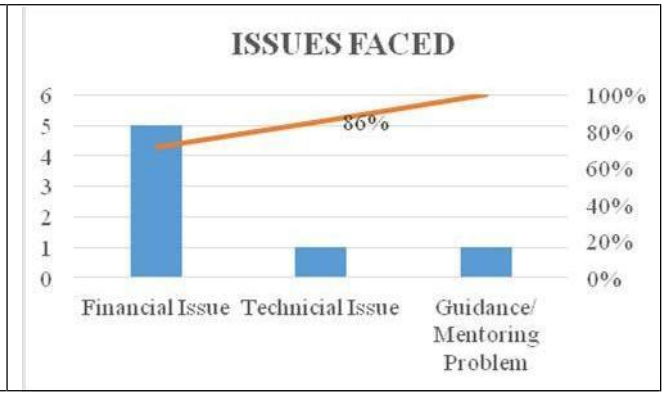


Figure 5.36 Satisfaction Level of Innovators **Figure 5.37 Issues faced by Innovators**

100% of the respondents came to know about the TePP scheme through institutions viz, academicians, peers, and professors. They were already aware of the technology and were not dependent on TUC to identify the same. Figure 5.38 exhibits the support policy clarity among the innovators. 85% of the innovators were clear regarding the support policies, when and how will they be provided their instalment money and at what stages. However, 15% were not clear of the same. Figure 5.39 unveils the reality of professional training imparted to the innovators. 85% innovators were provided training and handholding sessions information booklets, and interacted with expert professionals. Remaining 15% were not imparted any kind of professional training.

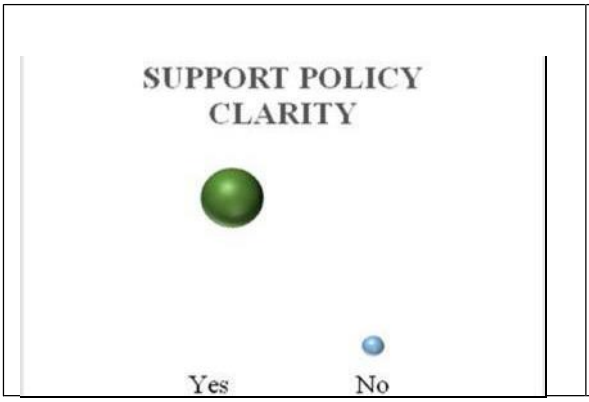
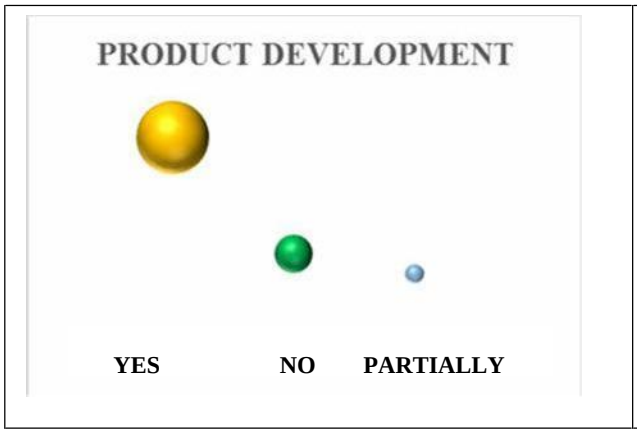


Figure 5.38 Support Policy Clarity

Figure 5.39 Professional Training



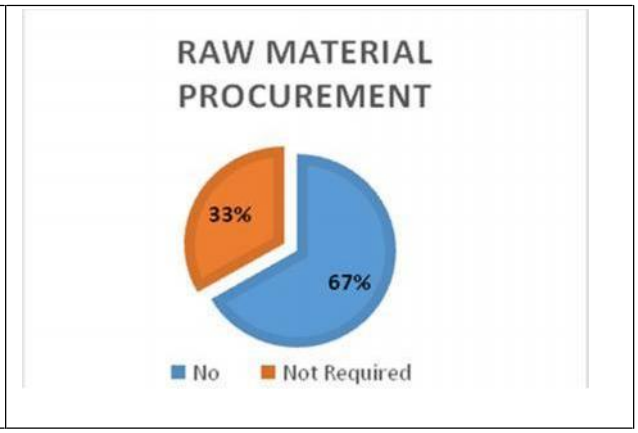


Figure 5.40 Monitoring during Product Development

Figure 5.41 Raw M aterial Procurement

Figure 5.40 demonstrates the monitoring done by TUC coordinators at all stages of product development. 57% of the innovations were monitored at each and every stage of product development. 14% were partially monitored; remaining 29% were not monitored at all. Figure 5.41 illustrates the help received by the innovators in terms of raw material procurement. Out of the total innovators, 33% did not require any help. Remaining 67% were not provided such help (55%). Table 5.3 shows the relationship between the shows the decomposition of the entrepreneurial skills in terms of technical mentoring. It is observed that out of the innovators who possess Human Resource Management skills, 50% were imparted knowledge about the technical or scientific concepts, 100% were provided information about each commercialization financial viability of the innovation. Similar situation is found under Labour Management and Financial Management skills. Further, only 17% of the innovators were imparted information related to non-technical skills like proposal writing, barriers, patents, IPR, legal issues, and piracy prevention.

Table 5.3 Entrepreneurial Skills and Technical Mentoring

Skills	Technical Mentoring		
	Science and Technology	Commercialization	Financial Viability
HR Management	50%	100%	100%
Labour Management	50%	100%	100%
Financial Management Skills	50%	100%	100%

Figure 5.42 shows the impact of innovations on the environment. 67% of the innovators were informed that their innovations were at par with environmental standards. Remaining 13% of the innovations were not under the regulations of the environment. Figure 5.43 indicates the status of the projects. It is has been broadly divided into three classification, completed (57%), on-going (29%), and fore-closure (14%). Most of the innovations are found to be commercial viable. This means that the products innovated are saving labour time and cost; technically strong; are cost effective in terms of pricing; and are environment friendly.

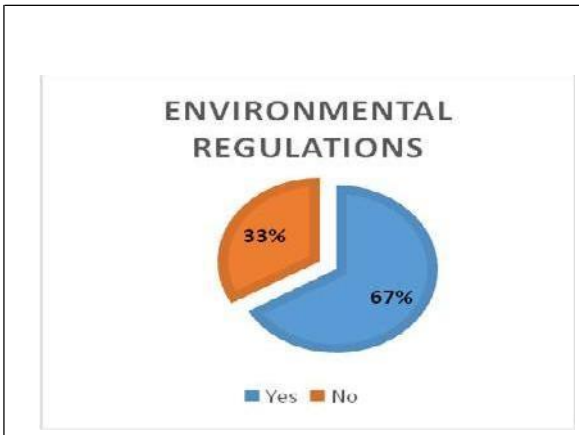


Figure 5.42 Environmental Regulations

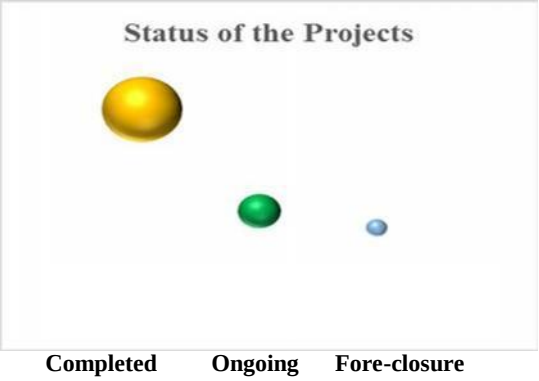


Figure 5.43 Status of the Projects

5.2.4 TePP Phase II Analysis

Figure 5.44 classifies the entrepreneurs zonal wise and state wise. 80% of the responses are from the states of Rajasthan, Tamil Nadu, Punjab, Andhra Pradesh, and Karnataka. Rajasthan is the only state which has the maximum number of representation in Phase II as per the data collected. Figure 5.45 displays that 95% of the innovators are men and only 5% are women. This indicates a growing trend towards men as compared to women in entrepreneurial ventures. Figure 5.46 shows that maximum number of innovations being commercialized under Phase II are equally (30% each) done by people in the age group of 36-46 years, 47-57 years age group, and more than 58 years. The least contribution is from age group of 25-35 years (10%). Further, 95% of entrepreneur belongs to the first generation and only 5% belong to second generation of entrepreneurship.

Zone	States	Breakup
North	Haryana	1
	Punjab	2
South	Andhra Pradesh	2
	Karnataka	2
	Kerala	2
	Tamil Nadu	4
West	Rajasthan	6
	Maharashtra	1
	Total	**20**

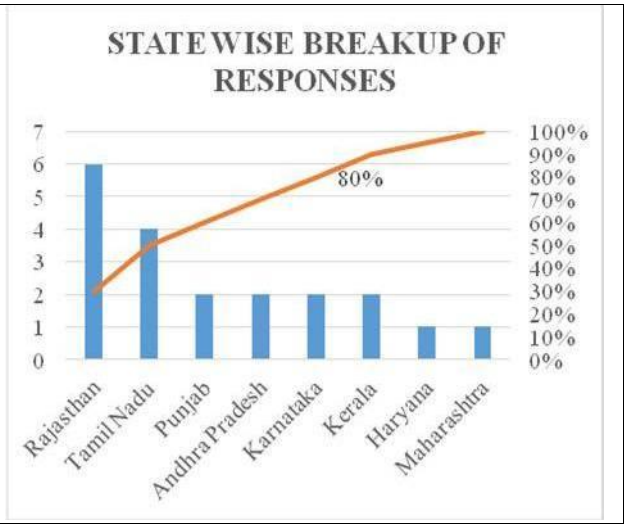


Figure 5.44 Classification of Entrepreneurs State Wise

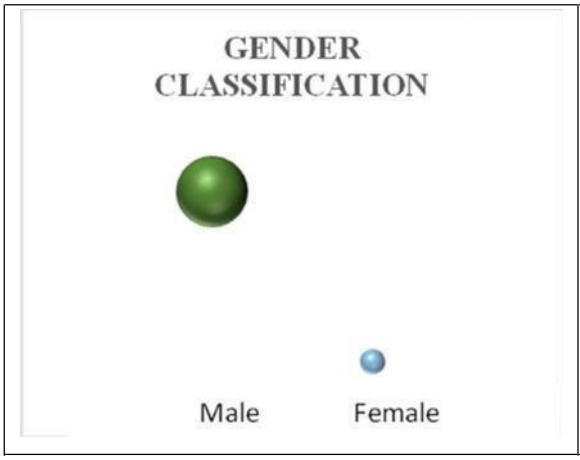


Figure 5.45 Gender Classification

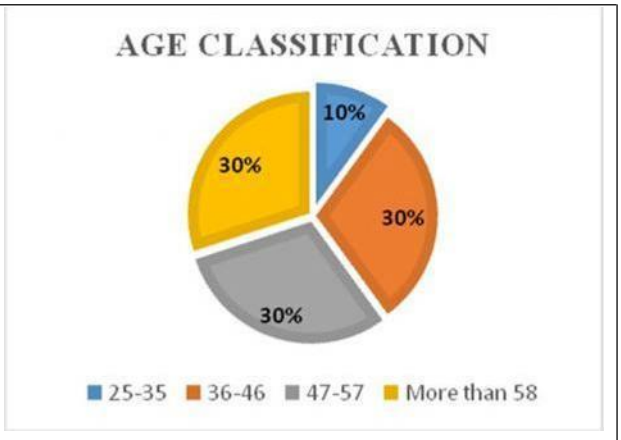
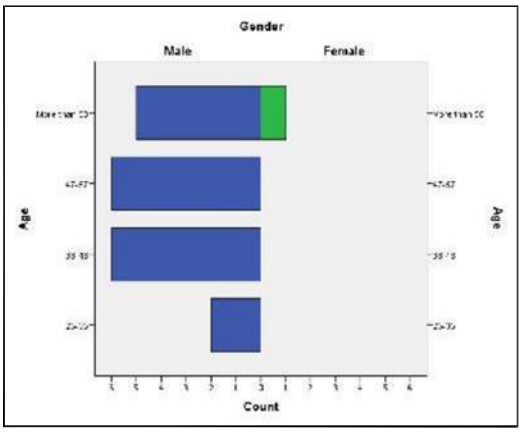


Figure 5.46 Age Distribution

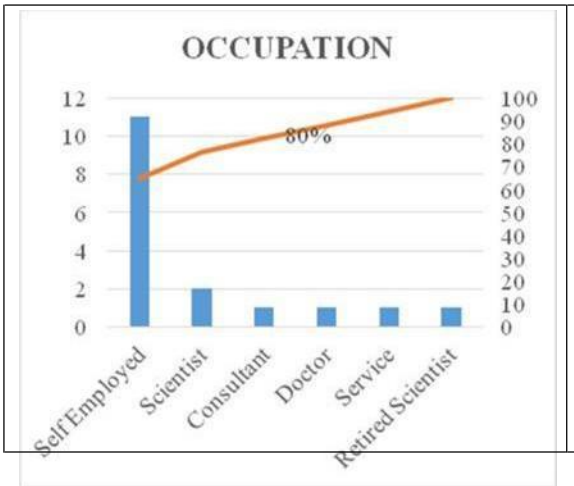
In continuation with the above figures, Figure 5.47 illustrates the age versus gender classification of the entrepreneurs. It has been observed that women belong to only the age group of more than 58 years. Moreover, Punjab has been recognized as the most popular state for women entrepreneurs.



Moving onto the profiling of the respondents, it was observed that the innovators belong to varied streams like consultants, doctors, scientists, job, or self-employed. Figure 5.48 demonstrates that 65% contributors are self-employed, and 80% of the contribution comes from the self-employed entrepreneurs, scientists, and consultants.

Figure 5.47 Relationship of Gender and Age Classification

Figure 5.49 displays the area of innovations examined by the innovators. It has been observed that 80% of the innovations have been done in the area of healthcare, mechanical processing, agriculture, textiles, and allied technology in Phase II of the TePP.



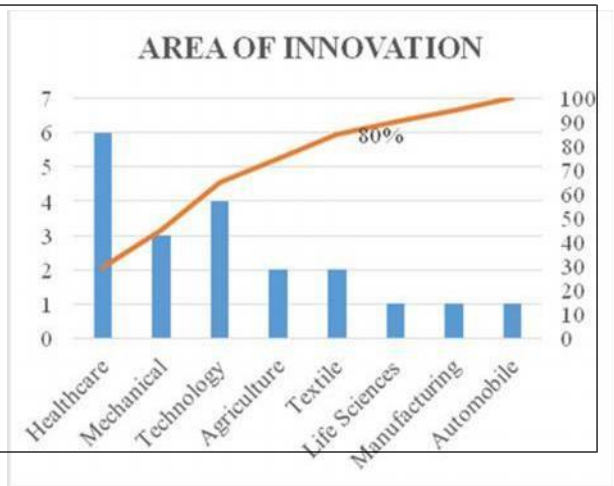


Figure 5.48 Occupation of the Entrepreneurs **Figure 5.49 Area of Innovation**

Figure 5.50 displays the inter-relationship between the age and area of innovation covered by the entrepreneurs. Under the age group of 25-35 years, the area of innovation covered have been mechanical processes and allied technology. Under the age group of 36-46 years, healthcare, textile, and agriculture forms 80% of the contributions. Under the age group of 47-57 years,

healthcare, mechanical, and manufacturing processes have been the major area of innovation. Finally under the age group of more than 58 years, healthcare, mechanical processes and life sciences forms the major part. Hence, it is observed that healthcare is the most prominent area of innovation under TePP Phase II.

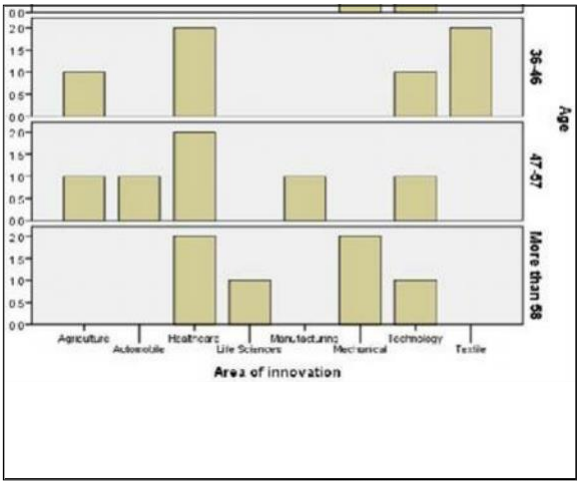


Figure 5.51 depicts the categories of the innovations. It has been observed that majority of the innovations are in product category (95%), followed by 5% in service category. Figure 5.52 shows that there has been a trend of new innovations being commercialized (60%) and remaining 40% of the innovations commercialized are modifications in the existing products, designs, and processes.

Figure 5.50 Relationship between Age Groups and Area of Innovation

This has been possible with the help and guidance of the concerned ministry in terms of technical, non-technical mentoring, issue of funds, procurement of raw material and continuous monitoring at every stage of development. Figure 5.53 displays the source of inspirations for the innovators divided into three segments viz, work experience (50%), daily life observations (40%), and during studies (10%).

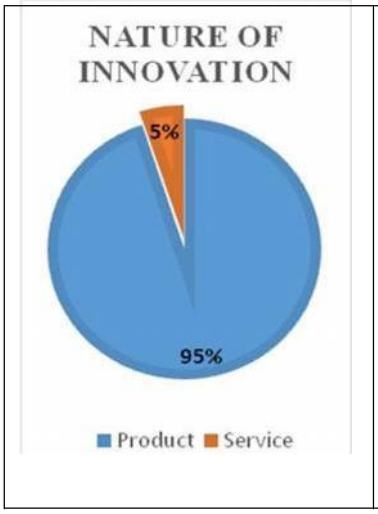


Figure 5.51 Nature of Innovation

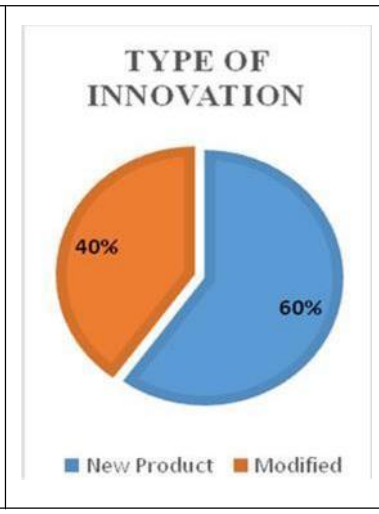


Figure 5.52 Type of Innovation

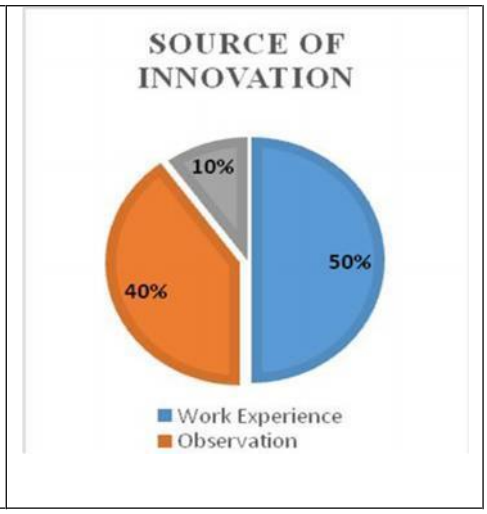


Figure 5.53 Source of Innovation

Figure 5.54 illustrates the relationship between the source of innovation and nature of innovation. People who innovated new products, got their source of inspiration majorly during work experience, followed by daily observations. Entrepreneurs who innovated in the field of service got the idea during their work experience. Figure 5.55 exhibits the inter- relationship between the source of innovation and occupation. It is observed that entrepreneurs who got the idea of innovation during studies are occupied in job or are professionals. Self-employed entrepreneurs got the source of innovation during work experience or daily life observations.

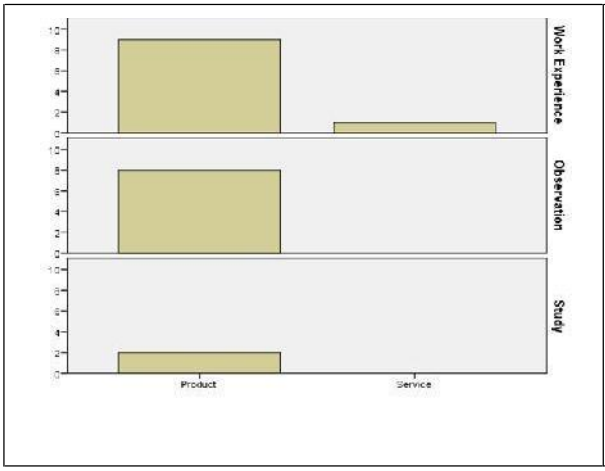


Figure 5.54 Source and Nature of Innovation

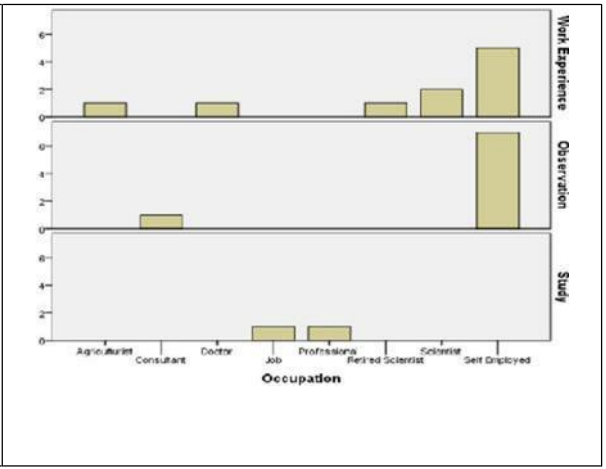


Figure 5.55 Source of Innovation and Occupation

Marketing strategies creating awareness among entrepreneurs are depicted in Figure 5.56. 80% of the entrepreneurs came to know about TePP through peers, print media like newspapers and pamphlets, and personnel involved with reputed institutions like academicians and professors. Other dominant strategies adopted by TUCs were DSIR Website and Exhibitions/Seminars/Workshops.

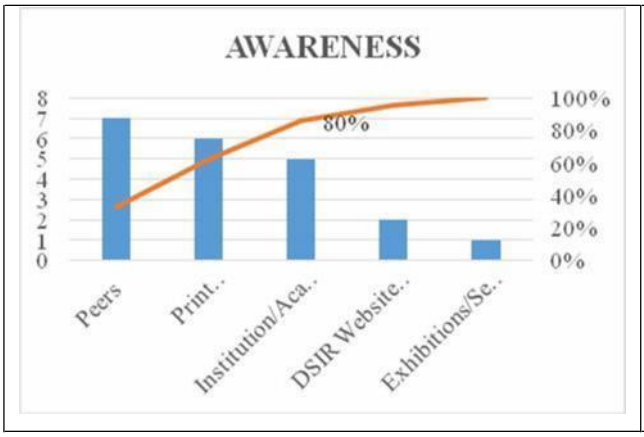


Figure 5.56 Sources of Awareness

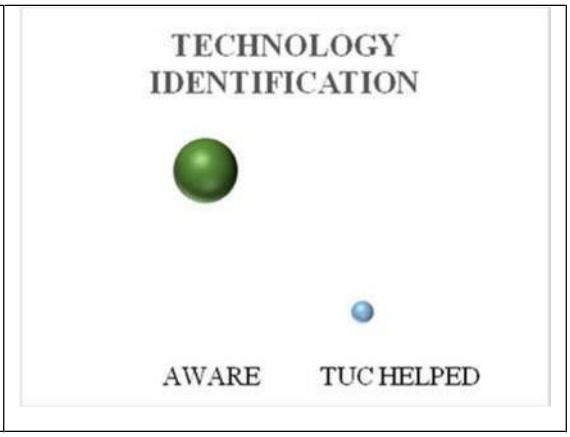


Figure 5.57 Technology Identification

Figure 5.57 indicates the awareness of technological concepts among the entrepreneurs. 95% of them were already aware of the apt technology behind their innovation, whereas only 5% were guided by the respective TUCs regarding the scientific concepts behind their innovation. Issues faced by the entrepreneurs while innovating are indicated in Figure 5.58. 80% of the entrepreneurs faced financial, marketing, and manufacturing issues. Other issues were prototyping, research and development, and administration hassles. Figure 5.59 shows the satisfaction level of the entrepreneurs. 80% are highly satisfied with the technical help, non-technical guidance, and support provided to them. 10% entrepreneurs are partly satisfied, and remaining 10% are dissatisfied due to the delay in grants, proper mentoring not provided in terms of technical expertise, project management, and product development, or administration hindrances faced.

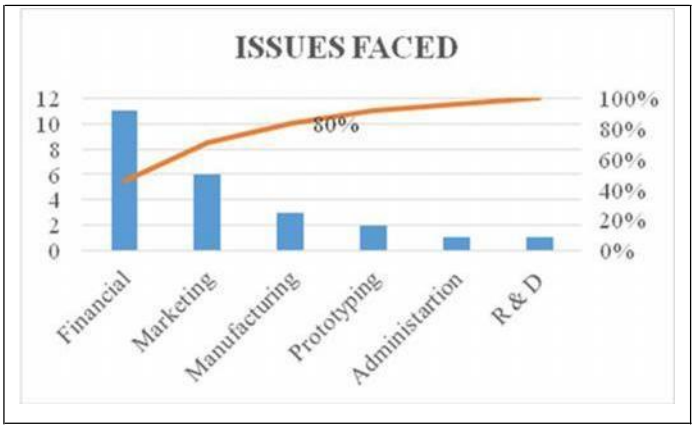


Figure 5.58 Issues faced by Entrepreneurs

Figure 5.59 Satisfaction Level of Innovators

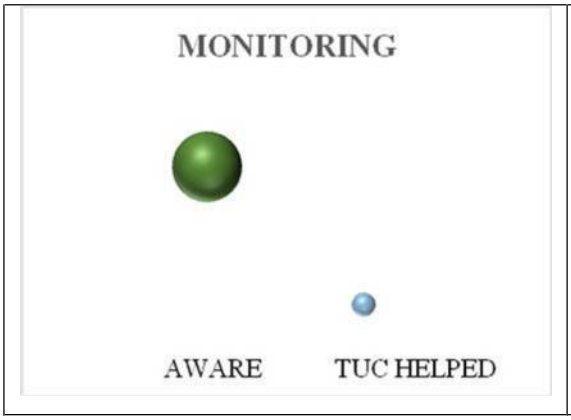
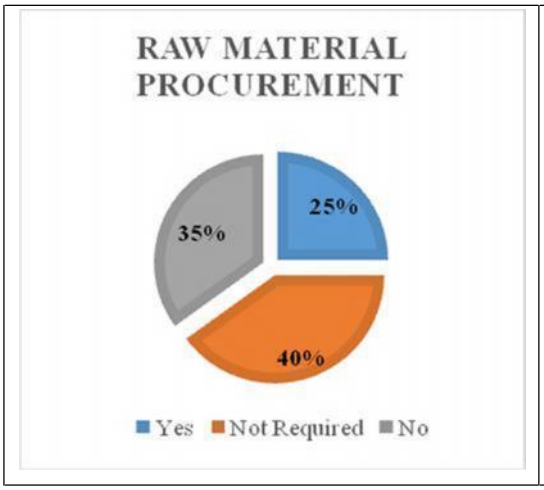


Figure 5.60 Monitoring during Product Development

Figure 5.61 Professional Training Imparted

Figure 5.60 depicts the monitoring of respective TUC done at every stage of product development. 80% of the entrepreneurs were monitored during every stage of innovation,

whereas 20% were not guided at any stage. Figure 5.61 unveils the reality of professional training imparted to the innovators. 65% were provided training and handholding sessions, information booklets, and interacted with expert professionals. Remaining 35% were not imparted any kind of professional training. Figure 5.62 illustrates the help received by the entrepreneurs in terms of raw material procurement. Only 25% of the innovators were provided such help. Remaining either did not require (40%) or were not provided such help (35%). Figure 5.63 shows the impact of innovations on the environment. Only 30% were informed that their innovations were at par with environmental standards. 50% of the innovations were not under the regulations of the environment, and the remaining 20% did not require environmental regulations i.e. these innovations were complete on their own.



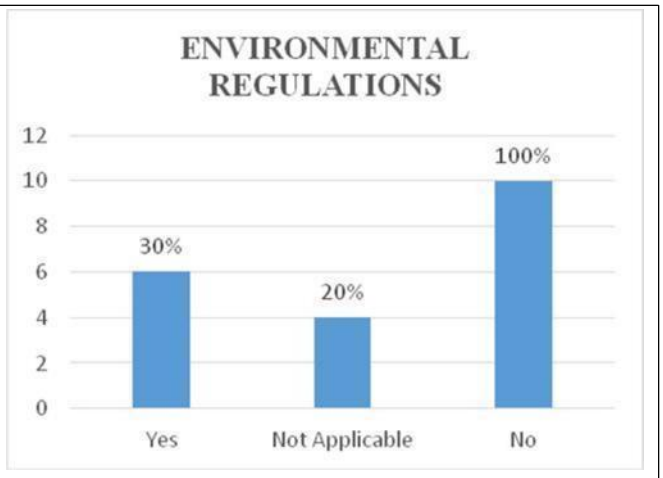


Figure 5.62 Raw Material Procurement **Figure 5.63 Environmental Regulations**

Further, 100% of the entrepreneurs possess entrepreneurial skills i.e. Labour Management, Financial Management, and HR Management skills. Table 5.4 shows the decomposition of entrepreneurial skills in terms of technical and non-technical Mentoring. It is observed that in Phase II, an equal proportion of entrepreneurs possessing entrepreneurial skills i.e. Labour Management, Financial Management, and HR Management skills also received technical and non-technical mentoring.

Table 5.4 Entrepreneurial Skills and Technical Mentoring

Mentoring (Technical and Non technical)		Skills Possessed		
		HR Management	**Labour Management**	**Financial Management**
Non-Technical Mentoring	**Proposal Writing**	89%	89%	89%
	Legal Issues	61%	61%	61%
	Barriers	83%	83%	83%
	Piracy Prevention	72%	72%	72%
	Patent	89%	89%	89%
	Intellectual Property Rights	83%	83%	83%
Technical Mentoring	**Imparting Science and Technology**	78%	78%	78%
	Commercialization	61%	61%	61%
	Financial Viability	83%	83%	83%

Figure 5.64 displays the status of the projects covered so far. The projects have been broadly classified into two categories, completed (90%), and ongoing (10%). Further, the entrepreneurs were asked to rate their projects in terms of technical potential in new or modified products, services, or processes so designed. Figure 5.65 demonstrates that 70% of the entrepreneurs rated their projects as high (rating of 10 out of 10); 30% of the innovations were rated neutral i.e. (rating of more than 6 out of 10); and none of the projects have been rated below 6.

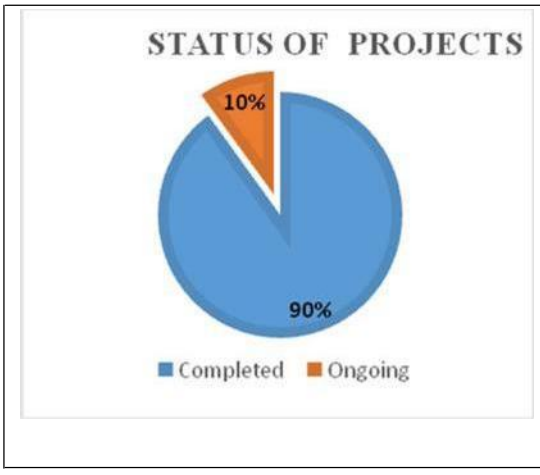


Figure 5.64 Status of the Projects

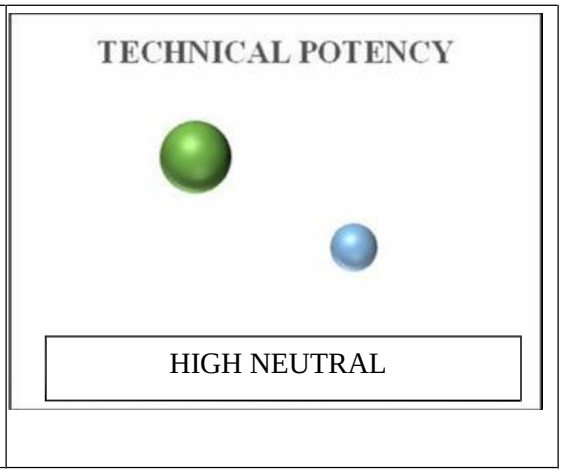


Figure 5.65 Technical Potency

The research also intended to study the commercial viability of the innovations. It is highly commendable to state that 100% of the innovations are commercially viable. This means that the products innovated or modified are saving labour time and cost; are cost effective in terms of pricing; are environment friendly; generating employment; and are at par with the international standards.

5.3 IMPACT OF OUTCOMES

After assessing the responses received, it was observed that the outcomes derived have a substantial impact on the society, environment, science, technology, and on the economy as a whole. Some of the innovators/entrepreneurs have started with their own start-ups or business ventures, also known as spin-offs. Some of these innovators' profile and their innovation have been discussed in table 5.5 (source: Creative India Reports 2006-2007 to 2010-2011). The impacts have been discussed in detail in the text below.

Table 5.5 Spin offs and their Impacts

Serial No.	Name	Contact Details	Innovation	Technology Developed	Social/Economic Impact
1	Shri C P Bhatnagar	A-98, Ashok Vihar, Phase II, Delhi 11 00 52	Disk-brakes for Human Powered Vehicles	Mechanical Engineering	The hydraulic disc brake will be useful for vehicles such as wheel chair, vending carts animal carts, tractors, and trailers with better braking.
2	Shri S R Verma	Mohan P.O. RamNa gar, Nainita l Utrakh and, 244715	Alkalin Lignin products and Cooler Pads from Dry Pine Needles (DPN)	Chemistry and Allied fields	Pine is the main source of oleoresin from which Rosin and Turpentine Oil are produced. It also gives good amount of timber for furniture, pulp, and paper, wood wool, etc
3	Shri Natarajan Rayar	Irumbulik urich y P.O., Sendurai, TK, Perambalurr, Dt, Tamil Nadu, 621804, Ph:	World First Water Pollution Free Technology for Starch Processing Plants	Clean Technology	Meets the new pollution laws, has no discharge of polluted effluents, lowers the operating costs, uses less power consumption, and processing time is also very less.

4	Shri Rajendra Kumawat	Old Tonk Road, 304001, Rajasthan, Ph; 01342 243008	Development of Extendable Width Cultivator	Agriculture/ Green Technology	Avoids the purchase of a new matching cultivator, when a farmer purchases a tractor. Thus, saves overhead costs with better efficiency and coverage area.
5	Shri S. Venkatarama n	20A, Raman street, Chitlapakkam, Chennai 600064, Ph: 044 22234528	Multi-level Automated Two-wheeler Parking Unit	Mechanical Engineering	Eases the problem of parking space with the advent of rising population, provides comfort, removes congestion from roads, and decreases the problem of road traffic.
6	Smt Vimla Devi	24 Capitaine Marius Xavier Street, Pondicherry 605001, Ph: 0413 2334632	Prefabrication Technology to manufacture Indian Oriental Remedies	Biomedical and Herbals	Will enable small scale industries to benefit in adapting this technology and manufacture oriental remedies (like liver tonics, paediatric antidiarrhoeal suspension) which is less costly and will be available in easy steps which would save labour and processing time
7	Shri Das Ajee Kamath	460/44 Prasanth, Junior Jantha Road, Vyttila P.O., Ernakulam, Kochi 682019, ph: 09447970495	Rotary variable compression ratio internal combustion engine	Mechanical Engineering	Different fuels can be burnt in the same engine. It will also be possible to change the fuel while the engine is running.
8	Shri N Vinayakapan di	200 MHS Colony, Theni Road, Madurai, 625016, ph: 09865954149	Split type wood forming cutter, insects, and cutter heads	Mechanical Engineering	The product is made up of raw materials locally available saving lot of costs. It gives better finishing to the products in the housing sector. Overall reducing the

					cost of wood work in any housing sector. Further, have provided employment to around 30 people.
9	Shri Paneerselvam	1/154 C, Madurai, Mandapam Road, Opp Union Office, Kattuparamku di, 623707, Tamil nadu, Ph: 09443323185	Tractor mounted pulveriser	Mechanical Engineering	Innovation is a tractor driven mobile machine for pulverising waste wood for utilization of fuel. This waste wood is high in demand in paper, food processing, textiles, industrial boilers and other similar industries.
10	Shri R. Augustine	A6, TREC STEP, NITT Campus, Thuakadi, Trichy 620015, ph: 09443425164	Integrated use of neem and sea algae in the eco friendly management of crop pest	Agricultural Sciences	Product act as a pest repellent as well as nutrient. It is biodegradable, non toxic, and has no ill effects on humans or animals. Highly feasible and economical as raw materials are easily available.
11	Shri S. Kumar	651, 11th Main road, 5th Block, Jayanagar, Banaglore, 560041, Ph: 080 26591524	NUALGI for growth of Diatom Algae	Agricultural Sciences	The product is used for fisheries and aquaculture to increase food production, reduces the effect of global warming, helps in the treatment of lakes, sewage and effluents, increases the production of bio oil and also controls odour.
12	Shri S. Selvaraj	D. No. 49, 5th Cross Road, Anna Nagar, Peelamedu-Post, Coimbatore 641004, Ph: 09442622223	Production of Manure and Methane Gas	Agricultural Sciences	The product meets the requirement of cooking gas and fertilizers for public and agricultural sector. It is easily available, cost efficient, and environment friendly.
13	Dr. Aroop Kumar Dutta	12-5-149/16-2, Vijayapuri	Development of indigenous	Biomedical and Herbals	The cell culture is amicable for large scale

		South Lalguda, Hyderabad, 5000717, ph: 040 27007288	micro carriers for large scale cell culture		manufacturing of mammalian cell culture base in an economical and efficient manner.
14	Smt. Mrinmayee Bhushan	992/93/14, Rajendra Nagar, Pune 411030 MAH India, Ph: 020 24537601	Romantaque-aloe vera cream	Biomedical and Herbals	Technology using plant derived extracts for inhibiting hair growth after waxing, threading etc.
15	Shri Shwetank Jain	8, New Mohan Puri, Meerut 2500051 U.P, Ph: 09332085694	Development of a STATCOM	Electrical Engineering/ Electronics	Technology helps in reducing the problem of neutral overloading in the power sector.
16	Shri Nimish Sharma	AE410, Type IV, 22nd Street, IIT Kanpur, Ph: 0512 2597844	Autonomous Unmanned Aerial Vehicle for Aerial Surveillance	Mechanical Engineering	Helps in civil, defence, environmental, meteorological applications. Also helpful in crop monitoring, traffic management, pipe line monitoring, coastal surveillance.
17	Shri J. Karthikeyan	6/1 Pangajum House Street, PKM Road, Theni, 625531, Tamil Nadu	Hi-fi digitalized Turning machine	Mechanical Engineering	Low cost, user friendly with LCD display and analog touch switches.
18	Prof. Suthikshn Kumar	#866, 1st main road, Kengeri Satellite Town, Bangalore, 560060, Ph: 9342843344	PC based Oscilloscope	Medical Sciences/ Technology	Replaces ordinary oscilloscope, can be used for the development of graphical user interface, on any machine like TV, Radio, PC.
19	Shri S. Bhimania	567, Sachin Nag Block, Asiad Village, Khel Gaon, New Delhi 110049, ph; 011 26492459	Lab scale process development of Environmental friendly printing ink	Technology	Drying and washing of ink is free of emission, cost effective, easily available raw materials, reduces the overall operating costs,
20	Shri Ankit Mehta	Idea forge technology Pvt Ltd, Office #4,	Sustainable and emergency mobile charger	Electronics/ Technology	The charger charges mobile phones just by human activity on the

		4th floor, Powai, Mumbai 400076, ph: 09969145419			charger, offering flexibility and convenience to the user at cheap prices.
21	Dr. P.T. Ajith Kumar	Technopark Technology Business Incubator, Technopark, Trivandrum 695581, Ph: 0471 2527282	Development and Optimization of a Holographic Pulsed Portrait Camera System	Electrical Engineering/ Technology	Better imaging facilities
22	Shri Ajit Narayanan	CGE-2A, Kuppam Beach Road, Thiruvanmiyur, Chennai 600041, Ph: 044 24405139	Affordable Augmentative & Alterative Communicatio n Device with dynamic message generation and speech synthesis for children with cerebral palsy	Biomedical Sciences/ Electrical Engineering	Helped the children socially, and contributed to economic productivity.
23	Shri Babeesh C.T.	T-TBI, 4th floor, Nila, Technopark, Trivandrum 695581, Kerela, Ph: 09349731763	Cardiac Analyzer	Biomedical Sciences/ Electronics	Predicts the risk of serious heart rhythm abnormalities.
24	Shri Kallol Mallick	BH-50, Sector 11, salt lake, Kolkatta 700091	Heart Throb	Biomedical Sciences/ Electronics	The product is used to manufacture multi- factor medical measurement instruments, capable of measuring multiple medical signals in one unit, storing the information for future use , and transmitting the data over an appropriate transmission medium (computer, internet or

					cell phones) as and when required with low cost.
25	Shri Kranthi Kumar Vistakula	503, Legend Apartments, Street #7, Himayatnagar, Hyderabad, 500029, Ph: 040 27624618	Clima Gear	Electronics	Clothes to protect the human body from extreme weather conditions
26	Dr. MSN Balasubramaniyan	Jaya Sree Metals, 4/169, Ambala nagar extn, Kowdiar p.o. , Trivandrum 695003, ph: 0471 2437241	Ultra clean electro slag refined products for critical application	Electrical Engineering	Solved hundreds of technical problems.
27	Shri Sanjay Vijayakumar	4th floor, Bhageerataha Square, Kacheripadda, Cochin Kerela, ph: 09846819123	MCARP – Mobile Crime and Accident Reporting Platform for Police	Electronics	Helped defence sector in protecting public from crime
28	Shri Umesh Sachdev	B-23, Shantivan Apartments, New no. 97, Old no. 44, 2nd main road, Gandhi nagar, Adyar, Chennai	Voice Net – Voice bridge to the internet for the visually impaired	Electronics	Caters to the problems of undeserved classes of the society, visually impaired, rural, etc.
29	Shri Aman Agarwal	13 A, Arya Nagar, Ambala Cantt 133001	Development of process technology for production of photographic films	Electronics	Uses locally available raw material, cheap labour, reduces the cost to the end user, saves foreign exchange, and generated emplo yment in the country
30	Smt. Charmaine Sharma	Gyanpur road, Bhadohi 221401 UP	Development of eco washing process for handmade woolen carpet	Biomedical Sciences	Eliminates the use of chemicals by replacing them with enzyme solutions, least harmful to washing labour force,

			industry		cloth would not be damaged, removes burns and other foreign particles from the clothes.
31	Shri Govind Prasad Pidamale	Aneesh Tehc P.O., Kodungai, Via Vittal, 574243, Bantwal Taluk, DK, Karnataka	Areca nut grading machine	Agriculture	Improves the quality of gradation of agricultural produce of exports, cost effective
32	Shri M. Baskar	#397, 1st floor, trichy main road, salem, 636006	Electronic Retrofit Kit for Cam Dobby	Textile	Helps the weavers to reduce the cost of fabric by reducing the design changing time, thereb y increasing the production and efficiency.

5.3.1 SOCIAL IMPACT

Social Impact includes the welfare of the various groups and the society at large. The innovated products and services have a versatile effect on the society, depending upon the area of innovation. To begin with, TePP scheme has the potential to improve upon the quality of life of people. According to World Health Organization (WHO), millions of people die each year due to medical reasons. The innovators in the area of healthcare have come up with excellent techniques to curb these problems. For example, innovators have innovated in the field of oriental remedies that help in the manufacture of tonics, pediatric anti-diarrhoeal suspension etc; developed artificial cell culture manufacturing; plants are used for treatment of skin and hair, and also used for washing garments that do not damage the skin of washing labour; helped the handicapped by developing communication devices for speech synthesis and message generation for people suffering from cerebral palsy, or have developed aids for patients who are visually impaired, or backbone problem; machines have also been developed that are eco-friendly yet protects the public from mosquito borne disease like malaria . Similarly in the field of cardiology, innovations have been developed to predict the risk of serious heart abnormalities or measurement of heart pumping.

In the field of mechanical, manufacturing process and allied technology huge modifications in the processes have been done by innovators and entrepreneurs to increase production, lessen the number of hazardous accidents, reduce the dependency on foreign goods, increase exports, and save labour time and energy at the same time. For example, hydraulic disk brakes are created for vehicles; automated rickshaws were designed; pollution free starch processing plants have been developed; multi-level automated two wheeler parking units have been designed and developed in various cities; engines have been invented in which different fuels can be burnt and it is even possible to change the fuel while the engine is running; aerial surveillance has also been benefitted through the manufacturing of aerial vehicles. Apart from this eco-friendly printing ink, emergency manually working mobile chargers, holographic pulsed portrait cameras, technology for photographic films, wood cutters; and many more important innovations have been promoted and given shape under the TePP scheme.

In the field of agriculture, bio-technology, and life sciences, innovations have evolved that would increase the yield of crops, and provide basic amenities to the poor at low cost. For example, there has been development of extendable width cultivator for farmers; eco-friendly pesticides using plants like neem and sea algae; products to increase the yield; nut grading machine; have been developed which are cost effective as well as contributing to the exports.

The innovations have provided green revolution in paper and textile sector. For example retrofit kit and scientific ruler that contains all the measurements in one single rulers are some innovations worth mentioning here. Talking about electronics, devices like clima gear, MCARP, and Voice net have been developed to name a few.

This has provided employment opportunities in rural and urban sector. To add on, the knowledge gained, both technical and non-technical, during the process of innovation has transformed local people to experts in specific domain.

(source: Success stories from Creative India reports 2006-2010 and primary data analysis collected from innovators through questionnaires, annexure 2.0)

5.3.2 ENVIRONMENTAL IMPACT

Environmental impact includes the impact on the weather and the climate surrounding us. Newer forms of incremental innovations are not only environmental friendly which saves energy, uses less of fossil fuels, decreases pollution in the atmosphere, reduces the effect of harmful gases present in the air (carbon footprint), but also shrinks the impact of expensive end-of-pipe solutions in global problems.

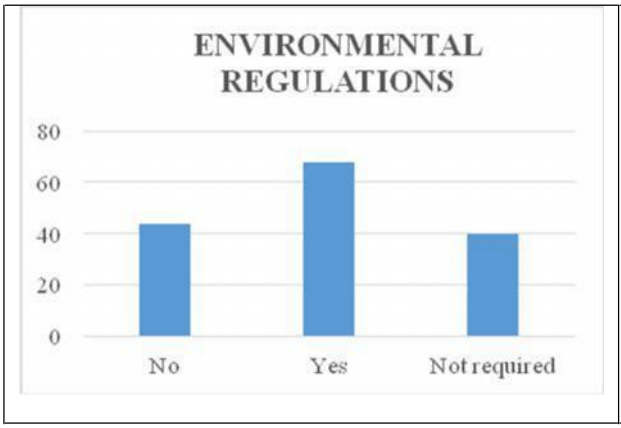


Figure 5.66 Phase I Environmental Regulations

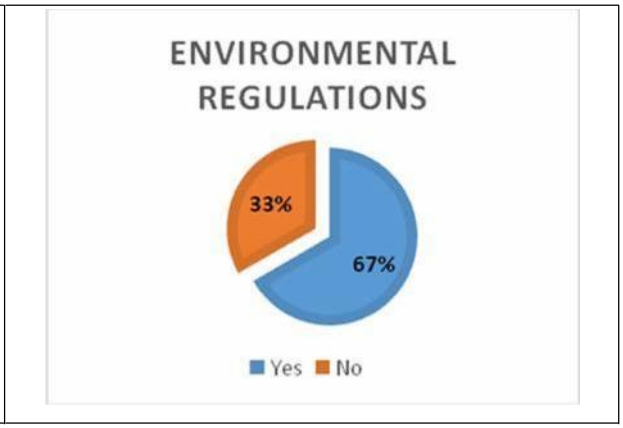


Figure 5.67 MT Phase Environmental Regulations

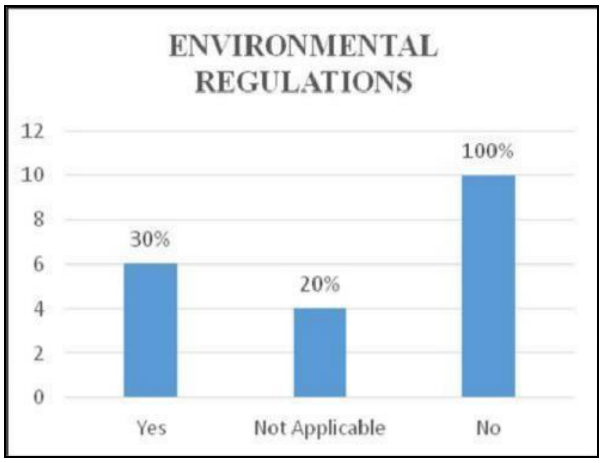


Figure 5.68 Phase II Environmental Regulations

Out of the total innovations, 45% under Phase I (Figure 5.66), 67% under MT Phase (Figure 5.67), and 30% under Phase II (Figure 5.68) are strictly under environmental regulations.

5.3.3 TECHNOLOGICAL IMPACT

Technological impact includes the impact on the products, processes, services and know-hows. With the advancement in technology, technological innovations grew along with it, resulting to the emergence of new equipment and gadgets. Technological innovations are all around us. From a simple alarm clock, to mobile phones, to a television set, and to the mother

of invention, electricity, everything is technological innovation. Birth of internet was also one of the biggest innovations from a common man. Innovators are working day and night to improve upon the existing products, and deliver better performance characteristics to the end consumer. They are highly intellectual in terms of technological background as discussed in the chapter above. If the profile of the innovators is observed once again, then it is notice that under TePP Phase I, 80% of the innovations are new in terms of technological and scientific concepts behind it, and 99% of the innovators were aware of the technology behind their innovation (Figure 5.69). Similarly, in MT Phase, 89% innovations are new, and 100% innovators were aware of the technological concepts. In TePP Phase II , 60% innovations are new, and 95% innovators were aware of the technological concepts (Figure 5.70). Hence, we see that majority of the innovators are aware of the latest scientific concepts. Technological innovations help in production of cost effective goods, saves time and energy, brings in employment, improves relations, and provides security and mobility to the people.

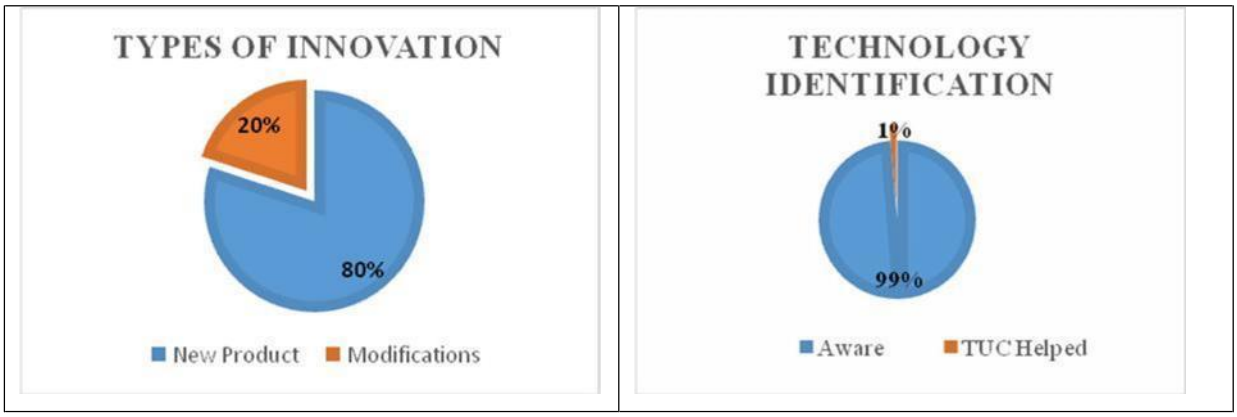


Figure 5.69 Technological Impacts under Phase I

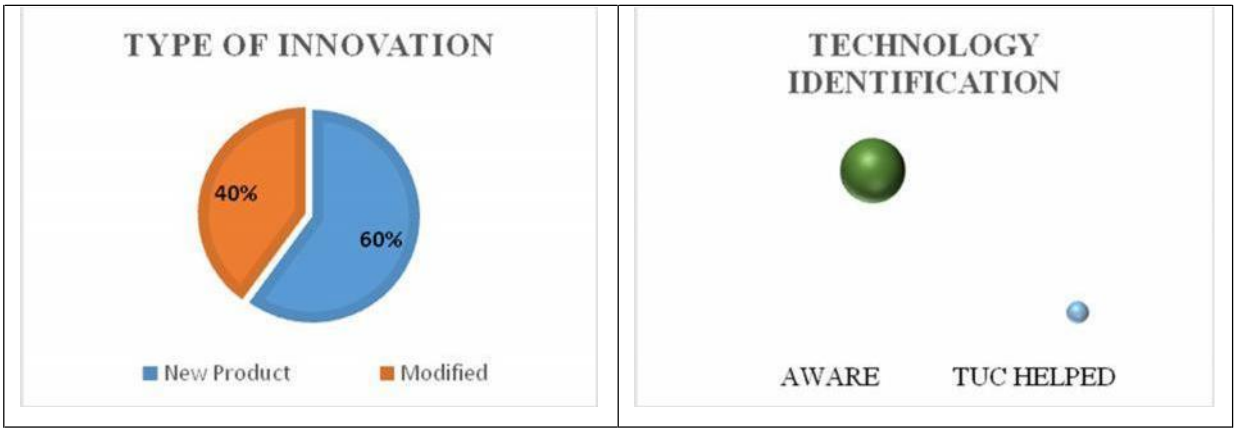


Figure 5.70 Technological Impacts under Phase II

5.3.4 ECONOMIC IMPACT

Economic impact includes the impact on production, financing, investments, commercialization, and budget. It is assessed after the assessment of society, environment and technology. In the Phase-II of the scheme, 99% of the innovations are commercially viable under TePP scheme, saving labour time, are environmental friendly, benefitting humans, having potential to provide employment opportunities to millions of people, are cost effective and sustainable in long run, running at par with international standards (as already discussed in the chapter above and social impact under the impact of outcomes). Some products, services, and processes are automated to the extent that it may establish an industry of its own. Figure 5.71 entails that the projects commercialized have a potential to provide employment opportunities (as per the data received from the respondents via questionnaires, annexure 2.0). Figure 5.72 shows that 40% of the projects are providing high annual rate of return on the investments, and 25% are average as per the industry standards.

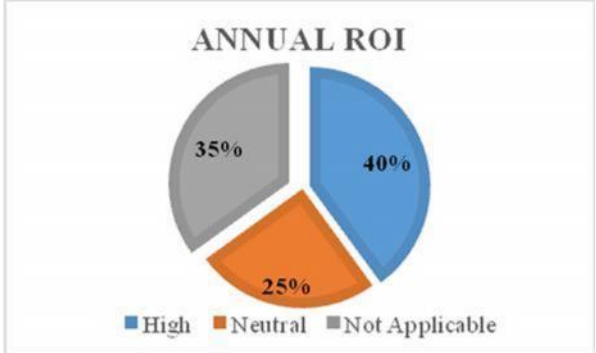


Figure 5.71 Employment Opportunity **Figure 5.72 Annual Return on Investments**

Figure 5.73 depicts mitigation of risk i.e. the changes in the innovation along with the growth of the industry. 40% of the innovations carry some risk due to the changes in the industry, whereas 35% carry no risk. Further, Figure 5.74 explains that 86% of the innovations are cost effective and only 14% are costly beyond industry standards.

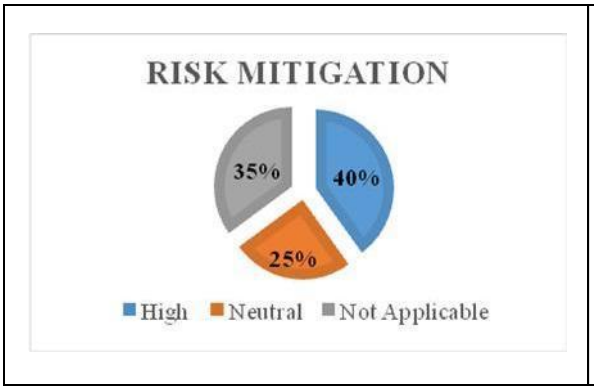


Figure 5.73 Risk Mitigation

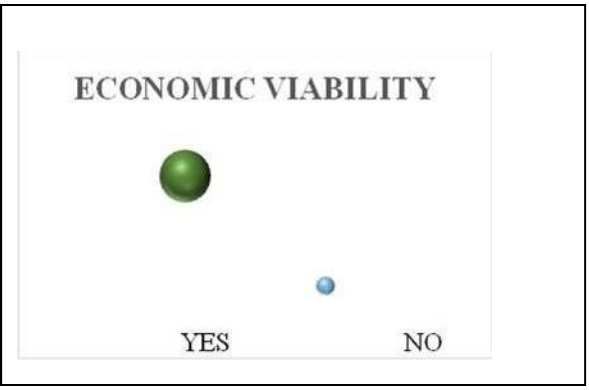


Figure 5.74 Economic Viability

Figure 5.75 demonstrates the sustainability of the innovations in the long run. 47% of the projects are sustainable in the long run, 21% of the innovations are sustainable for more than 2 years, and 5% are in the indefinite category. Further, the innovations have high market potential in terms of exports, mass production, customer awareness, and saves labour time and cost.

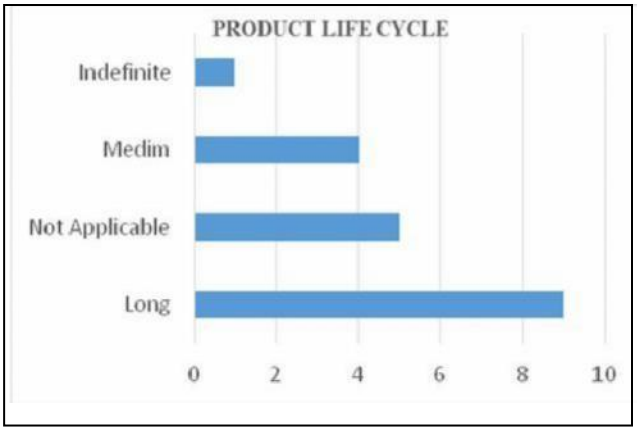


Figure 5.75 Product Life Cycles of Innovations

5.3.5 SCIENTIFIC IMPACT

Scientific impact is different from technological impact in the way that it impacts the knowledge of the personnel involved, and the training provided by them to the innovators. Science has given birth to so many inventions and improved upon the face of the society. Figure 5.76 shows the classification of the number of years of experience of the coordinators. Majority (61%) have an experience of 22-32 years, 22% have experience even more than 32 years, and only 17% have experience up to 10 years. There are no coordinators with the experience of 11-21 years. On measuring the success rate of mentoring of coordinators, it was observed that majority (56%) of coordinators belong to the category of very good

performance (71%-100%), 39% belong to average performance category (41%-70%), and only 5% belong to low performance category (0-40%), as exhibited in Figure 5.77.

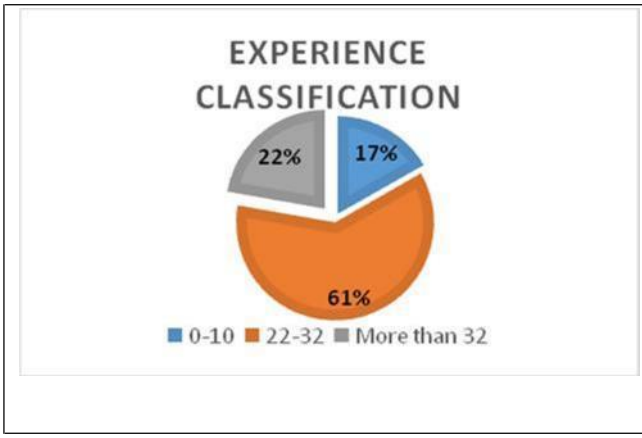
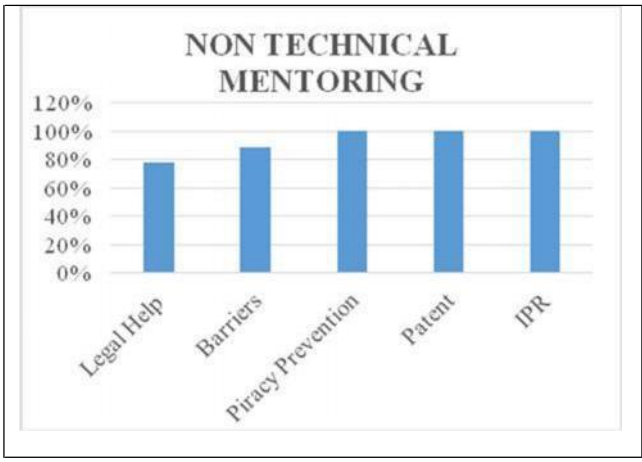


Figure 5.76 Experience of TUC coordinators **Figure 5.77 Success Rate of Mentoring**

Scientific impact of TePP is in terms of providing technical, non-technical, and professional mentoring and training facilities to the innovators and entrepreneurs. Figure 5.78 shows the non-technical mentoring provided by the TUC experts to the innovators and the entrepreneurs. This includes legal help, barriers to innovation, piracy prevention, patenting, and IPR. Figure 5.79 displays the non-technical assistance provided to the personnel enrolled under TePP. It is observed that 80% of the contribution is towards, funding, marketing, business setup and documentation.



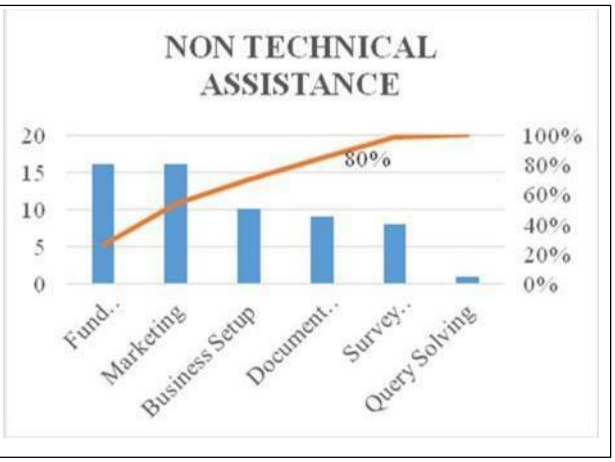


Figure 5.78 Non-Technical Mentoring **Figure 5.79 Non-Technical Assistance**

Figure 5.80 exhibits the technical assistance provided to the innovators and the entrepreneurs in terms of expert connect idea validation, documentation, product testing, and prototyping. Figure 5.81 indicates the methods through which fully developed and validated technologies

are captured from different sources, ensured through rigorous selection process, utilization of resources, industrial tie-ups, incubation centers, and competent manpower.

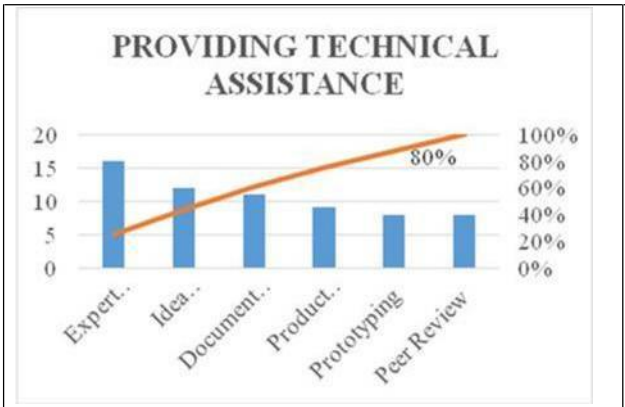


Figure 5.80 Technical Assistance

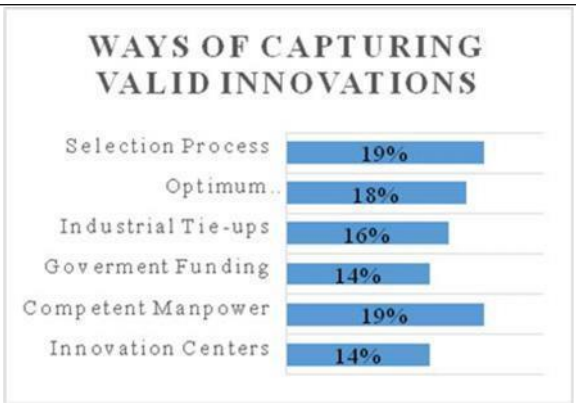


Figure 5.81 Ways to Capture Valid Innovations

Figure 5.82 Training Facilities

Figure 5.82 demonstrates the types of training imparted to the TUC coordinators. Some of them are Entrepreneurial skills (19%), laws related to Environmental Regulations (17%), IPR (19%), Legal issues (13%), Technical (15%) and Non-Technical skills (17%).

5.4 CONCLUSION

The data analysis provides information about the responses received from the list provided by DSIR. It has been concluded that the innovators are distributed all over India. Every TUC has adopted a mix of marketing strategies to identify and attract promising talents of India; enriching them; and turning the resources into commercially and financially viable, sustainable innovations. Under Phase I, the maximum number of innovations is from Southern part of India. Under Phase II, maximum projects have been discovered from the Western Region, 70% of the projects holding high technical potential. These innovations are scattered among all age groups and genders; and belong

to different family generation of innovators. The innovators identified belong to a broad spectrum of occupations have the potential to provide innovative and sustainable products and services. There is a trend of scholars and academicians, and the shift is observed from market driven to academic driven society. The innovated products have also saved labour time, cost, energy, and generated employment to boost the economy growth of the nation. The outcomes blend the social and environmental perspectives with economic perspective. These innovations provide conceptual frameworks, strategies, and implementation skills necessary to create substantial social and economic value in for-profit, non-profit and public sectors. Social innovations have added the benefit of providing solutions to global problems in the fields of medicine, energy, agriculture, and communications. To sum up, innovation is the need of the hour.

CHAPTER VI – RECOMMENDATIONS, LIMITATIONS AND CONCLUSIONS

6.0 CHAPTER OBJECTIVE

TePP is a unique programme that provides funds to the innovators and supports innovations in the society. The objective of the chapter is to provide recommendations based on the evaluation conducted. The chapter also points out the limitations of the study. The following chapter discusses upon the possible alternatives that could be incorporated in the TePP ecosystem to overcome the weaknesses and threats, for better facilitation of the scheme. It has been observed that TePP requires a process based framework that would enable the scheme to function in a better way.

6.1 RECOMMENDATIONS

Figure 6.1 demonstrates the hierarchical process as a recommendation for the TePP scheme. This is an integration of three stage process. Strategy refers to the policy being catered to under TePP, whether it is related to market driven scheme, administration policies, application guidelines, and so on. The second stage is Operations which refers to the series of steps to be implemented in order to achieve the desired outcome. In the final stage, Performance would be the actual output as a result of the operations under taken. The strategies, operations, and the performances as identified in Figure 6.1 have been described in the next section.

1. Strategy (S1): Promote Entrepreneurship

This is one of the core objectives of TePP to promote innovators to emerge as entrepreneurs. This strategy can be achieved by implementing the following activities/operations.

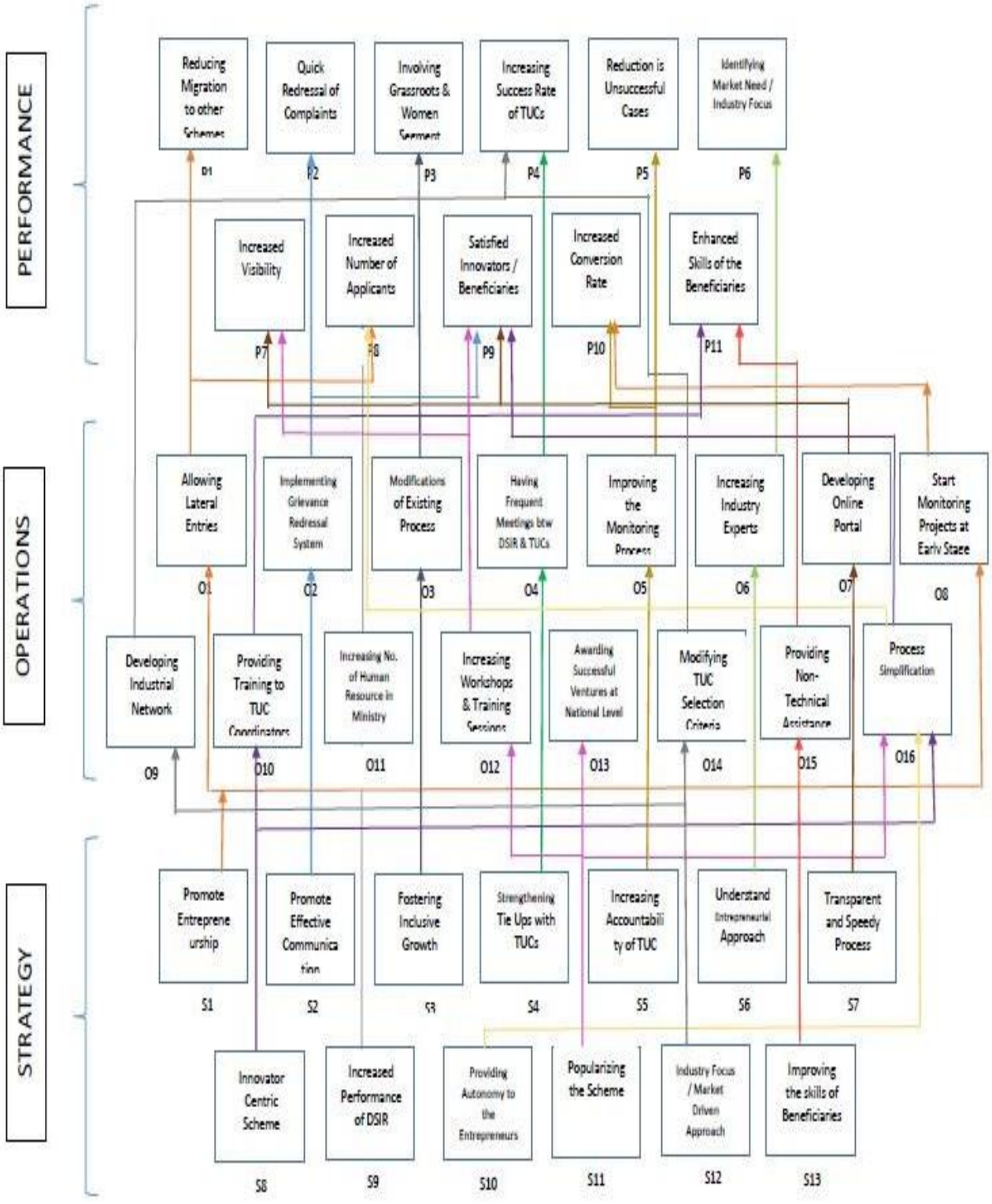


Figure 6.1 Hierarchical Diagram

Operation (O1): Allowing Lateral Entries

During the study, it was observed that the innovators were not allowed to directly enter into Phase II as per the policy/guidelines of the scheme. Once the innovator successfully completes the Phase I only then they are eligible for the Phase II.

Operation (O8): Start Monitoring the Promising Projects at an Early Stage

Once an innovator completes TePP Phase I, she/he is eligible for TePP Phase II. It was observed during the study that the conversion rate of projects from Phase I to Phase II is only 6% (as depicted in Figure 5.4). Beneficiaries face difficulties in making transition from Phase I to Phase II, under TePP scheme.

Performance (P1): Reducing Migration to other Schemes

By allowing the lateral entries, there would be reduction in the migration of the innovators/ entrepreneurs to other similar schemes for funding and other support.

Performance (P8): Increased Number of Applicants

By allowing the lateral entries, there would be increase in the number of applications for starting entrepreneurship in the country.

Performance (P10): Increased Conversion Rate

By monitoring the promising projects at an early stage, the conversion rate would increase. **Recommendation 1:** It is recommended to amend this condition and direct entries should be promoted in Phase II. This system should be an automated one. It should not be mandatory for every innovator to go through initial phases before entering the phase of entrepreneurship.

2. Strategy (S2): Promoting Effective Communication

Effective communication should be established among all the parties of TePP viz, between DSIR and TUCs, between TUCs and the beneficiaries, and between DSIR and the innovators, for long run sustainability of the scheme. This can be achieved through the following operation.

Operations (O2): Implementing Grievance Redressal System

As per the current practise and the response collected from the beneficiaries (questionnaires attached in annexure 2.0), there is absence of a centralized redressal system. When in need, innovators feel handicapped as they do not know whom to approach for a particular problem. The issues faced by the innovators in Phase I as analysed in Figure 5.22, issues faced by the innovators in MT Phase as analysed in Figure 5.37, and issues faced by the entrepreneurs in Phase II as analysed in Figure 5.58. The issues limited the innovators in communicating their problems, which led to delayed decision making.

Performance (P2): Quick Redressal of Complaints

Easy filing of grievances and prompt redressal would sustain TePP scheme for a longer duration and would also promote good faith among the parties.

Performance (P9): Satisfied Innovators / Beneficiaries

This would help in eliminating bureaucracy and red tapism from the system, and would increase the satisfaction level of the beneficiaries. The satisfaction level of the innovators in Phase I, MT Phase and Phase II has been analysed in Figure 5.23, Figure 5.36, and Figure 5.59 respectively. **Recommendation 2:** It is recommended to adopt a quick redressal system as it would provide quick decision making ability among the beneficiaries, would not make the technology obsolete, and satisfy the innovators in the long run. Electronic documentation system and use of digital signature should also be incorporated to accelerate the overall process.

3. Strategy (S3): Fostering Inclusive Growth

Inclusive growth would lead to a market driven economy. There would be upliftment in every section of the society.

Operations (O3): Modifications in the Existing Process

During the study, it was observed that women representation is only 7% in Phase I (Figure 5.8) and 5% in Phase II (Figure 5.45). There is only 2% representation of grassroots level in Phase I (Figure 5.12). In contrast, trend of scholars, academicians, and professionals was well observed in Phase I and Phase II as analysed in Figure 5.12 and Figure 5.48 respectively.

Performance (P3): Involving Grassroot Innovators and Women

Involving people from all sections of the society would enable a shared regional vision and would promote fresh and exciting ideas from the bottom of the pyramid.

Recommendation 3: It is recommended to promote innovator friendly schemes that would increase the representation of women, people from grass root level, and other lesser known areas of innovation. This would also help in facilitating the bottom up approach which would strengthen the TePP ecosystem.

4. Strategy (S4): Strengthening tie ups TUC Coordinators

Strengthening the DSIR and TUC bond would increase the effectiveness of the TUCs. This can be achieved through the following activity.

Operations (O4): Holding Frequent Meetings of TUC coordinators and DSIR officials. In XI Five Year Plan, six meetings were held in the financial year 2007-2008, seven in the financial year 2008-2009, five in the financial year 2009-2010, and seven each in the financial years 2010-2011 and 2011-2012, as exhibited in Figure 1.2. There are several issues faced by the TUC coordinators as shown in Figure 3.20.

Performance (P4): Increasing Success Rate of TUCs

TUCs play a significant role in making the scheme a success. Having frequent meetings would enable the DSIR officials to take regular updates, industry trends, know the problems being faced by TUCs, and any other important clarifications to be done or suggestions to be incorporated. **Recommendation 4:** It is suggested to have regular meetings, monthly or bi-monthly between the TUC coordinators and DSIR, in order to increase the success rate of TUCs and its mentoring.

5. Strategy (S5): Increasing Accountability of TUCs

The success of the scheme lies with all the stakeholders involved and one of the most important stakeholders is TUC. Thus the accountability of the TUC must be increased which can be achieved through the following operation in the hands of the parties involved in the scheme.

Operations (O5): Improving the Monitoring Process

TUC coordinators and members of the team other experts are assigned for every beneficiary guide and support them, both technically and non-technically for better results. However, non-availability of technical experts was observed in some cases as analysed in Figure 5.24, Figure 5.25, Figure 5.26, Figure 5.27, Figure 5.28, and Figure 5.30 in Phase I; in Figure 5.38, Figure 5.39, Figure 5.40, Figure 5.41, Figure5.42, and Table 5.3 in MT Phase; and in Figure 5.60, Figure 5.61, Figure 5.62, Figure5.63, and Table 5.4 in Phase II respectively.

Further, technical backlogs and inappropriate help from TUC experts left a negative impression on the minds of the beneficiaries. This can be seen in Figure 5.23, Figure 5.36 and Figure 5.59 in Phase I, MT Phase, and Phase II respectively.

Moreover, Table 1.4 exhibits the reasons of rejection of unsuccessful cases. Reasons like sketchy details, insufficient details, incomplete project proposal or application, not as per the TePP Guidelines, are some of the reasons due to lack of accountability of TUCs.

Performance (P5): Reduction in Unsuccessful Cases

By incorporating regular monitoring sessions, the number of unsuccessful projects would reduce.

Performance (P10): Increased Conversion Rate

By monitoring the promising projects at an early stage, and removing the flaws in the initial stage would help in catalysing the conversion rate, as analysed in Figure 5.4.

Recommendation 5: It is recommended to have a supervision and continuous follow up of the TUC coordinator to improve the complete monitoring system so that more number of cases are approved instantly leading to reduction in the number of unsuccessful projects, and the increased conversion rate is achieved.

6. Strategy (S6): Understanding Entrepreneurial Approach

One of the objectives of TePP scheme is to understand the entrepreneurial approach of the innovators, enrich them, and cultivate them into budding entrepreneurs. This can be achieved through the following operation.

Operations (O6): Increasing Experts from Industries

TePP Screening Committee Meetings held every year evaluates each proposal. However, as per the data collected from the innovators via questionnaires (annexure 2.0), the committee consists of more academicians and less number of industry experts. As a result, more emphasis is laid on academics. Involvement of industry experts would increase the efficiency of the system.

Performance (P6): Identifying Market Needs

Involving more expertise from Industry would help the experts understand entrepreneurial approach and identify the market needs.

Recommendation 6: It is recommended that the screening committee should emphasize more on market driven innovations. A pragmatic approach should be adapted by including exerts from industry more industry as they would be in a position to judge the project proposals for its technological potency as shown in Figure 5.65 in Phase II.

7. Strategy (S8): Innovator Centric Scheme

One of the objectives of TePP scheme is to provide proper technical guidance and non-technical mentoring to the independent innovators. This can be achieved by adopting the following operations.

Operation (10): Providing Training to TUC Coordinators

TUC coordinators and other experts are assigned to beneficiaries to guide and support them, both technically and non-technically for better results. However, non-availability of technical experts was observed in some cases as analysed in Figure 5.24, Figure 5.25, Figure 5.26, Figure 5.27, Figure 5.28, Table 5.9, and Figure 5.30 in Phase I; in Figure 5.38, Figure 5.39, Figure 5.40, Figure 5.41, Figure 5.42, and Table 5.3 in MT Phase; and in Figure 5.60, Figure 5.61, Figure 5.62, Figure 5.63, and Table 5.4 in Phase II respectively.

Further, technical backlogs and in-appropriate help from TUC experts left a negative impression on the minds of the beneficiaries. This can be seen in Figure 5.23, Figure 5.36 and Figure 5.59 in Phase I, MT Phase, and Phase II respectively.

The training facilities provided by TUC coordinators have been analysed in Figure 3.15, Figure 3.16, Figure 3.17, Figure 3.18, and Figure 3.19; and the challenges faced by them in this process has been depicted in Figure 3.20.

Operation (16): Process Simplification

In order to promote the scheme in a friendly way, a simple process should be adopted. The innovators should be upgraded to the next level as soon as they complete the first level. Support should be provided as and when needed.

Performance (P9): Satisfied Innovators / Beneficiaries

The above operation would help in increasing the innovators in Phase I, MT Phase and Phase II has been analysed in Figure 5.23, Figure 5.36, and Figure 5.59 respectively.

Performance (P11): Enhanced Skills of the Beneficiaries

This would also enhance the skills of the beneficiaries and make them better entrepreneurs. **Recommendation 7:** It is recommended to mentor TUC coordinators efficiently so that complete technical guidance like piracy prevention, IPR, commercial viability, and non-technical mentoring like proposal writing, and product development could be imparted to the beneficiaries.

8. Strategy (S9): Performance appraisal of DSIR

So as to apprise the performance of DSIR the following operation may be adopted.

Operations (O11): Increasing Number of Dedicated Human Resource Limited number of officials are appointed under the TePP scheme of TPDU Programme which leads to delayed decision making, which further generates uncertainty. Although average processing time is five months in some cases, it exceeds to more than 12 months in some cases. This makes the technology obsolete and innovators demotivated.

Performance (P8): Increased Number of Applicants

By increasing the number of officials, more time and support could be provided to the innovators. This would increase the satisfaction level of the innovators, and would further increase the number of applications for starting entrepreneurship in the country.

Performance (P9): Satisfied Innovators / Beneficiaries

This would increase the satisfaction level of the beneficiaries. The satisfaction level of the innovators in Phase I, MT Phase and Phase II has been analysed in Figure 5.23, Figure 5.36, and Figure 5.59 respectively.

Recommendation 8: It is suggested to have a dedicated personnel for each role. This would handy for prompt results. Personnel involved, should be accessible by each TUC coordinators and should have a control over the processes, both financially and otherwise.

9. Strategy (S10): Providing Autonomy to the Entrepreneurs

One of the objectives of TePP is to convert independent innovators to entrepreneurs by incubating their ideas and enterprises. This can be achieved by providing autonomy to the entrepreneurs. In order to achieve this strategy, following operation needs to be adopted.

Operations (O16): Process Simplification of Fund Disbursement

As per the current practise, DSIR directly releases the funds to the beneficiaries. Further, the TePP Screening Committee and the experts decides the amount of fund that is to be given to a particular innovator. It was observed that there is a general trend to reduce the funding on a particular project due to lack of industry experience.

As a result of the above mentioned operation, it was observed that the innovators wasted their time in administration and financial hassles. It took more than a year, in some cases, to get the approved sanctioned amount. Also, the cost of project went up, technology became obsolete, and the innovators became de-motivated. In order to protect themselves, the innovators started migrating to other similar schemes.

Performance (P8): Increased Number of Applicants

By allowing the lateral entries, there would be increase in the number of applications for starting entrepreneurship in the country.

Recommendations 9: Providing autonomy to the entrepreneurs would generate enthusiasm among the individuals. It is recommended to ensure in depth promotions sessions to increase the

awareness. Further, simple process would increase the number of applications.

10. Strategy (S11): Popularizing the Scheme

In order to popularize the scheme and reach to the masses, the following operations need to be undertaken.

Operations (O12): Increasing the number of Workshops/ Training Sessions/ Symposiums
A dedicated amount is earmarked to conduct the workshops and training sessions by each TUC. The breakup of the same is being mentioned in Table 3.1. However, very few sessions are being undertaken by TUCs as analysed in Figure 3.5, Figure 3.6, Figure 3.7, Figure 3.12, Figure 3.13, and Figure 3.21. The reach (source of innovation) is also limited as per the source of innovation analysed in Figure 5.18, Figure 5.34, and Figure 5.53 for Phase I, MT Phase, and Phase II respectively.

Operations (O13): Awarding Successful Ventures at National Level
During the study, it was observed that as per the current practice and the data collected via questionnaires (annexure 2.0), there is absence of any such policy which would recognize and praise the commercialised innovations.

TePP should increase their objective to a level where the innovators would have a sense of accomplishment and a nerve for competition at local and national level (as being done under other schemes, suggested under Threats 2.1.4).

Operations (O16): Process Simplification of Fund Disbursement

As per the current practice, DSIR directly releases the funds to the beneficiaries. Further, the TePP Screening Committee and the experts decides the amount of fund that is to be given to a particular innovator. It was observed that there is a general trend to reduce the funding on a particular project due to lack of industry experience.

As a result of the above mentioned operation, it was observed that the innovators wasted their time in administration and financial hassles. It took more than a year, in some cases, to get the approved sanctioned amount. Also, the cost of project went up, technology became obsolete, and the innovators became de-motivated. In order to protect themselves, the innovators started migrating to

other similar schemes.

It was observed during the study that too much emphasis is laid on evaluation like paper work. Further, the application cum registration is a lengthy and cumbersome one as per the data collected via questionnaires (annexure 2.0). As a result, the complete innovation process is delayed.

Performance (P7): Increased Visibility

By increasing the number of workshops and awarding the successful ventures at national level, the popularity of the scheme would increase with the help of word of mouth. This would increase the visibility of the scheme.

Performance (P9): Satisfied Innovators

Simplification of the process would increase the satisfaction level of the beneficiaries and would motivate them to achieve their goals.

Recommendation 10: It is suggested to increase the number of training sessions and workshops being held by TUCs and DSIR to increase the visibility of the scheme. Recognise the innovations commercialised on a large platform, awarding them, and praising them for their brain child innovations would increase the satisfaction level of the innovators. Exhibitions and seminars should be held for the same where innovators can display their creations.

Hence, it is suggested to simplify the process. The terms and conditions ought to be enumerated clearly before the sanctioning and approval of the project. An emphasis should be given on monitoring the project rather than evaluation which is time consuming. This would increase the number of applicants and satisfaction level of the innovators.

It is recommended to create a robust platform for the approval and sanction of the funds. The beneficiaries should not be tied up with unnecessary delays. It has to be realised that when an innovator applies for a fund she/he is not employed anywhere and waiting for the sanction eagerly to start their project. The funding process needs to be expedited to enable grant disbursement at the earliest possible.

Further, it is suggested to provide funds to the innovators as per the need of the innovation, after due assessment by respective experts. There should be increase in the industry experts and

reduction in academicians and professors in the Screening Committee. The Screening Committee experts can have face to face interaction with the innovators. This would build harmony and mutual trust between the parties. It would encourage the innovators to take plunge in entrepreneurship and would increase their satisfaction levels.

11. Strategy (S12): Industry Focus/Market Driven Approach

In order to fulfil the objective of converting innovators into entrepreneurs by incubating their ideas and enterprises, a market driven approach should be adopted. This can be achieved by incorporating the following activities into the system.

Operations (O9): Developing the Industry Network

DSIR has a vast network with established industries as evident in Figure 3.7. They also have links to investors and venture capitalists whose' inputs could be exploited to fulfil the market needs.

Operations (O14): Modifying TUC Selection Criteria

The selection criteria of TUCs have been mentioned in Annexure 3.0.Organisations registered under Section 25 of Companies Act, 1956 are more in line with industry norms. They are in a better position to enhance market driven innovations. As per the current state, approximately six or seven TUCs are having entrepreneurship incubate cell.

Performance (P4): Increasing Success Rate of TUCs

Exploiting this vast network would help the innovators to scale up and commercialise their innovations. The scheme can contribute to the success rate of TUCs. Such a platform would not only help the two parties exchange ideas, share demand and supply needs, but also strive to work on market driven innovations. This would also provide opportunities to the innovators to network with industry experts who can market the product under their brand name for example Godrej's Boyce and commercialize the projects at the earliest.

Recommendation 11: It is recommended to choose the TUCs with great care. Institutions having innovation incubator cell viz, IIM, IITs and NID, should be given priority during TUC selection or else, their model can be replicated to make this scheme more successful.

12. Strategy (S7): Transparent and Speedy Process

In order to accelerate the speed of the TePP Scheme and increase its visibility, following operation should be undertaken.

Operations (O7): Developing Online Portal

As per the current practise, the registration process is done on papers. All the communication between the innovator, TUC, and DSIR is also through letters/posts. This leads to time delay in the whole process as a good amount of time is involved in administration hassles, travelling, and contacting people. An online portal would reduce the processing time and increase transparency.

Performance (P9): Satisfied Innovators

Developing a transparent and speedy process would satisfy the innovators. It would also provide ease to the innovators in form filling, submissions, contributing to savings in terms of time and cost.

Performance (P7): Increased Visibility

A transparent system would not only satisfy the innovators but also increase the scheme's visibility.

Recommendation 12: It is recommended to develop an online portal where the applicants can log in and create their respective User Identification. All the communication among the innovator, TUCs, experts and DSIR should be recorded and displayed as a log in innovators account on the portal. Information on the monitoring feedback, grant status should also be updated and displayed on the portal. Regular updates, notifications, and reminders about other due dates should be successfully given through this portal.

13. Strategy (S13): Improving the Skills of the Beneficiaries

Operations (O15): Providing Non-Technical Assistance

As per the analysis in Phase I depicted in Figure 5.30, and in Phase II depicted in Table 5.4, TUC coordinators provide non-technical assistance to the beneficiaries. However, it was observed that there is lag between the assistance given by the TUC coordinators and received by the

beneficiaries. The major hindrance for the innovators was drafting proposals, submitting forms, as shown in Figure 5.22, Figure 5.37, and Figure 5.58 for Phase I, MT Phase, and Phase II respectively.

Performance (P11): Enhanced Skills of the Beneficiaries

This would also enhance the skills of the beneficiaries and make them better entrepreneurs. **Recommendation 13:** It is suggested that the TUCs should ensure that proper mentoring facilities are provided to the innovators. At the time of approval of a project, the respective innovator should be appointed a mentor who could guide the innovator during their innovation journey.

6.2 LIMITATION OF THE STUDY

The study was conducted at national level. The study attempted to cover all the states where the beneficiaries of the scheme were present. One of the limitations of the evaluation study was non-availability of the contact details of the innovators and entrepreneurs. On account of insufficient frame it was not possible to contact the respondents. Out of four hundred contacts, around one hundred respondents had invalid address or contact details. The second limitation was non-availability of the respondents during the survey process. Either the respondents were too busy to respond or they were not accessible to give their responses. The owners of the start ups were not available for interaction, hence, it was not feasible to collect information on their ventures.

In some cases, TUC coordinators did not respond despite of repeated reminders. In few cases, the contact details were not sufficient or were inaccurate because of which they could not have been contacted by the field officers.

The validity of the data was another limitation of the study. On several occasions, the data provided on the same parameter by the TUCs and DSIR did not match. At each stage, the validity of the data was checked before further analyses.

6.3 CONCLUSION

TePP is a unique scheme that is supporting the innovators without any collateral security since its inception. It has paved way for innovation and entrepreneurship culture in the country.

The scheme has potential to become more successful and sustainable in long run, however, with

the passage of time, there is a need to modify the existing process. The scheme should be more innovator centric. Providing maximum autonomy to the entrepreneurs, would help in generating enthusiasm among the individuals. The existing network with the industries can be explored for a market driven approach to further strengthen the linkage between industry and innovation.

To promote an entrepreneurial approach, the scheme must reduce the processing time of various operations including disbursement of the fund to the beneficiary. The delay in the process escalates the project cost. The technology becomes obsolete, and the innovator becomes de-motivated. The views of the industry experts should be considered for the amount of funds to be disbursed as per the need of innovation.It has been witnessed at various instances , the paucity of funds has led to uncalled delays. The financial resources allocated for such a scheme which brings mind to market are very meagre. There is an immediate need to step up the money allocated for the same. The system should be flexible and should not be generalized as every innovation is unique in nature; so are their needs.

To have a better impact, the scheme can emphasize more on monitoring than on evaluation. The fund related issues may be simplified by smoothening the internal processes. This would also help in enhancing the satisfaction level of the beneficiaries and would motivate them to achieve their goals. Provision of training to impart technical and non-technical skills to the beneficiaries would encourage the involvement of the participants across society.

There must be an inclusion of experts from industry in the screening committee, this would help in creation of market driven flare for the innovation. The innovation would be more sustainable and demand driven. The industry -academia linkage would also help in opening up a plethora of

avenues for the students particularly from the science and engineering streams. This would also foster the generation of self-employment.

An attempt should be made for in depth promotional sessions to increase the visibility of the scheme by creating awareness at the regional as well as at national level too. Various academic institutes can be targeted and the media can be also exploited for the same purpose.

Since TUCs play a significant role in the success of the scheme, selection of the TUCs should be done judiciously. Institutions having innovation incubator cell viz, IIM, IITs and NID, should be

given priority during TUC selection or else, their model maybe replicated to make this scheme more successful. To increase the accountability of the TUCs, a continuous follow up of the TUC coordinators to improve the complete monitoring system so that more cases are approved instantly leading to reduction in the number of unsuccessful projects, and the increased conversion rate is achieved. IIPA recommends continuation of the scheme.

ANNEXURES

Annexure 1.0 Some Innovations Highlighted

Annexure 1.1 Snowbreeze Ice Air Conditioner

Snowbreeze is invented by 95 years old, Shri M B Lal. One of the economic and environmental friendly innovations, the product has been created for the elderly and sick people facing difficulties due to extreme weather conditions and power cuts. He created different models depending on the usage, suffering in similar circumstances. These are enlisted below and the same can be purchased from the website www.greenairconditioner. org.

Annexure 1.1.1 Snowbreeze 1

Designed in several shapes and sizes Snowbreeze 1 runs on a stream of compressed air for 100 to 150 feet through aluminium grooves fitted in a separate casing around an aluminium drum packed with ice. It keeps the room cooled and dehumidified for about 8 hours when it has to be refilled with ice after draining out condensed water.

Annexure 1.1.2 Snowbreeze 2 (Unique Self Cooling AC)

Snowbreeze 2 is a unique cooling device which harnesses the self-cooling energy of water in conjunction with ice. It is based on the centuries old self-cooling ‘matka’ (pitcher) principle, which sets in motion an automatic convection current in a water body.

Annexure 1.1.3 Automated Snowbreeze

The latest 90% energy saving, 100% green, fully automated model of Snowbreeze is designed to match a wall air conditioner. Their chief advantage is that it costs practically nothing and keeps the room cool and comfortable during the summer and monsoon seasons.

Annexure 1.1.4 Mini Snowbreeze

Mini Snowbreeze is a boon for elderly people with limited means. It helps the sick to cope up with the weather and power breakdowns. Mini-Snowbreeze is a cheap but effective air conditioner which can run on an inverter and keep a small room cool and dehumidified for eight hours with "free" ice from the family fridge (Cost Rs.2,500-$50).

Annexure 1.1.5 Snowbreeze Room Heater

Converting Snowbreeze 1 into a power saving room heater is a simple process. Remove the lid of the ice drum. Suspend a 300 to 500 watt halogen bulb from a bar resting on its rim, with its frame tilted inward, in the upper half of the drum, filling the lower 40% of it with water and leaving a gap of half to one inch between the water and the bulb-frame. Then switch on the system. Warm air will start blowing into the room within 10 minutes. The warming up period could be reduced to five minutes or less if pre-heated water is poured in the drum.

Annexure 1.1.6 Battery Powered Rural Unit

It is a special model suited for rural areas where power is available for just a few hours a day or not at all. It can run for eight hours at a time on a specially designed power unit equipped with an automatically recharging 15-ampere dry battery and a 6" DC fan.

Annexure 1.2 Battery Operated Rickshaw

Mr. Alok Bhatnagar, another master of innovations, had a neck of looking beyond

imaginations since childhool. Born in the year 1964, he invented D.C. Motor in class third, electric chargers in class sixth, and in class eighth, he started taking tuitions for B.S.C students in Mathematics. Born and brought in Udaipur, teachers could never understand that his mind was much more advanced than a normal human brain. Being from family of doctors, Mr. Bhatnagar visited hospitals on a daily routine. In one such visits, he came across handicapped people and decided to invent something for their benefit. After completing his graduation and gaining work experience from the industry, he set up a small workshop of machine tools in Faridabad, Haryana. In 2008 he came up with the prototype of automated rickshaw, one of the finest inventions till date, and got himself enrolled under TePP Phase I.

He has started his own blog batteryrickshaw.blogspot.in to promote his innovation. Other inventions can be visited at modularmachines.co.in. According to Mr. Bhatnagar, "Battery Operated Rickshaws are the current craze in India. During the global economic downturn, rising economic uncertainty, energy crisis, and lack of funding- the Battery Operated Rickshaw segment is on a boom. Majority of these vehicles are a contraption of front steered wheel, a motor driven rear axle assembly, and seats for the driver and the passengers. These are also available in the material handling formats." Sample of his innovations are exhibited below.

Annexure 1.2.1 Battery Operated Rickshaw with Passenger Seats

Annexure 1.2.2 Battery Operated Rickshaw for Material Handling

Annexure 1.3

Dr. Pramod K. Joshi is the director of International Food Policy Research Institute (IFPRI). In his past he has worked with reputed organizations like National Academy of Agricultural Research Management, Hyderabad, National Centre for Agricultural Economics and Policy Research, New Delhi, and SAARC Agricultural Centre. Being a doctor by profession and resident of Pune, Maharashtra innovated Cashew Nut Breaking Machine. He was inspired by one of his friends in the cashew business. His areas of research include technology policy, market, and institutional economics.

According to Dr. Joshi, "I first tried electric forces for breaking the cashew but ultimately used mechanical forces. That is why I have designed entirely new machine which does

not look like the diagram I have submitted. Machine is in final stage and after taking trials, I will fit stepper motors for full operations. It will improve the yield of unbroken cashews also will reduce the hazards of the handling raw cashews It will also increase the speed of breaking cashews. ”

The sample of the machine can be seen in the following images.

Annexure 1.3.1 Front View

Annexure 1.3.2 Posterior View

Annexure 1.3.3 Anterior View

Annexure 2.0 Questionnaires Used for Field Survey

Independent evaluation of Technopreneur Promotion Programme (TePP) under PRISM scheme

Questionnaire for Innovators- Phase I and Microtechnopreneurship

Respondent profile

1. Interviewer's name:…….
2. Date of visit:……
3. Innovator's name:……
4. Area of innovation:……..
5. Nature of innovation: Service or Product……..
6. Status of project (ongoing/ completed)……..
7. Address and Phone:

8. Email:……..
9. What is the family generation stage of the innovator:
   a. First stage……..
   b. Second stage…….
   c. Third stage……..
10. Age: ☐ 25-35 ☐ 36-46 ☐ 47-57 ☐ > 58
11. Gender:……..
12. Occupation:…….
13. What all Entrepreneurial skills does the innovator posses:
    a. Does he\ she know how to manage Labour? Yes ☐ No ☐
    b. Does he\ she know how to manage finance? Yes ☐ No ☐
    c. Does he\ she know how to manage human resource? Yes ☐ No ☐
    d. Other management

a. What were the Issues faced by the innovator?

About TUC

2. How did you come to know about TUC? (Via newspaper, website, T.V., peers, institution, exhibitions etc.)

3. In what all ways was mentoring (Non-technical) available.

a.	Did you get help in proposal writing?	Yes		No
b.	Did you get help around legal issues for your innovations?	Yes		No
c.	Were you informed about the possible barriers to your innovation?	Yes		No
d.	Were you informed about the piracy prevention measures?	Yes		No
e.	Were you informed about how you can patent you innovation?	Yes		No
f.	Were you informed about Intellectual property rights (IPR)?	Yes		No

4. Quality of mentoring: What was your experience with TUC

a. Were you satisfied with the help, support guidance received and why? Please elaborate.

b. Were you dissatisfied with the help, support guidance received and why? Please elaborate.

Annexure 2.1 Questionnaire for Innovators- Phase I and MT Phase

1. Were you clear about the support policies of the TUC? That is, did you know how and when you will get the instalment money and help at all stages?

2. Were you imparted any professional training. Was there any handholding session, information booklet, interaction with expert etc. in your area of innovation?

3. In what all ways was mentoring (Technical) available.
   a. Were you informed about the type of technology and or sciencetific concept required for your innovation?.....
   b. Were you informed about productisation or commercialisation of your innovation? .....
   c. Were you informed about the financial viability of your product in capital Market.....

4. Did TUC monitor at all stages of product development?

5. Did you receive help in procuring raw material for your innovation?

6. Were you informed if your innovation is at par with industry or not. That is, were you told if you innovation can be commercialised.

1. Did TUC inform you about the environmental regulations?

Technology

2. Did you know about the technology or TUC helped you identify it?

3. Did you innovate a new product or modified the existing product?

4. How did you get the idea? That is what the source of your idea was.

5. What did you learn from your innovation? How has your knowledge enhanced after innovation?

6. What is the business centric advantage of your innovation? What does your innovation intend to achieve commercially.

Annexure 2.2 Questionnaire for Innovators- Phase II

Independent evaluation of Technopreneur Promotion Programme (TePP) under PRISM scheme

Questionnaire for Innovators- Phase II

Respondent profile

1. Interviewer's name:……
2. Date of visit:……
3. Innovator's name:……
4. Area of innovation:……..
5. Nature of innovation: Service or Product……..
6. Status of project (ongoing/ completed)……..
7. Address and Phone:

8. Email:……..
9. What is the family generation stage of the innovator:
   a. First stage……..
   b. Second stage……
   c. Third stage……..
10. Age: ☐ 25-35 ☐ 36-46 ☐ 47-57 ☐ > 58
11. Gender:……..
12. Occupation……
13. What all Entrepreneurial skills does the innovator posses:
    a. Does he\ she know how to manage Labour? Yes ☐ No ☐
    b. Does he\ she know how to manage finance? Yes ☐ No ☐
    c. Does he\ she know how to manage human resource? Yes ☐ No ☐
    d. Other management

a. What were the issues faced by the innovator?

About TUC

2. How did you come to know about TUC? (Via newspaper, website, T.V., peers, institution, exhibitions etc.)

3. In what all ways was mentoring (Non-technical) available.

a. Did you get help in proposal writing? Yes ☐ No ☐

b. Did you get help around legal issues for your innovations? Yes ☐ No ☐

c. Were you informed about the possible barriers to your innovation? Yes ☐ No ☐

d. Were you informed about the piracy prevention measures? Yes ☐ No ☐

e. Were you informed about how you can patent you innovation? Yes ☐ No ☐

f. Were you informed about Intellectual property rights (IPR)? Yes ☐ No ☐

4. Quality of mentoring: What was your experience with TUC

a. Were you satisfied with the help, support guidance received and why? Please elaborate.

a. Were you dissatisfied with the help, support guidance received and why? Please elaborate.

2.

3. Were you imparted any professional training. Was there any handholding session, information booklet, interaction with expert etc. in your area of innovation?

4. In what all ways was mentoring (Technical) available.

a. Were you informed about the type of technology and or sciencetific concept required for your innovation?.....

b. Were you informed about productisation or commercialisation of your innovation?.....

c. Were you informed about the financial viability of your product in capital Market…….

5. Did TUC monitor at all stages of product development?

6. Did you receive help in procuring raw material for your innovation?

7. Were you informed if your innovation is at par with industry or not. Did TUC tell you whether your innovation can be commercialised?

1. Did TUC inform you about the environmental regulations?

Technology

2. Did you know about the technology or TUC helped you identify it?

3. Did you innovate a new product or modified the existing product?

4. How did you get the idea? That is what the source of your idea was.

5. What did you learn from your innovation? How has your knowledge enhanced after innovation?

6. **Rate your innovation for its technological potency on the scale of 1 to 10.**

1 (Low)……5. (Neutral)…….10. (High)……

Social

1. What were economic and developmental impact of you innovation?
    a. On the region (local) – To what extent was their improvement in employment?

    b. Impact on life (social) - To what extent was their improvement in the quality of the life?

    c. National impact- To what extent did it contribute in improvement in the national economy?

Environment

2. Are you ready and how do you to make changes in your product in case of environmental policy changes?

3. Does your product comply with environmental rules and regulations?

Economy

1. What is the business centric advantage of your innovation? Is it viable commercially?

2. Did your innovation help in the following

   a. Employment generation- Did establishment of the industry help generate employment?

   b. ROI- What was the annual return on investment for your innovation?

   c. Mitigation of the risk- What were the changes in growth of industry. Did your innovation grow in the industry it belongs?

   d. Pricing (Economic viability) - Was your innovation cost effective?

   e. Product Life Cycle. - What is the duration of PLC? Is it sustainable in the long run?

a. New users in the market. What is the new market potential for your product was?

Thank you.

Annexure 2.3 Questionnaire for TUC coordinators

Independent evaluation of Technopreneur Promotion Programme (TePP) under PRISM scheme

Questionnaire for TUC Co-ordinator.

Co-ordinator profile

1. Interviewer's name:……
2. Date of visit:……
3. Coordinator's name:……
4. Experience in years:…….
5. TUC name:……..
6. Address and Phone:

7. Email:……..
8. Age:…….
9. Gender :……..

Evaluating Co-ordinator

10. Do you organise conference\ workshop every year?

11. How do you update yourself about the new technology?

12. Do you have any network with other agency in terms of innovation?

13. What has been your success rate of mentoring?

Evaluating TUC

1. How do you increase you visibility\promote\advertise yourself?

2. Do you provide legal help to the participants around their innovation? Yes ☐ No ☐

3. Do you inform participants about possible barriers to their innovation? Yes ☐ No ☐

4. Do you inform participant regarding piracy prevention? Yes ☐ No ☐

5. Do you inform participants about patenting of their innovation? Yes ☐ No ☐

6. Do you inform participant about Intellectual property rights (IPR)? Yes No

7. In what all ways do you provide technical assistance to innovators?

8. In what all ways do you provide non-technical assistance to innovators?

9. In what all ways do you provide entrepreneurial assistance to innovators?

10. In what all ways do you provide environmental guidance to innovators?

1. What are the key challenges and problems for specified geographical region (s)/ industry sector or cluster /society covering both rural and semi-urban areas i.e. gaps in innovation to market value chain?

2. How do you ensure that you tap fully developed and validated technologies from different sources such as traditional sectors /existing clusters, R&D institutions, technology providers, local innovations and solution oriented R&D etc. having good market potential?

3. How stringent is your policy for RTI. What has been you experience with it?

4. Do you get any training and do you provide training to TUC coordinator for imparting training to innovators on follow parameters?

a. Non-Technical Yes ☐ No ☐

b. Technical Yes ☐ No ☐

c. Legal Yes ☐ No ☐

a. IPR Yes ☐ No ☐

b. Environmental Yes ☐ No ☐

c. Entrepreneurial Yes ☐ No ☐

2. Do you have Fulltime trained manpower in the selected area of technology for mentoring?

Thank you.

Annexure 3.0 Application Format / Selection Criteria for TUC

Government of India
Ministry of Science & Technology
Technopreneur Promotion Programme(TePP)

General Guidelines for Outreach Centres for Technopreneur Promotion Programme (TUC)

** General Instructions*

1. The identified agency for outreach will undertake various activities for promoting and implementation of TePP in their regions (to be specified) in close association of DSIR/ TIFAC (as the case may be);

2. The terms of reference for the agency identified for outreach would be

- To invite proposals by giving advertisements in regional languages as per the advertisement material provided by DSIR/TIFAC(as the case may be), through direct contact, through regional seminars/workshops and other appropriate mechanisms etc.;
- To screen the proposals including initial screening in consultation with DSIR/TIFAC representatives;
- To organize Screening Committee meetings on regular basis for project support, review/monitoring the progress of the supported projects and the issues relating to the operation of TePP;
- To help in arranging networking, market/commercial information support;
- To organize project review committee meetings of the on-going projects;
- To organize site visits/discussions with the innovators;
- Any other issues as per the guidance of TePP Screening Committee/High Level Technopreneur Evaluation Committee (HLTEC).

The agency will constitute a Screening Committee at local level with the approval of DSIR / TIFAC for TePP. The constitution of Screening Committee is suggested as follows:*

i. DSIR/TIFAC official or its nominee(as the case may be) - Chair
ii. Rep. of Outreach Agency (preferably Head/CEO) - Co-Chairman
iii. Rep. of Technical Institutes/Colleges/University/Research Institutes in the field/ area of : Civil/Mechanical/Electrical/Medical/Veterinary/Physics/ Chemistry/ Information Technology/Bio-technology/Agriculture/ engineering/ Ayurved/Other technology areas as required
iv. Rep. of financial institutions/banks etc.
v. Rep. of District Industries Centre(DIC)/Small Industry Service Institutes (SISI)/ Central or State Government Industrial Development organization;
vi. Lead Bank Officer or rep. of Lead Bank in the region;
vii. Nodal Officer (as identified by the Agency) - Member-Secretary
viii. Special invitees.

contd. .. on next page

The above composition is a suggestive one. The actual committee will be formed in consultation with the outreach agency on a case to case basis.

3. The agency should be involved in promotional activities related to innovation/ entrepreneurship/small scale industry(SSI)/science & technology/R&D etc. having good track record & sufficient infrastructure to undertake the activities for TePP.

4. The agency should not depend on TePP grant for its existence. Support would be given to cover expenses on items like **apportioned cost** of the manpower services towards TePP, publicity and advertisement expenses, contingent expenses (e.g. expenses on organizing Screening Committee meetings, TA/DA & honorarium to the experts for screening the proposals as identified by the local Screening Committee), computer, furniture and fixtures required for running the programme. **10% of the approved project cost** will be given to the agency per project in addition to the support mentioned above for hand holding the innovators through the project.

5. The TePP support may be given in a project mode & the activities will also be run in the result-oriented project mode.

6. The agency will follow the existing General Information & Application Format(to be provided) for inviting/seeking proposals under Technopreneur Promotion Programme(TePP) of Ministry of Science & Technology and also will be abided by the conditions stated in the TePP Policy Guidelines(to be provided).

7. The agency will collect the application forms from individual innovators. The application received will be screened for its completeness etc. & agenda for the local TePP Screening Committee(TSC) will be prepared by the outreach agency in respect of each proposals along with brief summary highlighting the innovativeness, techno-economic feasibility etc. for evaluation of the same by the committee members during the local screening committee meetings.

8. The date of committee meetings may be fixed in consultation with DSIR/TIFAC well in advance to enable their participation in the local Screening Committee meetings. The proposals against the known scientific principles, based on perpetual motion, only concept(non projectised) etc. may not be screened in. The proposals which involve a project cost of more than Rs. 10.00 lakhs may not be considered for screening.

9. The agency will send the proposals recommended by the local screening committee to TePP Screening Committee(TSC) of Ministry of Science & Technology for their information.

Honorarium payable to the experts

* For the TPCDA category of support, an honorarium of Rs. 2,500/- could be given to the local monitoring expert as identified by the Local TePP Screening Committee in recognition of his/her services rendered from initial evaluation till the completion of the project including filing of the completion report.

* For the TPF, STF abd S3T categories, a sum up to Rs. 500/- for initial evaluation of the proposals and/or periodic project monitoring and/or filing the completion report could be paid as honorarium per proposal to the experts as identified by the Local TePP Screening Committee. If the above evaluation and/or periodic monitoring requires travel by experts, their TA/DA may be paid as per Govt. rules by the agency.

* A sum of Rs. 400/- is payable to the non-official members of the Local TePP Screening Committee for their participation and contribution.

Cost Escalation

Cost escalation, if any, will be borne by the beneficiary. However, in exceptional cases, an escalation limited up to 20% of the financial assistance could be recommended by the local Screening Committee of the Agency. Generally escalations are not encouraged & approved.

Intellectual Property Rights

The TePP and its Agency will have no rights to claim Intellectual Property Rights (IPR), if generated.

Other Issues

1. The commercialization of the technology may be done in consultation with TSC at Delhi.
2. The entire correspondence related to TePP by the Agency may be treated as Confidential and "Non-disclosure agreement" will be required to be signed by all the Concerned, who participate in the process of evaluation of the proposals, as the programme involves sensitivity related to nascent ideas, which might not have been protected.
3. The agency should have an established corridor of contact with Academic Institute/s, Research laboratories and also with entrepreneurs/technology business incubators with good liaison with industry around.
4. In case of any dispute the decision of Secretary, DSIR would be final and binding.

The above guidelines may be changed from time to time after gaining experience of outreach and or receiving additional inputs.

The application format is given at Annexure.

Annexure

Government of India
Ministry of Science & Technology
Technopreneur Promotion Programme(TePP)

Application format for **TePP Outreach Centre(TUC)**

1. Name of the Agency/Organization : (along with Postal address with pin code, Telephone, Fax numbers and e-mail , if any)

2. Name of the Chief Executive, Designation and bio-data of key personnel :

3. Brief write-up giving broad details of the activities of the organization and the details of past experiences in promoting innovation

4. Focus areas :

5. Proposed expenditures and time frame :

Sl. No.	Activities	Estimated expenditure (in rupees)	Remarks
1.	Promotion & publicity		
2.	Office support		
3.	Travel		
4.	Handholding/Technical Assistance/Documentation		
5.	Demonstration/exhibition		
	Total :		

6. Output/outcome :

Place :
Date :

(Signature of the Chief Executive)
and Designation

Annexure 4.0 TePP Innovators List

Technopreneur Promotion Programme (TePP)
(An initiative of DSIR)
Ministry of Science & Technology
[1st April, 2007-31st March,2008]

Summary of Projects

Department of Scientific & Industrial Research (DSIR)

Sl. No.	Title of the Project	Innovator / Agency
1.	NUALGI for growth of Diatom algae	Shri T. Sampath Kumar, 651, 11th Main Road, 5th Block, Jayanagar, Bangalore – 560 041.
2.	Development of PC based Oscilloscope	Dr. Suthikshn Kumar, Uvinix Computing Solutions, #02, 1st Floor, 1st Main Road, Ring Road, Kengeri Satellite Town, Bangalore-560 060
3.	Development of indigenous micro-carriers for large scale cell culture	Dr. Aroop Kumar Dutta, ExCel Matrix Biological Device P. Ltd. 12-5-149/16-2, Vijayapuri, South Lalaguda (Opp.NIN) Hyderabad-500 017
4.	Automatic Vending Machine	Shri Ashok Kumar Goyal, 110, Dharmshala Road, Bangewale, Shivpuri-473 551(M.P.)
5.	Integrated use of Neem and Sea Algae in the eco-friendly management of crop pests	Shri R. Augustine, M/s A.C.G. Products 6/1542, Anand Nagar, No. 1 Tollgate Bikshandar Kovil Post Tiruchirappalli-621 216 (T.N.)

Sl. No.	Title of the Project	Innovator / Agency
6.	Development of groundnut separator machine	Md. Yusuf Khan, C/o Yusuf Krishi Yantra Udyog, Fatehpur Road (Opp. Hotel Paradise), Sikar(Rajasthan)
7.	Development of different variants for mobile operated switch	Shri Prem Singh Saini C/o National Innovation Foundation(NIF), Bunglow no. 1, Satellite Complex, Near Mansi Tower, Jodhpur Tekra, Satellite, Ahmedabad – 380 015
8.	Worm composting to treat medical waste	Shri Arunav Mishra, 14, Siddhi Vinayaka Complex, Ganesh Circle, Anand (Gujarat) – 388 001.
9.	Scientific evaluation of a herbal medicine for treatment of Asthma	Smt. Raj Katyal, EJ-331/A, Riazpura (Near Bara Gurudwara), Diwan Asthan, Central Town, Jalandhar City (Punjab)
10.	Laboratory scale process development of environment friendly printing ink	Shri Sidhartha Kumar Bhimania, 567, Sachin Nag Block, Asiad Village, Khel Gaon, New Delhi – 110 049.
11.	Accurate level indicator	Shri S. Baskar, 12-2-14, Oorkalasamy Koil Street, Batla Gundu (T.N.)
12.	Herb-Med(herbal medicine for patients of kidney stones)	Dr. S.B. Patankar, S. No. 32/2A, Behind Mehendale Garage, Gulavani Maharaj Path, Erandawane, Pune – 411 004.
13.	Development of Arrowroot grinding machine	Shri A.T. Thomas, Edayal, Melukauvmattom, Kottayam (Kerala) – 686 652.
14.	Development of water flow electronic controller for household water tank	Shri Kalyan Chatterjee, Vill. : Matukumra Post : Gobardanga Ichapur, Distt. : North 24 Parganas – 743252

Sl. No.	Title of the Project	Innovator / Agency
15.	Development of advanced model of pomegranate deseeding machine and procuring certifications to meet the requirement of the export market	Shri Uddhab Kumar Bharali, C/o UKB Agrotech, Bhairav Path, K.B. Road, North Lakhimpur (Assam)
16.	Dynamic multi focal spectacle frame	Dr. P. Parikumar, The Light Eye Hospital, 39D, By Pass Road, Dharmapuri – 636 701 (T.N.)
17.	Guided crank PIN design IC engine	Shri R. Prakash Urs, #204B, Ujawala, 5th Main, Bahubali Nagar, Jalhali Post, Bangalore – 56 0 013 (Karnataka)
18.	Hi-fi digitalized turning machine(TS)	Shri R. Karthikeyan, 61, Pangajum House Street P.K.M. Road, Theni – 625 531(T.N.)
19.	Cost-effective V-trough flat photo-voltaic modules	Prof. Chetan S. Solanki, Dept. Of Energy Systems Engineering, IIT Bombay, Powai, Mumbai – 400 076 (Maharashtra)
20.	Prototype development of heating/cooling apparel	Shri Kranti Kiran Vistakula, Flat #503 Legend Apartments Street #7, Himayatnagar, Hyderabad – 500 029 (A.P.)
21.	Research and Development of a STATCOM (P2-STAT)	Shri Shwetank Jain, Room no. B-303, Vikram Sarabhai Research Centre, IIT, Kharagpur – 721 302 (W.B.) Home Address: 8, New Mohan Puri Meerut – 250 001 (U.P.)
22.	Stem cell marker protein CD44 in cancer diagnostic : development of an immuno-diagnostic kit	Dr. Lokantaha Valluru, 5-40/B, Ullipatenda , M. R. Palli, Tirupati – 517 502 (A.P.)

Sl. No.	Title of the Project	Innovator / Agency
23.	Fertilizer spray through Ariel flying machine	Shri Radha Kamalakaran, No. A-101, Mansarovar No. 19, 3rd Seaward Road, Valmiki Nagar, Thiruvanmiyur, Chennai – 600 041.
24.	SN Door Wind Mill	Shri N. Sasi, No. 29A, St. Joseph Garden, Madhavaram, Chennai – 600 060 (T.N.)
25.	Development of low cost, high performance LED based home illumination system for rural and urban areas	Shri Phool Singh Chauhan, House no. 3037, Type III, IIT Campus, Kanpur – 208 016 (U.P.)
26.	Prepaid cash card for ATM system for electric bill	Shri Biswanath Dey, S/o Late Anil Kumar Dey, Vill. : Barsul (Doltala), P.O. Barsul (U), Distt. : Burdwan (W.B.) PIN - 713 124.
27.	Mosquito free healthy cooler	Shri T.A. Anand Vishnu, 19, 1 Street, Parthasarghy Nagar, Adambakkam, Chennai – 600 088.
28.	Highly flexible stepper motor controlled diamond bruiting machine(TS)	Shri Preetham K., S/o Shri Bhaskaran K. , Door No. 24-1-63-2, Vaidyanatha Nagar Attavara, Managalore – 575 001 (Karnataka)
29.	Electronic retrofit kit for Cam Dobby	Shri M. Baskar, No. 124, 5th Main, 6th Cross, Raghvendra Colony, Chamarajpet, Bangalore – 560 018.
30.	Prototyping chandraprabha water gun (Rain gun)	Shri Annasaheb Bavu Udgavi, Pattan Modu Thotta, Sadhalga (Post) Chikkodi Taluk, Belgaum District (Karnataka)

Sl. No.	Title of the Project	Innovator / Agency
31.	Wireless threat Assessment System	Shri Vikas Sharma, B-84, Hill View Apartments, Vasant Vihar, New Delhi – 110 057.
32.	Design and development of a Holographic Pulse portrait Camera System	Shri P. T. Ajith kUmar, President and Leading Specialist, Light Logics Holography and Optics Pvt. Ltd., Technopark Business Incubator, Kuttanad, Park Centre,Technopark, Trivandrum – 695 581.
33.	Product Hairminator for validation of Hypothesis-Cytotoxic Lectin Inhibit growth of Hair follicle	Ms.Mrinamai Bhusan, Vishwa-Pushpa, 992/93/14, Rajendranagar, Pune-411 309
34.	Development of Walnut cracker machine	Md. Mustaq Ahmed Dar, Anantnag(J&K) C/o GIAN-N, Jaipur
35.	**TePP Phase II** Design & Development of Mechatronic Flyer Frame for Cotton Spinning	Shri L. Kannan No.14, Palayakaran Street, Ekkaduthangal, Chennai-600 097

* Sl. No. 4,6,7,13,14,15,30 are yet to be completed.

Technopreneur Promotion Programme (TePP)
(An initiative of DSIR)
Ministry of Science & Technology
[1st April, 2008-31st March,2009]

Summary of Projects

Department of Scientific & Industrial Research (DSIR)

1.	Development of eco-washing process for hand made woolen carpet industry	Smt. Charmaine Fernandes Sharma W/o Shri Prakash Mani Sharma Gyanpur Road, Bhadohi – 221 401(U.P.)
2.	Cooled helmet for two wheeler riders	Shri George Koshy D2/1, Vipul Mitra CHS, Goregaon(West), Mumbai – 400 062.
3.	Digital controlled precise dispensing valve for liquids under gravity flow	Shri Pathak Satish Vishnu 101, Shri Jankidas Shelters, B. Vaidya Chowk, Near City P.O. Kalyan(West) -421 301, Mumbai
4.	Pooga sizing machine	Shri Govind Prasad Pidamale ANEESH TECH, P.O. KODUNGAI Via Vittal - 574 243 , Bantwal Taluk, D.K., Karnataka
5.	Promotion of Rapid Thrombochek Test Kit	Dr. Dilip S. Velaskar 527, Murli Govind Society, 4A, Grond Floor, Road No. 33 Khar(W), Mumbai 400 076.
6.	Mrityunjay – an advanced electronic distant patient monitoring system	Dr. Pankaj Parashar E-2406, Sudama Nagar, Indore – 452 009 (M.P.)
7.	Mobile crime and accident reporting system	Shri Sanjay Vijay Kumar Sarovaram, KP 1/864, Convent Raod, Muttada P.O., Trivandrum – 695 025.

8.	Light emitting POP tiles	Shri Madhav V. Sawant 003-C-29, B-Wing, Sarathi Co-op Housing Society, Gokuldham, Goregaon(E), Mumbai – 421 301.
9.	Merlyn D3 Low Cost Modular Bomb Disposal Robot with Flexible Chassis System	Shri Biju R. Barkey H.No. 213, Phulkian Enclave, Patiala – 147 001 (Punjab).
10.	Low cost automatic cash depositor	Shri Rajiv Shankar Sinha E-306, Hall – IV, IIT Kanpur, Kanpur – 208 016(U.P.)
11.	Cardiac Analyser	Shri C.T. Babeesh Chellapra Thazham House, Iringallur, G.A. College, P.O. Calicut, Kerala – 673 014.
12.	Drishticare – a tele diagnosis platform for retinal examination	Shri Gopal Dutta Joshi C/o Entrepreneurship Development Cell, IIIT – Hyderabad, Gadchibowli, Hyderabad – 500 032.
13.	Laryngotracheal stenosis – an indigenous stent system	Dr. (Major) Prasanna Kumar No. 65/3, Railway Quarters, East Colony, ICF, Chennai – 600 038.
14.	Low cost multi-media projector	Shri Suvendu Banerjee A-73, Burge Town, Medinapore, West Medinapore – 721 101 (W.B.)
15.	Micro controller based custom designed overload relay	Shri Palash Das B-206, Vikram Sarabhai Residential Complex, IIT Campus, IIT Kharagpur – 721 302(WB)
16.	Scale-up and standardization of an economical commercially viable laboratory process to isolate y-Oryzanols from the waste products arising out of rice bran oil refineries	Dr. G. Prakash Flat no. 125, Lift no. 11, Mansarovar Heights Phase-I, Near RTC Colony, Trimulgerry, Secunderabad – 500 009(A.P.)

17.	Development of a herbal skin-nourishing gel	Prof. Satyahari Dey Bio-technology Department, IIT Kharagpur – 721 302 (W.B.)
18.	Focal length independent high resolution wide frame, camera array & X-ray imager	Shri J. Karthikeyan 11, Vidya Nagar, Civil Aerodrome Post, Coimbatore – 641 014.
19.	Device and process to capture losses due to weather event in nay specific geographical coordinate	Shri Sonu Agarwal G-5, SIDBI Innovation & Incubation Centre, IIT Kanpur – 208 016.
20.	Pickling acid recovery using diffusion dialysis	Shri Arvind A. Narayan A-5, TREC_STEP, Thuvakudi, Trichy – 620 015.
21.	Ball press washer or cleaning & crushing biological raw materials	Ms Priya R. Kizhake Mulakkazhathu, Vayalar P.O. Cherthala, Alipuzha – 688 536 (Kerala).
22.	Control release crop fertilizer with additives	Shri Jayen Barochia B-54, Vraj Vatika Society, Near Jalaram Temple, New Sama Road, Vadodara – 390 008 (Gujarat)
23.	Lengthwise Zig-zag Cutting of Steel Coils	Shri Prem Kumar kambham #78,78,79 P&T Colony Behind Apollo Hospital Secunderabad-500 009
24.	Synthesis of nanocrystalline HAP and sintered compacts of the same	Shri Tapendu Mandal D-104, Hall-4, IIT, Kanpur Indian Institute of Technology, Kanpur-208016
25.	Pedestal wet grinder	Shri Shyam Kumar S. Mudumpil Veedu, SPNRA-160, Temple Road, Thiruvallom P.O. Thiruvananthapuram-695 027

26.	Voice net	Shri Umesh Sachdev B-23, Shantivan Apartments, New No. 97, Old No. 44, 2nd Main Road, Gandhinagar, Adyar, Chennai-600 036
27.	Shoe Brush with Wax Polish	Shri Davinder Kumar 660, New Prem Nagar, Karnal-132 001(Haryana)
28.	Bath Brush	Shri K.K. Kannan 38/9-A, Pananthoppu Street, Sitharkadu, Mayiladuthurai Jn. Nagia(Dt.)-609 003(Tamil Nadu)
29.	Development of aqueous metal oxide based super capacitors	Shri Parashuram Balwant Karandikar 5/5 Golf Residency, Don Bosco road Yerawada, Pune-411 006
30.	Nimble carpet shearing machine	Shri Nandu Kumar Dongre, S/o Shri Deenaji Dongre, Village-Ikalbehari, Post-Jam Distt-Chhindwara-480 107(M.P.)
31.	Heart throb-portable generic multi factor medical measurement unit	Shri Kallol Mallick Azure Software Private Limited, BH-50, Sector-II, Salt Lake, Kolkata-700 091
32.	Real time flight data analyzer	Shri Gaurav Gupta A-1, 301, White House Apartment, 6th Main, 15th Cross, RAT Nagar, Bangalore-560 032
33.	Automated scan lock	Shri Vijay Kumar Singh D-59/103,Q-5, Opp. Siddhartha Complex, Sigra-Mammoorganj Road, Varanasi-221 010
34.	Variable length pedal-crank assembly with doubling of torque	Shri Manoj Kumar Mondoa 240/1 South Side, Kharagpur, West Bengal PIN 721 301

35.	Steerable Headlights	Shri Sudhir Kodeboyina H.No. 3-9-41, Plot No. 87, Central Bank Colony, L.B. Nagar, Hyderabad-500 068 (Andhra Pradesh)
36.	Active Bioconjugates 2-0-alpha pyranosyl-L-ascorbic acid	Dr. J.R. Murti C/o Dr. J.R. Prahlad, 102, Leeladhar Enclave, Plot No. 43, 8/3/167/K/43, Kalyan Nagar, Phase(III), Hyderabad-500 018
37.	AAC device with dynamic message generation and speech synthesis for Children with Cerebral Palsy	Shri Ajit Narayanan CGE-2A, Kuppam Beach Road, Thiruvanmiyur, Chennai-600 041
38.	Shoulder Harness Helmet	Shri Neethala Mittu No. 88-B(Upstairs), Naga Kali Amman Koil Street, Sengotiah Colony, Gandhi Nagar, Sundarapuram (P.O.) Coimbatore-641 024(Tamil Nadu)
39.	Novel tamper proof, tear proof, durable leather as printing paper for niche applications	Shri K. Mohammed Fakruddin 20/2D, Gandhi Main Road, Shankar Nagar Pammal, Chennai-600 075
40.	Solar Water Heater using Fused Tube lights	Shri S.B. Janakiraman 18/6, Kalas Athimaram Street, Kalaspalayam, Vellore-632 001
41.	Development of friction stir welding process	Shri Manas Mohan Mahapatra MIG-185, Kalinga Vihar, P.O. Patrapara Bhubaneswar-751 019 (Orissa)
42.	Innovation of Ultraclean electro stag refined technology/cost effective substitute for clinical applications	Dr. MSN Balasubramanian 4/169, Ambala Nagar Extension, Kowdiar PO, Thiruvananthapuram-695 003(Kerala)
43.	Peeling device(machine) for Banana stem	Shri Ashish Khatri Ashish Villa, 86, D-Block, Hiran Magri Sector-14 Udaipur(Rajasthan)

44.	Multi-crop portable circular oil expeller	Shri Balkrishan Lohar Vill.-Kirki Chowki, P.O. Dundia, Tehsil-Mavli, Distt. Udaipur-313 602 (Rajasthan)
45.	Microprocessor based lubrication flow and inductive sensing and controlling device	Shri Ekling Nath Paliwal 6, Bheru Bhati, Illaji Ka Neem Udaipur-313 001 (Rajasthan)
46.	2-D Nano-positioner	Shri Reetesh Kumar Room No. 129, New RA Hostel, IIT Kanpur, Kanpur-208 016
47.	Development of a commercial Rheometer for High Performance Concrete	Shri Aminul Islam Laskar Civil Engineering Department, National Institute of Technology, Silchar-788 010(Assam)
48.	Slow-release multi-micronutrient zinc and boron based fertilizer	Dr.(Smt.) Chandrika Varadachari 4A, Ratnabali, 7A Judges Court Road, Kolkata-700 027
49.	Intelligent fuel pump calibrator	Mohd. Yamin Khan H.No. 132, Kundli, District-Sonepat, Haryana-131 028
50.	Smart solar irrigation unit	Shri Chandu Sasidharan Chandra Bhawan, Thondankulangara Thathampally P.O. District Court Ward Alipuzha-688 013
51.	Fully automatic cashew-nut breaking machine	Dr. Pramod Raghunath Joshi C/o Abhijeet Joshi “Sadafuli”, Row House No. 5, Alok Heights Phase No. 1, Ganeshnagar, Dhayari Pune-411 041

52.	Design & development of dynamic stretch comfort measurement device for sport and healthcare application	Shri L. Ashok Kumar Sr. Lecturer, Deptt. Of Electrical and Electronics Engg., PSG College of Technology, Coimbatore-641 004
53.	Solar wafer/cell inspection equipment	Shri T.K. Velayudham CG 52, Cinnamon Garden, Vazhayila, Karakulam PO, Trivandrum PIN : 695 564
54.	Low temperature heat engine	Shri Gurmit Singh, F-2658, Palam Vihar, Gurgaon-122 017
55.	Design & Development of domestic monoblock pump without shaft	Dr. K.M. Srinivasan 245, East Thiruvenkatasamy Road R.S. Puram, Coimbatore-641 002
56.	Fermenter-microprocessor based controller with GSM mobile technology	Shri H. Abbas Ali 46, Appar Street, Thiruvalliswara Nagar, Thirumanglam, Anna Nagar West Extn. Chennai-600 040
57.	Design & Development of a prototype of a digital textile printing machine	Shri S. Rajakumar Old No. 56, New No.24, First Floor, Pitchai Braminar Street, Kumbakonam-612 001, Thanjavur District, Tamilnadu
58.	Track every coin	Shri Vikram V. Chadag #18, 15th Main, 16th Cross, Padmanabha Nagar Bangalore-560
59.	Pilot plant for desalination of sea water	Shri S. Kumar 8/13/677-64A, 'USHAS' Sri Krishanadevaraya Nagar Sri Nagar Colony Post, Yellareddyguda Hyderabad-500 073

60.	Cooled Helmet for Two Wheeler Riding	Shri George Koshy, D2/1, Vipul Mitra CHS, Goregaon (West), Mumbai-400 062
61.	Integrated security management system	Capt. PMK Rajesh B-2, Arun Apartments, #33, III Avenue, Indiranagar, Adyar, Chennai-600 020
62.	Design and development of a DNA fingerprint based photopolymer hologram reader/writer for personnel Identification And Security	Smt. Maya Devi C Scientist(Bio-Metrics), M/s Light Logics Holography and Optics Pvt. Ltd., Technopark Technology Business Incubator, Technopark, Trivandrum-695 581
63.	Process optimization and production of novel probiotic consortium (Synshrimp) for eco- friendly shrimp farming	Shri Sujith S. G.V. Mandiram, Chavarcode, Parippally, Thiruvananthapuram-691 574
64.	Optimization of production technology for the commercialization of shrimpactive Shrimp Disease management	Shri Aseer Manilal Pattathil house, Pattathanam P.O. Kollam-691 021
65.	RSW Chiller	Shri C.V. Varghese Bldg. No. XIX-398, Behind CSI Church Thaivelikkakam Lane, H.M.T. Road Kalamassery-683 104, Kerala
66.	Simultaneous production of multiple digestive enzymes from microbial sources	Shri Seshagiri Raghukumar 'Tamara', Machado's Cove, 313, Vaiguinnim Valley, Dona Paula, Goa-403 004
67.	Snow breeze ice air conditioner	Shri M.B. Lal D-30, Press Enclave, Saket New Delhi-110017

68.	Planar inverted F-antenna for mobile communication(PIFA)	Dr. Bratin Ghosh Asstt. Prof., Deptt. Of Electronics & Electrical Communication Engg, Indian Institute of Technology Kharagpur ' Kharagpur-721 302
69.	Innovative baghel devices	Dr. Shailendra Singh C/o Shri Lalji Singh, SH-8/3-13-G-1 Ram Janki Dham Colony, Shivpur, Varanasi-221 003 (U.P.)
70.	Intralock intravenous canula	Shri Tribhuvan Singh Raman C-27, Satya Marg, Hawa Sarak, Dundlod Colony, Jaipur, Rajasthan
71.	Development of Customized Audiometer	Dr. M.N. Nagaraja Door No. 3588, 70th Cross, II Stage, Kumaraswamy Lay out, Bangalore-560 078
72.	Development of Bhavana's Procto tub	Dr. Prasad Narayan Vaidya 33/4, Sudarshan Apartment, Swapna Nagari, Garkheda Parisar, Aurangabad-431 005
73.	Banana Cotton separator	Smt. Lalitha M. 29A/1, Bryant Nagar, 8th Middle Street Tuticorin
74.	Control of biofouling in ships and atomic power station cooling system	Shri P. Ayyappan 45, 25th Cross Street, Basanth Nagar, Chennai-600 090
75.	Phantom power eliminator	Shri Nelvin Joseph Greeshmum House, Jawahar Lane, Poonithura, P.O. Gandhi Square Pettah Cochin-682 038
76.	Manually operated wheat reaper	Shri Krishan Vir Singh Village: Mataur, P.O. Daurala Dist. Meerut (U.P.)

77.	Development of improved seed drill	Shri Gopal Dave National Innovation Foundation(NIF) Bunglow No. 1, Satellite Complex, Near Sattellite Tower, Jodhpur Tekra Satellite, Ahmedabad-380 015
78.	Instant sewage treatment plant(e-step)	Shri Suresh Kumar Ecowater, Plot No. 11, Phase-IV IDA, Cherlapally, Hyderabad-500 051
79.	Portable front-loaded washing machine without concrete structure	Shri Nitin Mulchandani X-45A, Flat No. 17, 2nd Floor, Godrej & Boyce quarter, Pirojshanagar, Station Side Colony, Vikhroli(East) Mumbai, Maharashtra PIN Code 400 079
80.	Product development of sugarcane bud chipper	Shri Roshanlal Vishwakarma Vill. & P.O. Mekh, Taluka Gotegaon, Narsinghpur, Madhya Pradesh-487 114
81.	Design of Novel Plant bio-reactor	Shri Rachit Agarwal, STEP, IIT Kharagpur-721302 (W.B.)
82.	Development of Star Node Circuit Breakers(SNCB) for newly invented midget transformers as well as for some presently available conventional transformers	Dr. Gopurayappa Srinivasan 11/8 Navanith Apartments, Kamaraj Street, Shanthinagar, Saligramam, Chennai-600 093
83.	Multimodal interaction systems for urban children for playing computer games	Shri Sumiran Pandya NDBI, NID, Paldi, Ahmedabad-380 007(Gujarat)
84.	Bathrooms for the safety of elderly	Ms. Mamta Gautam, NDBI, NID, Paldi, Ahmedabad-380 007(Gujarat)
85.	Development of a Wireless Sensor network & Communication protocol in underground mine Environment.	Shri Partha Muknopadhyay, A-205, Vikram Sarabhai Residential Complex, IIT Campus, IIT Kharagpur, Kharagpur-721 302 (W.B.)

86.	Versatile internet communication equipment (VICE)	Shri R. Balajee Flat no. 8, New no. 20, Bhagavandam Street, T. Nagar, Chennai – 600 017.
87.	Innovation on Normal Scaife , i.e. GEM-Polishing wheel for gem polishing application	Shri Rajesh Ravindrabhai Kansara D-3, Arvind Nagar Society, 12/222, Luncikui-Sindhi Camp Road, Near Ambica Auto-Riksha Stand, NAVASARI – 396 445 (Gujarat)
Micro-technopreneurship		
88.	Electrochemical Sensor for Toxic heavy metals analysis in drinking water	Shri Senthil Kumar Asstt. Prof. Deptt. Of Chemistry, VIT, Vellore-632 014
89.	Electric Rocker(Terasa)	Shri P Tamilvanan 30/5, East Agraharam, Nannilam Tower, Thiruvarur-610 105(Tamilnadu)
90.	Waste Heat Recovery from Engine Exhaust using Thermoelectric Technology	Shri Kunal Agarwal C/o VIT-TBI, Vellore Institute of Technology, Vellore-632 014
91.	Eco Brakes-Energy Efficient Braking system	Shri Siddharth Shah B-1, Glaxy Apartments, Bedla Road, Fatehpura, Udaipur-313 001
92.	Cultivator Suspension System	Shri Rajendra Kumawat Tikkiwala Mohalla, Purani Tonk, Tonk-304 001(Rajasthan)
93.	Multi point illumination White LED Solar Lamp	Shri Shailendra Kumar Mistry 3, Ashiana, Vishwakarma Nagar, Gariyawas, Udaipur-313 001
94.	Aracanut Tree Climbing & Harvesting Robot	Shri Prajwal V. Kumar Bail House, Iddya Village, Surathkal-575 014, Mangalore(Karnataka)

95.	Energy Efficient Electromagnetic motor	Shri Ratnakar Naik Shri Devi Prasad House, Miyyar Post & Village, Karkala Taluq, Udipi-574 107 (Karnataka)
96.	New Ocean wave energy harvesting system	Shri Ashok Kundapur Kalashree, Hayagreva, Udipi-576 102(Karnataka)
97.	Multi Purpose Mosquito trap	Shri Ignatius Orwin Noronha 406, Mannagudda Tower Mannagudda, Mangalore-575 003
98.	Design and Development of Switched Reluctance(SR) Submersible Motor	Shri M. Sundaram 2/159, Andavar Nilayam, Keeranatam, Coimbatore-641 035
99.	Vision System for Automatic Inspection of Rectangular Sensor Devices	Ms. C. Lakshmi Deepika 9/11, Kovai Thirunagar, Civil Aerodrome Post, Coimbatore-641 004
100.	Increase in productivity of Spirulina by Distributed Agitation System	Dr. V. Ramamurthy Blue Bonnet, 3/1-A Kaveri Nagar, Ramanathpuram, Coimbatore-641 045
101.	Extra Air Power	Shri K. Ramaraju B/113, 3rd Cross, Dheeran Nagar, Tiruchirappalli-620 009
102.	Close Circuit Cooling Tower	Shri K. Perumalsamy C-109/159 Manickam St., Ganghi Nagar Udamalpet, Coimbatore-642154
103.	Power Saver in Lathe Machine	Shri M. Rathinavel 3/245A, North Pilliyar Kavil Street North Kattur, Tiruchirappalli-620 019
104.	Two Speed System for Rickshaw	Shri Surender Kumar Gurjar 311D, Railway Colony, Ambala Cantt.-133 001

105.	High Low Gear Box Attachment For Harvester	Shri Gurcharan Singh Matharu Agro Gear, Near Kandam Hotel, Bughi Pura bye Pass, G.T. Road, Moga(Punjab)
106.	Zero Tech Invention	Shri Malkiat Singh Zero VPO Kandhala Jattan, Distt. Hoshiarpur(Punjab)
107.	Tree Climbing Gear	Shri Sumit 311D, Railway Colony, Ambala Cantt.-133 001
108.	Onsite mobile electrolytic generation of NaOCl, Cl_2 and Chlorine dioxide	Shri Ganesan Balachandran 56, Vivekananda Avenue, VOC Nagar Extn., Valluvar Colony, ANAIYUR PO Madurai-625 017
109.	Improvement in or related to vehicle road wheels rotating without friction	Shri O.N. Devarajan 47, Vaikunthaperumal, North Mada Street, Kanchipuram-631 402 (Tamil Nadu)
110.	Development of an "Autopilot" for a UAV	Shri Adhip Gupta J-827, VIT Men's Hostel, VIT University, Vellore-632 014
111.	Micro-thruster augmented wind turbine	Shri Pankaj Kumar Jha G-317, VIT Men's Hostel, VIT University, Vellore-632 014
112.	Backpack Beverage Container for Tea/Coffee	Shri Vishwaroop Sharma E-417, VIT Men's Hostel, VIT University, Vellore-632 014
113.	Evolution of some ayurvedic formulation for their potentiality in the cure and management of diseases like cancer, diabetes	Dr. A.K. Maulik Suraj, 114/7, Prem Kunj, Roorkee-247 667
114.	Digital Valve Controller P/N: DVC 02	Shri Lokesh Goyal 130, East Ambar Talab, Roorkee-247 667

115.	Instant Rasam Mix/Paste/Granules	Smt. Shylaja Vittala Poornapragna, 4th Cross, Sapthagiri Extn., Upparahalli Main Raod, Tumkur- 572 102 (Karnataka)
116.	Soso Folding Mosquito Net	Shri Balram Gupta, Old Jhusi, Kohna, G.T. Road, Nr. Kali Mandir, Jhusi, Allahabad-211 019
117.	Automatic Rail Toilet System	Shri Shiv Shankar Mondal, Dalhatta Bazar Mohlla, P.O. & Distt, Munger-811201
118.	Innovative Loom	Shri Shyam Sunder Maurya, Vill. Achhavar, P.O.Gyanpur, Distt. Sant Ravidas Nagar (Bhadohi) U.P.-221304
119.	Solar Tea Maker	Shri Gokul Acharjee, Qtr. No. EMG2, Near NCC Camp, IIT Kharagpur, West Bengal-721302
120.	Prototype Development for Low Cost Airborne Surveillance System	Shri Sumit Goswami, C/o Head, Department of Computer Science (CSE) IIT Kharagpur, West Bengal-721302
121.	Multipurpose Cooling Jar	Shri Anuj Gupta, C-301, Patel Hall of Residence, IIT Kharagpur, West Bengal-721302

TePP Phase II		
122.	A Rotary Apparatus adopted to Perform as a Variable Compression Ratio Internal Combustion Engine	Shri Das Ajee Kamath M/s GYATK PVCR Apparatus, D-1, Arwin River Dale Appts., Vrindavan, Chetichira Raod, Elamkulam, Ernakulam, Kochi – 682 019(Kerala)
123.	Alkali Lignin Products & Cooler Pads from Dry Pine Needles	Shri S.R. Verma Mohan P.O., Ramnagar, Distt. –Nainital, Uttrakhand – 244 715
124.	Tea & Tea Based Herbal Health Drinks	Shri H.P. Singh, Scientist E-II, Institute of Himalayan Bioresource Technology(IHBT), Post Box no. 6, Palampur – 176 061(H.P.)
125.	Indigenous dialysis device refinement for commercialization and test marketing	Dr. Parikshit Bansal 5568, Sector 38-West, Chandigarh-160 036
126.	Heating/cooling apparel and accessories	Shri Kranthi Kiran Vistakula 503, Legend Appartments 3-6-493/A/503, Street-7, Himayat Nagar, Hyderabad-500 029(A.P.)

* Sl. No. 19,23,46,48,50,54,56,68,72,78, 80,83,99,104,110,113,114 are yet to be completed.

Sl.No. 77 is foreclosed

Technopreneur Promotion Programme (TePP)
(An initiative of DSIR)
Ministry of Science & Technology
[1st April, 2009-31st March,2010]

Summary of Projects

Department of Scientific & Industrial Research (DSIR)

1.	Fabrication of high energy planetary mill and low temperature synthesis of Tungsten-carbide & Cobalt composite powder at Nano scale using the same	Shri Prem Prakash J-492, World Bank Colony, Kanpur – 208 017 (U.P.)
2.	Improved machine human interface – a replacement to mouse	Shri Avinash Saxena A-57A, 2nd Floor, Lane no. 3, Paryavaran Complex, IGNOU Road, Saket, New Delhi – 110 030.
3.	Portable microscope slide projector (teaching aid)	Shri Chandra Narayan Bairagya Retd. Secondary School Teacher, Someswartala, P.O. Memari, Distt. : Burdwan – 713 146 (WB)
4.	Development of filler grade PTFE scrap material	Dr. Arunachalam Lakshmanan Professor , Dept. of Physics, Saveethea Engineering College, Thnadalam – 602 105 (TN)
5.	Development of Piezoelectric transformers	Dr. Sunil Kumar Mishra Director, R&D and Institute Industry Interaction, Hindustan Institute of Technology, Plot no. 32-34, Knowledge Park III, Greater NOIDA – 201 306(UP)
6.	Cabinet of personal computer	Ms. T. Bhargavi W/o Shri Seelam Ranga Reddy Vill. & P.O. : T. Chalimamidi, B. Kottakota (Mandal), Madanapalli (SO), Distt. : Chittoor – 517 370 (A.P.)

7.	Faucets(washbasin and bathroom taps) with independent control of temperature and flow	Shri K.N. Sundara Rama Reddy No. 462, IV Main, Rajamahal Vilas Stage II, Bangalore – 560 094.
8.	Products designed to maintain temperature without the need of continuous power	Shri Abhijit Rai S-19, Panchshila Park, New Delhi – 110 016.
9.	High energy density capacitor development	Shri Bhuwenesh Gupta 66, Keluskar Road, Saiprasad Building, Shivaji Park, Dadar, Mumbai – 400 028.
10.	Light duty variable displacement compressor	Shri Sankha Subhra Datta Mohanta Para (Lane opp. To Senior Citizens Park), P.O. & Distt. : Jalpaiguri – 735 101(WB)
11.	Retractable auto disposable syringes	Dr. Rajesh N. Shukla C-101, Doctors Quarters, Kashibai Navale Hospital & Medical College, Narthe Campus, Ambegaon (Near Western Bypass Pune-Bangalore Highway), Pune – 410 041.
12.	Multi-radio data communication system for wireless active RFID/Sensor network	Dr. Siuli Roy Flat no. B12/9 Golf Green, Phase I, KOLKATA – 700 095.
13.	Instant sewage treatment plant (e-STP)	Shri T. Suresh Kumar Ecowater, Plot no. 11, Phase-IV, IDA, Cherlapally, Hyderabad – 500 051.
14.	Municipal solid waste Windrow Trurner	Shri Romesh Bardia 18, Kanchan Bagh, 401, Princes Regency, Opp. Samvosharan Jain Temple, Indore – 452 001. (M.P.)
15.	Solar powered DC/BLDC motor operated kerosene dispensing unit with biometric/bar code access control for PDS	Shri Samir Kumar Neogi 155, Kumarapara Road, P.O. Rajpur, Kolkata -700 149.

16.	Testing of pollution control device, dry scrubber at ARAI, Pune	Shri Churamani Sen M-2, D Sector, LDA Colony Kanpur Road, Lucknow – 226 012.
17.	Development of cost effective New Generation Electronic Energy Meter for domestic use	Shri Santanu Sengupta FD-425 Salt Lake, Sector-3, Kolkata – 700 106.
18.	Non-electric water level indicator	Shri Vidit Agarwal MM-172, Sec. D-1, LDA Colony KPR Road, Lucknow – 226012 (U.P.)
19.	Handwriting improvement slate	Shri S. Bhaskara Raju 1-5-565, Balaji Colony, Tirupati – 517 502 (A.P.)
20.	Digitally controlled three dimensional billboard	Shri Mehar Ali Rose Gardens, Kulakkarappadom Road, W. Kakkanadu PO, Ernakulam Dt. (Kerala) – 682 030.
21.	Peptone biotech	Shri N. Nageswara Rao C-74, Madhura Nagar, Hyderabad – 500 038.
22.	Multi-level automated two-wheeler parking unit	Shri S. Venkataraman 20A, Raman Street, Chitlapakkam, Chennai – 600 064 (TN)
23.	Mechanical automatic sliding door closer	Shri D. Thulasi No. 21/A, China Thanbi Street, Vyasarpadi, Chennai – 600 039 (TN)
24.	Self propelled 3-row potato seeding device	Shri SK Abdul Aziz Krishna Bazar, GT Road, Memari, Distt. : Burdwan – 713 146 (WB)
25.	Application turned lacquering process on solid bamboo species to make non-toxic, eco-friendly toys and accessories for children	Shri Abhijit Paul Toy Centre, National Institute of Design(NID) Paldi, Ahmedabad – 380 007.

26.	Indian sink utensils washer	Ms. Jasneet Kaur Gandhi W/o Shri Maneet Singh Gandhi 10, Guru Govind Pura Colony, Airport Road, Udaipur – 313 001.
27.	Electrical transmission tower damaged protection monitor	Shri Sanjay Kumar Choubey MIG -604, LIG Ground, Padmanabhpur, DURG – 491 001 (Chhatisgarh)
28.	Bulk synthesis of carbon nanotubes	Dr. Prakash R. Somani Vijaynagar, Building no. 3, B-14, Dhayari, Near Dharashwar Mandir, Sinhgad Road, PUNE – 411 041 (Maharashtra)
29.	Development of sensor-based systems for estimation of fluoride and E. coli in drinking water	Dr. A.Q. Contractor D 302, Powai Park,High Street, Hiranandani Gardens, Powai, Mumbai – 400 076
30.	Natural potassium extract from agricultural organic source	Shri Munisekhar Medasani 504, Prithvi Block, My Home Navadweepa, Hyderabad – 500 081.
31.	Nutraceutical composition containing egg yolk derived anti-diarrhea agent	Shri Sandesh Kamath B. Bio Genics, Veena Plaza, P.B. Road, Unkal, Hubli – 580 031. (KARNATAKA)
32.	Prickly Pear (OPUNTIA) Products – The New Emerging Neutraceuticals	Shri S. Chenna Kesva Reddy C/o B. Sujatha, Door no. 18-1-407, Bhavani Nagar, Tirupati – 517 502, Chitoor District
33.	Bio-conversion of feather – A poultry waste to high nutritive value feed using Keratinases	Prof. V.V. Lakshmi 3, A, Pratap Palace Apartment, Padmavati Nagar, Tirupati -517 502.
34.	Vaneer laminated lumber	Shri G. Baskran 307, Ayyavu Street, West Main Road, Thanjavur – 613 009 (T.N.)
35.	Development of ELISA kits for Thyroid Stimulating Harmone (TSH), Thyroxine (T4) and 3,5,3 – Tridothyronine(T3)	Dr.(Mrs.) G. Lakshmi Kumari R/o Ambala College of Engineering & Applied Research, Devasthali(Mithapur), Ambala (Haryana)

36.	Embedded hardware based security solutions	Shri Vikas Srivastava No. 12, 4th C Cross, 2nd A Main, East of NGEF, Kasturi Nagar, Bangalore – 560 043 (Karnataka)
37.	Automated multilevel modular system for parking vehicles	Shri Joy Abraham Mannah, SP 17/329, Gandhipuram Sreekaryam PO, Thiruvananthapuram – 695 017(Kerala)
38.	Recycling of tungsten carbide scrap material by a cost effective process	Shri A. Jeyakannan Plot no. 11 & 36, Cholapuram Extn. Nochi Vayal Pudur Road, Tiruverumbur Tiruchirapalli – 620 013 (TN)
39.	Design of eco-friendly leisure boat	Shri Gautam Madhavan Nair No. 68, Nehru 4th Street, Kumaran Nagar, Padi Chennai – 600 050 (T.N.)
40.	Evolutionary glass slumping technology within the realms of art, architecture and science	Ms. Amruta Suresh Ramgir National Design Business Incubator National Institute of Design, Paldi Ahmedabad – 380 007(Gujarat)
41.	ACCEPTOR	Shri Samarth Mungali National Design Business Incubator National Institute of Design, Paldi Ahmedabad – 380 007(Gujarat)
42.	Community lighting from the use of hand pump	Shri Suprio Das P-2, Block B, Lake Town, Kolkata -721 302 (WB)
43.	Project Y-cook – convenient to eat, multi dish just eat food in thermoformed interlock-able multilayer rigid containers	Shri H. Janardhan Linga Swahar 201, Green Castle, #40 Annswamy Mud. Raod, Ulsoor,, Bangalore – 560 042(Karnataka)

44.	Customized vermicompost production	Shri K. Srinivas Reddy 6-1-224, Sri Sadan, III Cross, Varadaraja Nagar, K.T. Road, Tirupati – 517 502 (A.P.)
45.	Development of Automatic Bamboo Strip & Incense Stick making machine	Shri Pareshbhai Kasturbhai Panchal 302, Kalpataru Complex, Behind Premchand Nagar Road, Satyagrah Chhavni Road, Satellite, Ahmedabad – 380 015 (Gujarat)
Micro-Technopreneurship		
46.	Synthesis of carbon nano-tubes loaded with metal nano-particles for application as electrodes in fuel cells	Dr. Savita Prakash Somani Vijaynagar, Building no. 3, B-wing, 4th Floor, Dhayari, Sinhgad Road, Pune – 411 041.
47.	Development of speech enabled chest vibrometer	Shri B. Kalyan Chakravarthy 11/3, KMC Quarter, Manipal – 576 104(Karnataka)
48.	Design and development of water disinfection process controller	Ms. P. Kalpana Asst. Prof., ECE Dept., PSG College of Technology, Peelamedu, Coimbatore – 641 004.
49.	Development of bioactive wound dressings	Ms. L. Sasikala 2/28B, Arul Murugan Thottam, Pillaiyappam Palayam (Post), Annur, Coimbatore – 641 653.
50.	Indirect type Solar Drier for processing food products	Shri Nandlal H. Kela S-14, Adarsh Nagar, DURG – 491 001 (CHHATISGARH)
51.	Development of filtered air supplying device for helmets	Shri Vijay Bhatia B-1/303, Lok Upvan – 1, Gladys Alwares Road, Thane (W), Maharashtra – 400 610.
52.	Vehicle driver monitoring system	Shri K.P. Premachandran VIJIVilla, Kannur – 670 002 (KERALA)

53.	Inspye	Shri Kesava Prasad T.D. Plot no. 217, TC 6/PTP Nagar, Trivandrum – 695 038
54.	Electric steering for car	Shri A. Cruz Arokiasamy 16/67, Gandhi Nagar, Madukkarai, Coimbatore – 641 105(T.N.)
55.	Wireless transmission of power	Shri Hitesh Trivedi C/o General Manager, VIT-TBI, VIT University, Vellore – 632 014
56.	Foot operated mechanical fingers	Shri V.G. Sridhar Asstt. Prof. (SG) SMBS, VIT University, Vellore – 632 014.
57.	Mobile presence authentication system	Shri Devender Singh G.T. Road, New Road, Kulti – 713 343 Distt. : Burdwan(WB)
58.	Development of multi layer scannnable voice output communication aid and special access switches	Shri Shamit Patra Krishnakali Housing Society, Chhota Tangra, Kharagpur – 721 301 (WB)
59.	Development of a novel method for biometric recognition	Shri Naresh Shenoy C-105, R.P. Hall, IIT Kharagpur – 721 302 (WB)
60.	Automatic cooler regulator	Shri Naresh Kumar Narayana Construction, Near Dauji Temple, Goswami Chowk, Bikaner (Rajasthan)
61.	Portable refrigerator	Shri Neeraj 1st Floor, Gramin Bank, Sector-3 Circle, Mukta Prasad Colony, Bikaner (Rajasthan)
62.	Micromouse	Md. Faiz Ahmad Campus Hostel, Engineering College, Bikaner Pungal Road, Kerni Industrial Area, Bikaner (Rajasthan),
TePP Phase-II		

63.*	Testing, trials & validation of Prefabrication Technology(PFT) developed products	Prof. (Mrs.) Vimla Devi 24, Capitaine Marius Xavier Street, Pondicherry – 605 001.
64.*	Design and development of 3GPP LTE (Long term evolution) Cellular Products for Base Station, CPE (Customer Premise Equipments) and WiL TE (Wi Fi + LTE) based femtocells	Dr. Sondur Lakshmipathi CEO, MYMO Wireless Technology Pvt. Ltd., 445, 3rd Main, 8th Cross, Coffee Board Layout, Kempapura, Hebbal, Bangalore – 560 012.
65.*	Mobile Crime and Accident Reporting Platform (MCARP)	Shri Sanjay Vijay Kumar Sarovaram, KP I/864, Convent Road, Muttada P.O., Thiruvananthapuram – 695 025 (KERALA)

* Sl. No. 2,4,8,9,11,13,14,16,17,18,19,20, 25,26,27,36,37,38,39,40,41,45,50,51,57,59 are yet to be completed.

Technopreneur Promotion Programme (TePP)
(An initiative of DSIR)
Ministry of Science & Technology
[1st April, 2010-31st March,2011]

Summary of Projects

Department of Scientific & Industrial Research (DSIR)

1.*	Development of immuno based diagnostics against Illar and Topso viruses of sunflower & groundnut by using cocktail antisera	Dr. K.S. Sastry Professor of Biotechnology Sree Vidyanikethan Engineering College, A. Rangampet Tirupati (A.P.)
2.*	Rat Vanisher	Shri V.K. Shaji Cygnet, 24-A Industrial Estate Manvila, Trivandrum – 695 583 (Kerala)
3.*	Ultrathin (Micro-porous) metal film sealed rechargeable battery having 50% less weight, volume and price for use in high rate discharge application	Shri Abhinav Gupta 19-20, Rani Park, Ambala Cantonment – 133 001 (Haryana)
4.*	Digital CO_2 Analyser	Shri Rama Kant, H. No. 48, Ajit Nagar, Ambala Cantt. (Haryana) – 133 001
5.*	Smart toilet	Shri Hari Sasi Vrindavanam, T.C. 4/1315 (5), Sreevilas Lane, Ambala Nagar Jn., Kowdiar P.O., Trivandrum(Kerala)
6.*	Solar heat treatment of sugarcane nodes and sugarcane node cutting machine	Shri G. Rama Prasad Plot no. 7, Sadasiva Nagar, Opp. Government Women Polytechnic, Guntur – 522 006 (A.P.)

7.*	Low cost Laproscopic Surgical Tool Interface to a Virtual Reality Laproscopic Surgical Simulator	Shri S. Iswaran 3B, River Biew Road, Kottupuram, Chennai – 600 085 (Tamil Nadu)
8.*	LASER Scan Head: Design & Development	Shri S. Viswesh G-1/14, Vasanth Flats, 100 ft. Bypass Road, Velachery, Chennai – 600 042 (Tamil Nadu)
9.*	An Intuitive Programmable Electronic Kit for Edutainment (Bi Box)	Shri Sandeep C. Senan #53, 2nd Main, 3rd b Cross, Nanjappa Layout, Adugodi, Bangalore – 560 030 (Karnataka)
10.*	An Unbreakable Multidirectional LED Based Replaceable Lighting System	Shri Bijoy Chakraborty 1/1A/4, Ramhrishna Naskar Lane, Kolkata – 700 010. (W.B.)
11.*	Development of Soleckshaw	Shri Alok Vijay Bhatnagar 302, Sampada Appartments, Sector 46, Faridabad – 121 001 (Haryana)
12.*	Low specific cost solar parabolic dish concentrator	Shri Madan Mohan Reddy Room no. E-1, Academic Hall of Residence, CMERI New Colony, Durgapur – 713 209 (W.B.)
13.*	Development of first Indian Re-engineered stabilizer for beating heart surgery	Dr. Murali P. Vettah KERA View, Velligal, Kottakunnu, Chevayur P.O., Kozhikode – 673 017 (Kerala)
14.*	Electro mechanical device for regulating the moisture content in a closed chamber	Shri C.J. Jobichen Kailapurathu House (Molathu), Vadayampady P.O., Puthencruz Via Ernakulam – 682 308 (Kerala)
15.*	Multi stage bamboo slivering machine	Shri Anil Kumar M.R. KRA-89, Chitranjali, Kedaram Nagar, West Pottam, Trivandrum – 695 004 (Kerala)
16.*	India specific sugarcane harvester	Shri K. Prabhushankar 20/53, Ganga Main Street, Navavoor Cross, Bharthiar University Post, Coimbatore – 641 046 (T.N.)

17.	Waste management products from non-recyclable plastics	Shri Rajiv Subba National Design Business Incubator(NDBI) National Institute of Design(NID), Paldi, Ahmedabad – 380 007(Gujarat)
18.*	Development of slide rule (ready reckoner) for decentralized textile sector (Hand looms and Power looms)	Shri Sahab Saran Satsangi 53 B/AC 4, Shalimar Bagh, Delhi – 110 088
19.	An innovative cost effective process for synthesis of peptide designer molecules for bio-medical applications	Dr. C. Arunan Lakshmi Thoppil, Stayikadu, Azheekal P.O., Quilon, Kerala – 690 547.
20.*	Ozone system for enriching oxygen in diesel engine	Shri S. Gopalakrishnan 5, S.N.V.S. Layout, II Street, Kongu Main Road, Tirupur – 641 607.
21.*	Multi-level automated two-wheeler parking unit	Shri S. Venkataraman 20A, Raman Street, Chitlapakkam, Chennai – 600 064.
22.*	Development of a commercial product – Digital Protractor	Smt. V. Klayani 1/280, Rajarathinam Nagar, Srigarathotta, Vandalur, Chennai – 600 048.
23.*	Continuous ethanol fermentation from Mahua flower by using Packed Bed Bioreactor with Immobilized Yeast for production of Industrial Grade Ethanol	Shri Nijhum Bisawas BA-71, Sector 1, Salt Lake, Kolkata - - 700 064.
24.*	Instant Non-Invasive Haemoglobin and Blood Sugar Analyser	Dr. M. Christopher, No. 7, Thendral Nagar, Near Medical College, Men's Hostel, Tirunelveli – 627 001
25.*	A damper controlled above knee prosthesis	Dr. Manoj Soni House no. A-85, Malviya Nagar, New Delhi – 110 017.

26.*	An innovative cost effective process for synthesis of peptide designer molecules for bio-medical applications	Dr. C. Arunan Lekshmi Thoppil, Stayikadu, Azheekal P.O., Quilon , Kerala – 690 547
Micro-Technopreneurship		
27.	Low cost handheld computing device with Barcode	Ms. V. Mohana 50/1E, Ammanag Kuttai Road, Boosanam Nagar, Vellore – 632 001 (Tamil Nadu)
28.*	BLUPEN – Flash drive with wireless data transfer	Shri Sasikumar C. 49/16, Avulkara Street, Kosapet, Vellore – 632 001 (Tamil Nadu)
29.*	Novel plant cell culture medium from bio-waste (Fly Ash)	Dr. Kakoli Biswas 3319A, Sector-24-D, Chandigarh – 160 023 .
30.*	Electricity from Tidal Waves	Shri Ajoy Mishra 32, Bidisha Sarani, P.O. Bally Durgapur Howrah – 711 205 (W.B.)
31.*	Tree/pole climbing ROBOT	Shri Nitya Batra Qr. No. 66, V.N.I.T. Campus Nagpur – 440 010 (Maharashtra)
32.*	Vehicle tracking on Mobile Phone	Shri Aadil Shah Room no. 176, Hostel 4, IIT Bombay Powai, Mumbai – 400 076 (Maharashtra)
33.*	Self Programmable Smart Educational Robotic Platform	Shri Ram Srinagar Chauhan S-1, SIIC, IIT Kanpur Kanpur – 208 016 (U.P.)
34.*	Electronic vibration alert indicator	Shri Debarun Paul 303/1, Kabi Nabin Sen Road, Dum Dum, Kolkata – 700 028 (W.B.)
35.*	Development of a novel optical mark reader with automatic document feeding system	Shri Mayank Yadav C-102, Rajendra Prasad Hall of Residence, IIT Kharagpur – 721 302 (W.B.)

36.*	Hand pump filer	Shri Sabya Sachi Dey 3/8, Bhagat Singh Marg, C-Zone, Durgapur – 713 205 (W.B.)
37.*	Pedal/wind operated RO Water Plant	Shri V.S. Srikanth Room no. 58, LAPIS Hostel, NIT Trichy – 620 015 (Tamil Nadu)
38.*	D-Red Motor Bicycle	Shri P. Dhanamjaya Reddy 26-3-1653, 5th Road, Chandramouli Nagar (Road Opp. Nippo Sai Baba Temple), A.K. Nagar Post, Nellore – 524 004 (A.P.)
39.*	Contact less power transmission & generation device	Shri Rohit Ahuja 1359-A, Maruti Vihar, Chakkarpur, Gurgaon – 122 002(Haryana)
40.*	Development of a modified Chess Game	Shri Tapan Deb C/o Kamrup Lime Supply & Co., Gar-Ali, Jorhat – 785 001 (Assam)
41.*	Kit based Stop-Start System	Shri Joydeep Chatterjee S/o Shri S.K. Chatterjee, Prafulla Nivas, Shantiniketan Raod, Mallickashpur, Balasore – 756 003(Orissa)
42.*	Diagram mould bricks(DMB) for electrical & plumbing works	Shri Rajesh Jaisawal D-48/182, Misir Pokhara, Varanasi – 221 010 (U.P.)
43.*	Development of wet diaper alarm for babies/disabled	Ms. Veena Rani House no. 5296/2, Modern Housing Complex, Manimajra, Chandigarh (UT) – 160 030
44.*	Development of a prototype of newly invented Muga reeling machine	Shri Monuj Kumar Gogoi Betbari Bhadhara Bigam, P.O. Bhadhara, Sivsagar – 785 640 (Assam)

45.*	Waste tamk auto shut off with alarm (WATASA)	Syed Abul Farukh S/o Late Syed Rashid Ahmed Kabarstan Road, Jorhat – 785 001 (Assam)
46.*	Jewellery from indigenous natural fibre of Assam	Shri Naren Raj Baruah Loonpuria Village, P.O. Hemlai, Via – Selenghat Dist. : Jorhat – 785 636 (Assam)
47.*	Development of a fuel flexible multi-draft thermal biomass gasifier	Shri Gautam Borthakur C/o Shri Panchanan Borthakur Gajpuria Road, Rajamaidam, Jorhat 785 001-19
48.*	Green technology : removal of heavy metals from industrial effluents by efficient biological waste	Shri Shuvra Kanta Behera Qr. No. : 1C/93, Balanda Coloney, Post – South Balanda , Distt. : Angul – 759 116 (Orissa)
49.*	Controlled motion in Ironing through automation	Shri Aditya Singh A-205, RP Hall of Residence, IIT Kharagpur – 721 302
50.*	Improved special design water tap for public hydrants and domestic use	ShriUdey Ram Sharma Shop no. 5 & 6, Bank Road, MIE, Part B, Near Veerji Dhaba, C/o Aggarwal Sales Corporation, Delhi Rohtak Road, Bahadurgarh (Haryana)
51.*	Alternate growth medium for rice straw mushromm for increasing production per unit space	Smt. Usha Kiran AE/267, VSS Nagar, Bhubaneshwar – 751 007 (Orissa)
TePP Phase-II		
52.*	Scale-up and commercialization of environment friendly printing ink	Shri Sidhartha Kumar Bhimania 562, Sachin Nag Block, Asiad Village, Khel Gaon , New Delhi – 110 049

53.*	Integrated use of Sea algae, Neem, Humic and Beneficial Microbes for Growth and Control of Pest and Disease in Crops	Shri Augustine R. A-6, TREC-STEP, NIT Campus, Thuvakudy, Tiruchirapalli – 620015
54.*	Split type forming cutter, inserts & cutter heads	Shri N. Vinayaka Pandi M/s Bramha Machine Tools B-2, Nursery Shed, TREC_STEP, NIT Campus, Tiruchirappalli – 620 015(T.N.)
55.*	Developmetn of Process Technology for Production of Photographic Films	Shri Aman Aggarwal 13-A, Arya Nagar, Ambala Cantt. (Haryana)
56.*	Research and Development of a STATCOM (P2-STAT-n)	Shri Shwetank Jain S/o Shri V.P. Jain, P2 Power Solutions Pvt. Ltd., D-87, Sector-63, NOIDA (U.P.) – 201 301

* Sl. No. 17,19,24 are yet to be completed.

*Project Completed.

!Project fore-closed.

Technopreneur Promotion Programme (TePP)
(An initiative of DSIR)
Ministry of Science & Technology
[1st April, 2011-31st March,2012]

Summary of Projects

Department of Scientific & Industrial Research (DSIR)

1.*	Improved special design water tap for public hydrants and domestic use	Shri Udey Ram Sharma Shop no. 5 & 6, Bank Road, MIE, Part B, Near Veerji Dhaba, C/o Aggarwal Sales Corp., Delhi Rohtak Road, Bahadurgarh (Haryana)
2.	Development of a commercial product – Digital Protractor	Smt. V. Kalyani 1/280, Rajarathinam Nagar, Singarathotta, Chennai – 600 048.
3.*	Continuous ethanol fermentation from Mahua flower by using packed bed bioreactor with immobilized yeast for production of industrial grade ethanol	Shri Nijhum Biswas BA-71, Sector- 1, Salt lake, Kolkata – 700 084.
4.	Instant non-invasive haemoglobin and blood sugar analyzer	Dr. M. Christopher No. 7, Thendral Nagar, Near medical College Men's Hostel, Tirunveli – 627 011.
5.*	A damper controlled above knee prosthesis	Shri Manoj Soni House no. A-85, Malviya Nagar , New Delhi – 110 087.
6.!	Scale independent pilot model design of bio-gas purification from agro industrial waste	Dr. P. Radhakrishna A-405, Aspen Apartments, Behind Spencer Daily, Lala Guda Road, Hyderabad – 500 017.

7.	Design and development of Fresnel moulds, lenses and goods	Shri Abraham Joseph Door# 33/2, Flat # A2 Shree Enclave, Car Nagar Subramani Nr. Mn. Road, Perambur, Chennai – 600 011 (T.N.)
8*.	Crankshaft metrology system	Shri Nicky Dushyant Joshi 30, Pratham Enclave, Opp. Sun Pharma Research Centre, Atladara, Vadodara – 390 012.
9*.	Fitment removal cum lifting/lowering arrangement for draft fear of wagons of Railways	Shri Sukh Ram Pal Tyagi S/o Shri Om Prakash Tyagi 43 A, Chopra Garden, New Megha Nursery, Yamunanagar – 135 001 (Haryana)
10*.	Fabrication of low cost lab scale electro-spinning machine	Shri Sandip Sitaram Patil SBRA L-2 IIT Kanpur, Kanpur – 208 016 (U.P.)
11.	Open ocean farming structures for the cultivation of commercially important Indian Seaweeds	Shri Nelson Vadassery A-13, Block – 2, IISCON Homes, 4th Street, Parameshwari Nagar, L.B. Raod, Adyar, Chennai – 600 020.
12.	Multi line refreshable Braille display	Shri Paul Gerard D'souza 324, Inner Circle , Whitefiled, Bangalore – 560 066.
13.	Scientific development and validation of a herbal drug for Diabetic –Neuropathy	Shri Anantha Devdarshi Vill : Ambasouri P.O. : Balichandrapur Distt. : Jajpur – 754 205.

14.*	Innovation of high performance cricket leg gear	Shri Sanath A. Reddy 1239, 32 G Cross, 4th T Block, Jayanagar, Bangalore – 560 041.
15.	Development of device for testing minimal antibiotic concentration for biofilm eradication	Ms. R. Sakti Room no. 405, A-Block, PSG Tech., Ladies Hostel, Peelamedu, Coimbatore – 641 004.
16*.	CNG Magnetorherological finishing machine	Dr. Sunil Jha 64, New Campus, IIT Delhi, Hauz Khas, New Delhi – 110 016.
17.*	Development of bio-medical engineering application toolkit and development of Steth ECG Stress ECG,, Smart Bed among others using the modules of BEAT	Shri Abhinav C/o Prof. Sneh Anand, Block II, Room no. 208, CBME, IIT Delhi New Delhi – 110 016.
18*.	Tarang Pariwartak – generating electricity from Ocean waves	Shri Sharat Kumar C/o Shri R.S. Singh RUPA Palace, Dam Side, Chendwe, Kanke Road, Ranchi – 834 008.
19.	Bullock drawn improved multi crop seed cum fertilizer drill	Shri Gopal Dave Shree Art and Agriculture Udyog, Salawas, Distt. : Jodhpur – 342 804.
20.*	Novel and affordable emergency modification system for school children	Shri K.R. Karthik Plot no. 122, No. 3, 5th East Street, Kamraj Nagar, Thiruvanmiyur, Chennai – 600 041.

21*.	Content sharing on TV	Shri Amrendra Sahu L-318, IIMB Hostel Blocks, IIMB, Bannerghatta Road, Bangalore - - 560 076.
22.*	Digital hot gold foil stamping/ embossing machine	Shri Ravindra Ganpat Chopade Gokhale Nagar, Opp. IIT Main Gate, Powai, Mumbai – 400 076.
23.	An improved oropharyngeal airway	Shri Trebhuwan Singh Raman Plot no. 19, Hemkunj, Madrampura, Ajmer Road, Civil Lines, Jaipur – 302 006.
24*.	2 in 1, Self Secured Orthodontic spring separator for predicatable separation of teeth in orthodontic patients	Shri Suhanshu Kansal E-9/23, Vasant Vihar, New Delhi – 110 057.
25.*	Development of prototype of flat bed 3-axis PC controlled vertical NC milling machine for sculptured surface machining for ornamental wood carving	Shri Ravinder Kumar Duvedi FR-A-204, New Faculty Residences, Thapar University, Patiala – 147 004.
26.*	Interactive Surfaces – Multi-touch walls and tables	Shri Sachidanand Swami 202, Siddharth Nagar, Hapur Ghaziabad - 245 101 (U.P.)
27.	A machine for interpretation and diagnosis of heart conditions based on ECG using expert system	Shri Anand Madangopal 184/2, Whitefield Main Road, Whitefield, Bangalore – 560 066.
28.	Low cost device for notifying the presence of water borne diseases (pathogen) in community drinking water	Smt. T. Kohila Ananthi L-291, Old no. 15, 12th Cross Street, Thiruvallur Nagar, Thiruvanmiyur Extn., Chennai – 600 041.
29.	Production and testing of selected Probiotic products as poultry feeds	Shri Vijay Kumar A-214, Gayatri Towers, Street No. 1, Tamaka, Hyderabad – 500 007.

30.	Digital assistant – Low Cost handheld device for rural banking using SMS cpmpatible biometrics (fingerprint)	Shri Shaunak Bnagale Flat 201, Balaji Splendor, 3rd Cross, Ejipura Signal, Vivek Nagar(PO), Bangalore – 560 047
31.*	Development of low cost diagnostic tool to identify cardiac patients at risk of restenosis	Dr. Yash Paul Sharma Additional Professor & Former Head, Department of Cardiology Advanced Cardiac Centre, PGIMER, House no. 8 H1, PGI Campus, Sector 12 , Chadigarh
32.	Rapid detection and differentiation of torch infections by one-step PCR assay	Smt. Adavi Vasantha 9-109, Sharda Towers –II, Venkateshwar Nagar, Malkagiri, Secunderabad – 500 047.
33.*	Development of portable, non-invasive Oral Cancer detection system	Dr. K.R. Suresh K. Nair, 34/790B, AARUSHI, Beena Anjumana Road, Edappally, Kochi – 682 024.
34*.	An innovative technology for recharging alluvial aquifers	Md. Mohasin Qr. No. K-7, Sainik School Purulia Campus, P.O. Sainik School, Distt. : Purulia – 723 104 (W.B.)
35.	Vishwakarma diesel engine – High machine and eco-friendly diesel engine	Shri Ramesh Kumar Sharma H. No. 1773, DMC, West of 38, Sector-38, Chandigarh – 160 014
36.*	Belt system for body support	Shri Ganesh Ram Jangir S/o Shri Nemi Chand Jangit, Near Railway Gate-West, Village : Gachhipura – 341 504 (Rajasthan)
37.	Evaluation of laccasse production under solid state and submerged fermentation	Shri Sivaramaiah Nallapeta 17/77, Main Road Dharmavaram – 515671, Ananthpur, Andhra Pradesh
38.	Automated Garment dyeing, chemical washing and Effluent Treatment Wet Processing Machine for Cotton Textiles and Cotton Garments	Shri Y. Jahir Hussain, 32, Jamath Building ii Floor, Thalisdar Pallivasal Street , Simmakal, Madurai – 625 001.

39.	Traffic Jam Detection & Control using PLC & SCADA	Shri Raj Kumar Suthar H.No. 76, Sutharon Ka Chowk, Main Road, Savina, Udaipur
40.	Design and Fabrication of Automated Hank Reeling Machine	Shri S.S.Krishnakumar No.35, North Street, Ganga Nagar, Jafferkhanpet, Chennai – 600 083.
41.	Design and Development of Yarn Break Informator	Shri Harsha Sunder A/2, Premier Grihalakshmi, 4th Seaward Road, Valmiki Nagar, Thiruvanmiyur, Chennai – 600 041.
42.	Root Crops Washer(specially designed for Carrots and Reddish)	Shri Arvind Sankhla Ram Kutiya, Mathaniya, Jodhpur – 342 305
43*.	Multiple zone well completion technology for enhanced oil recovery	Shri Chanchal Dass F-201 Parth Avenue, Nr. Avani Bhavan, Chandkheda, Ahmedabad – 380 005.
44.	Formulation and development of nutraceitical formulatio with anti-cancer activity	Dr. A.Annapuma, 301, Neelakash Apartments, 6-22-10, East Point Colony, Visakhapatnam, Andhra Pradesh – 530 003
45.	Low Cost Hand Controlled Drive Vehicle for Handicaps	Shri Arshad Ahmad Pandith Umer Colony B, Lal Bazar, Srinagar, Jammu & Kashmir
46.	Automatic Fodder Feeding System for Cattles	Er. Rouful Alam Bhat, Syed Colony, Habak, Naseem Bagh, Srinagar, Jammu & Kashmir
47.	Modular & Reversible 2-in-1 School Shoes	Shri Tony M John, 117, Trinity Meadows, Bellandur, Bangalore – 560 103, Karnataka
48.	Prototype Develpoment of Rahman's Yender	Shri Abdul Rahman Parray Banigam, Meerakabad, Shalimar, Srinagar, Jammu & Kashmir
49.	Sports Car with Hybrid Engine	Shri Rajeev Madhukar Ranadive B2/13. Harmony, Nagras Road, Aundh, Pune – 411 007.

50.	Design & Development of a Micro Light Propeller Hydro Turbine	Shri Kamal Chandra Saikia, House No. 16, Milan Nagar Road, Jorhat, Assam
51.	Computer Interfaced Hi-Fidelity Affordable Mannequin for Effective CPR (Cardiopulmonary Resuscitation) Training	Shri Varun Durai S.I. No. 6/177A, Door No.17, 3rd Floor, Poonamalle Road, Porur, Chennai – 600 116
53.	Process for the development of botanical anti-fouling Polymer (Chlorinated Bio Polymer) & Antimicrobial products from the latex of Euphorbia Royleana Boiss	Shri Surendra Prasad Vill. Ghamaindpur, P.O.Nimbuchaur, Kotdwar, Pauri Garhwal, Uttarakhand

Micro-technopreneurship

Sl. No.	Title of the Project	Innovator / Agency
1.*	Controlled motion in ironing through automation	Shri Aditya Singh A-205, RP Hall of Residence, IIT Kharagpur – 721 302 (W.B.)
2.	Alternative growth medium for rice straw mushroom for increasing production per unit space	Smt. Usha Kiran AE/267, VSS Nagar, Bhubaneshwar – 751 007 (Odisha)
3.	Development of a preservative and carrier by spores of entomopathogenic fungi with biological control applications	Ms. S. Anitha Research Scholar, Dept. of Zoology, Scott Christian College, Nagercoil – 629 003 (T.N.)
4.	Manual Compressor	Shri D. Parthiban 25/8C, Srinivasa Puram, South Muthuraja Street, Puthur, Trichy – 620 017.
5.	Continuously controlled electronic servo mains voltage stabilizer	Dr. K. Padmanabhan 21, Postal Colony, 4th Street, West Mambalam, Chennai – 600 033.

Sl. No.	Title of the Project	Innovator / Agency
6.	Fuel theft alert system	Shri M. Hariram Chander 20/11A, Gandhi Nagar Middle St., Ambalavanapuram, Vickramasingapuram, Tirunveli – 627 425.
7.*	Mechanical Porter	Ms. K. Masha Mazeem 928/2, V. Cross St., Timber Depot Road, Ranithottam, Nagercoil – 629 001 (T.N.)
8.	Multi angle power weeder	Shri P. R. Nadraj 3/95, Pattramangalam, Pudhupeerkadavu, Sathyamangalam, City : Bhavanisagar Erode – 638 4512 (T.N.)
9.*	Electric assisted hydraulic rickshaw	Shri Siddharth Shekhar E-49, Karni Nagar (Lalgarh), Bikaner – 334 001.
10.*	Coconut fibre as suture material	Shri P. Raghu Babu No. 16, Madras Christian College Staff Quarters, Tambaram East, Chennai – 600 059.
11.	Prototype development of low cost non-invasive glucometer	Shri Karthik Anand Plot no. 122/3, 5th Street, Kamraj Nagar, Thiruvanmiyur, Chennai
12.*	HEPCO beverage (a herbal and fruit beverage with medicinal & nutritional properties)	Shri K.V. Sudheer C/o Department of Home Science, College of Sciences, S.V. University, Tirupati – 517 502.

Sl. No.	Title of the Project	Innovator / Agency
13.	Health insoles/footwear	Shri James A.Syiemong, Ivory Cottage Mission Compound, Shillong -793 002.
14.*	Data accumulation of a player in live sports	Ms. Ashwini A. Chanappa Layout, 2nd Cross, "ANUASHWINI", Shimoga – 577 204.
15.*	Wireless voice assistant for the dumb	Ms. Dhanya Mayur, No. 45, LBS Nagar, Sawalanga Road, Shimoga – 577 204.
16.*	Cost effective cell phone controlled AC and Car lcok system	Shri M. Prakash 102/1, Central Revenue quarters, 15th Main Road, Anna Nagar West, Chennai – 600 040
17.*	Developing novel photo catalysts fir photo degradation on various dyes without pre-treatment	Dr.(Ms.) N. Padmavathy No. 7, Pandian Street – II, TVK Nagar, Pernambut, Vellore – 635 810.
18.	Character recognizer for physically impaired using MEMS based wireless system	Shri Arjun Shaw 188/1/1, Rishi Bankim Chandra Chatterjee Road, P.O. Dum Dum Kolkata – 700 028
19.*	Mobile control military operation in a defence vehicle as a lab model	Shri A. Sarvanan No. 19, Flat no. G1, GRC Green Park, James 2nd Street, Poonammalise, Chennai – 600 056.
20.*	Audio sensing assistance for deaf people	Ms. Dhanyashree S.V. "Sri Sthambhaja", Behind SBM, Near Police Chowki, Vinobanagar, Shimoga – 577 204 (Karnataka)

Sl. No.	Title of the Project	Innovator / Agency
21.*	Mobile phone detector in aircraft	Ms. Sapna V.A. D/o Shri Ashok V.A. Opp. K.P.T. Temple, Gandhi Bazar, Main Road, Shimoga – 577 202 (Karnataka)
22.*	Surveillance snake robot	Shri Sumanth Prabhu M.G. Manjugiri Nilaya, S.R.S. Layout, Analekoppa, Keladi Road, Sagar – 577 401(Karnataka)
23.*	Intuitive tele-controlled machine arm	Ms. Sharvari B. R. D/o Shri Ramesh, "Venkatesh Krupa", 6th Cross, 2nd Main, Rajendranagar, Shimoga – 577 201 (Karnataka)
24.*	Quick (1 hr) treatment of dyeing industries effluent and recycling treated waste water for dye house again	Shri K. K. Garg, Kota (Rajasthan)
25.	Low cost device for notifying the presence of water borne diseases(pathogen) in community drinking water	Smt. T. Kohila Ananthi L-291, Old no. 15, 12th Cross Street, Thiruvalluvar Nagar, Thiruvanmiyur Extn., Chennai – 600 041.
26.	Anti theft emergency device(ATED)	Shri Vipin Kumar Vill. : Kuralki, Post : Kenduki Tehsil- Deoband, District : Saharanpur (U.P.)
27.	Motion control of wheel chair by head rotation using MEMS accelerometer sensor	Shri T. Neelkanth Reddy 23-14-3, Sri Ramnagar, Rajamundry, East Godavary, (A.P.) – 533 105
28.	Mobile based belonging locator	Shri Mubashir Rasool Dar Qr. No. L25, Lecturers Quarters, NIT, Srinagar, Hazratbal, Srinagar – 190 006(J&K)

Sl. No.	Title of the Project	Innovator / Agency
29.*	Visbreaker for Crude Petroleum Oil	Shri Chetan Makharia 20 A Sura 3rd Lane, Bhagya Lakshmi Apartment, Beliaghata, CIT Road, Kolkata – 700 010 (West Bengal)
30.*	Development of Biobattery	Ms. Archna B. D-2, NTPC, TSTPS, PTS Deepshikha , Kaniha, Angul – 759 147, Orissa
31.*	A device to control fine dust in rice mills	Dr. T. K. Chandrasekhar, Professor, Mech. Engg. Dept., SSIR, Tumkur – 572 105.
32.*	Double Tank Flush Cistern	Shri Santhosh Kurian Kunnel House, Beeemanady, P.O. Kasargod Distt., Kerala – 671 314.
33.	Finger Gesture Based Automated Wheel Chair	Er. Roheed Mehmood Qadiri H.No. 123, New Colony, Nigeen Hazratbal, Srinagar, Jammu & Kashmir
34*.	3rd Invincible Eye – A home automation system using voice and face recognition	Shri Srinivas M.D., D-32-11, Adyar Avenue, IIT Chennai – 600 036, Tamil Nadu
35.	Handled Terminal for Indian Logistic System	Shri Viral Arvindhhai Sachde 298, 1st Floor, 4th Cross, 7th Block, 1st Phase, Koramangala, Bangalore – 560 095
36.	Emission Controlling Bio-Adsorbents for Automobiles	Ms. Suganya M @ Mahalakshmi J. Mullai Hostel, Anna University of Technology, Tiruchirapalli

TePP Phase-II

Sl. No.	Title of the Project	Innovator / Agency

Sl. No.	Title of the Project	Innovator / Agency
1.*	Development of process technology for production of photographic films	Shri Aman Aggarwal M/s Micro Photo Films, 13-A, Arya Nagar, Ambala Cantt. – 133 001 (Haryana)
2.*	Research and Development of a STATCOM (P2-STAT-n)	Shri Shwetank Jain S/o Shri V.P. Jain Room no. 3B, STEP/TBI, Indian Institute of Technology, Kharagpur – 721 302 (W.B.)
3.*	Banana fibre separator machine	Shri K. Murugan 6 G, Bryant Nagar, 8, Middle Street, Tuticorin – 628 008.
4.*	Tractor mounted pulveriser	Shri I. Pannerselvam 1/145-D, Kattuparamakudi, Paramakudi – 623 707.
5.	Single spring mounted suspension type extendable width cultivator (STF-Phase-II)	Shri Rajendra Kumawat S/o Late Shri B.L.Kumawat Tikky Walon Ka Mohalla, Purani Tonk, Tonk, Rajasthan – 304 001.

*Project Completed.

!Project fore-closed.

Summary:

Total Number of Projects Supported under TePP:

Phase I : 507 [DSIR : 412, TIFAC : 95] Phase II : 19 [DSIR : 18 , TIFAC : 1]

[DSIR**: 370** = C: 129, F: 10, On-going: 231 and **TIFAC**: **96** = C: 47, F : 7, On- going : 42]

C: Completed

F: Foreclosed

NB : May, 2008 onwards, TIFAC is not a partner in TePP Programme. TePP is now hereby a program of DSIR under Ministry of Science & Technology.]

*Project Completed.

! Project fore-closed.

Annexure 5.0 Highlighted Spin Offs

Department of Scientific & Industrial Research

Promoting Innovations in Individuals, Start-ups and MSMEs (PRISM)

LIST OF START-UPS / SPIN OFFS from TePP

Sl. No.	Name of the Start-ups	Innovator
1	M/s Light Logics Holography and Optics Pvt. Ltd., Thiruvananthapuram (DST-Lockheed Martin Corporation(USA)-Gold Medal)	Dr. P.T. Ajith Kumar
2	M/s Idea Forge Technology Pvt. Ltd., Mumbai	Shri Ankit Mehta
3	M/s Invention Labs, Chennai	Shri Ajit Narayanan
4	M/s DIVX Medical Equipments & Software Technologies C.T. (P) Ltd.,Thiruvananthapuram	Shri Babeesh
5	M/s GYATK RVCR Apparatus(P) Ltd., Kochi	Shri Das Ajee Kamath
6	M/s Azure Software Pvt. Ltd., Kolkata	Shri Kallol Mallick
7	M/s Dhama Apparels, Hyderabad (DST-Lockheed Martin Corporation(USA)-Gold Medal	Shri Kranthi Kumar Vistakula
8	M/s Jaya Sree Metals, Trivandrum	Dr. MSN Balasubramaniyan
9	M/s Brahma Machine Tools, Madurai.(Employment : 30 nos., Expected to achieve turnover of at least 50 crore in next 3 to 5 years.)	Shri N Vinayakapandi
10	M/s Glo-Tech Pvt. Ltd., Trichy	Shri R. Augustine
11	M/s MobME Wireless Solutions, Kochi	Shri Sanjay Vijayakumar
12	M/s P-2 Powwer Solutions, Bangalore	Shri Shwetank Jain
13	M/s Uniphore Software Systems Pvt. Ltd., Chennai	Shri Umesh Sachdev
14	M/s Micro Photo Films, Ambala Cantt. (Employment: 50 nos.)	Shri Aman Agarwal
15	M/s Carpet Weavers(India), Bhadohi	Smt. Charmaine Sharma
16	M/s Aneesh Tech, Kodungal(Karnataka)	Shri Govind Prasad Pidamale
17	M/s Wovven Technologies, Salem	Shri M. Baskar
18	M/s Ind-Tech Auto Tools, Coimbatore	Shri S. Selvaraj
19	M/s Pure Tech India, Trichy (Best START UP In ASIA Awards)	Shri Aravind A. Narayan

20	M/s MYMO Technologies, Bangalore	Shri Sondur Lakshmipatti
21	M/s Decimal Technologies, Vadodara	Shri Nicky D. Joshi
22	M/s Sago Pvt. Ltd., Perambadur (DST-Lockheed Martin Corporation(USA)- World First Water Pollution Free Starch/Sago Plant)	Shri Natarajan Rayar
23	M/s Prakash Industries, Ramnagar(Uttarakhand)	Shri S.R. Verma
24	M/s EnNatura Technology Ventures Pvt. Ltd., New Delhi	Shri S. Bhimania
25	M/s Adhitya Medical Systems, Trichy	Shri J. Karthikeyan
26	M/s Bharath Agro Products, Paramkudi Shri Paneerselvam	Shri Paneerselvam
27	M/s Polymerics Sensors Pvt. Ltd. , Mumbai	Prof. A.Q. Contractor
28	M/s Aurora Integrated Systems, Kanpur	Shri Nimish Sharma
29	M/s Excel Matrix Biological Devices Pvt. Ltd., Hyderabad	Dr. Aroop Kumar Dutta
30	M/s Uvinix Computing Solutions, Bangalore	Prof. Suthikshn Kumar
31	M/s Mindfarm Novatech Pvt. Ltd., Pune	Smt. Mrinmayee Bhushan
32	M/s Invoxel, New Delhi	Shri Sachidanand Swami
33	M/s Brizz TV, Bangalore	Shri Amrendra Sahu
(NABARD AWARD for Rural Innovation as the Best Technology Company)		
Sl. No.	**Name of the Start-ups**	**Innovator**
34	M/s Vishwakarma Industries, Tonk (Rajasthan)	Shri Rajendra Kumawat
35	M/s Accuster Technologies, Gurgaon	Shri Bhatnagar
36	M/s Cygnet, Trivandrum	Shri V.K. Shaji
37	M/s Auro Pharma, Puducherry	Smt. Vimla Devi
38	M/s BISWIRE, Chennai	Shri Eswaran
39	M/s Cybernoide Technologies Pvt. Ltd., Chennai	Shri Veer Babu
40	M/s VMW Parking, Chennai	Shri S. Venkataraman
41	M/s Greetech Aqua, Hyderabad	Shri S. Kumar
42	OOcoon Solutions, Vellore	Shri Rajaram Balaji
43	M/s Aeyas Tungten (Expected to reach turnover of 200 crore. Won DST-Lockheed Martin Award)	Shri Jeya Kannan
44	M/s Cardia Bio-medical Technologies Pvt. Ltd., Delhi	Shri Abhinav

Annexure 6.0 TUC Role and Responsibilities

Department of Scientific & Industrial Research
Technopreneur Promotion Programme (TePP)

1. Scouting of Proposal for TePP Grant:

TePP Phase I:

Category: Micro-technopreneurship (TS)
&
Category: TePP Project Fund (TPF)

The proposal should be examined from following points:

i. Whether the idea is novel.
ii. Whether the idea is based on known scientific principle. iii.
Whether the idea is techno-economically viable.
iv. Whether proposal merits consideration.

TePP Phase II:

*TePP Phase-II grant is applicable for TePP Phase-I graduates. **Lateral entry for Phase-II funding is not covered under the scheme. TUC should not forward any such application for TePP Phase-II grant.**

2. Evaluation of Proposal for TePP Grant:

Minimum **two domain experts** [*not from the same institutions*] should be consulted. In case, the expert comments are at variant/variance, in such cases, the opinion of third expert should be sought.

General Remarks:

i. The Experts are evaluating proposals without specific inputs from innovators. TUC should check the completeness of format submitted by the innovators before sending to expert for their views. The innovators should highlight the salient features of their projects in the specific columns of Expert Evaluation form, so that, Expert can comment on project merits.

ii. It has been observed that the **same set of experts** are being involved in the evaluation process for many TePP proposals being scouted by TUC irrespective of their domain knowledge. There is a need to consult **different set of experts and relevant domain/subject matter specialist** to make the system more perfect.

iii. It has been observed that the expert comments are very general in nature, which makes it difficult to process the case for TSC recommendations. [**For example**, Experts consulted are normally writing Good, OK, Reasonable and so on. No descriptive justifications are found in respective columns where experts input are needed.] In view of this, TUC are hereby requested not to forward such evaluated proposals. **Additionally**, the experts may also opine about the tune/quantum of financial support to the innovator, while making recommendations.

iv. TUC should note that TUC assessment form should be duly filled by the Coordinator(s) of respective TUCs. TUC Coordinator should not act as an expert. They may give their views in TUCs assessment/forwarding note about the merit of the proposals. TUC should write **a detailed justification on Innovative Content of the proposals** in TUC Assessment form.

v. Before forwarding the proposals, TUC should check **whether similar proposals have been supported under TePP earlier or not from DSIR website, Creative India** and so on. **With regard to novelty aspect**, TUC may consult literature of CSIR, NRDC, DST, DRDO and if possible should assist innovator in patent search. It has also come to the notice of TePP HQ that a number of technology supported are available with National laboratories at a very cheap rate.

vi. While forwarding TePP proposal, TUC should must ensure that the innovator has not submitted any other proposal/on-going proposals to their name. The TePP proposal on second occasion from same innovator may be considered, only if, the innovator has commercialized the know-how/technology supported by TePP on earlier account.

vii. While forwarding TePP applications, TUC should have following check-list:

(a.) Whether the application is duly signed by the innovator,
(b.) Whether Expert Evaluation Form is duly filled by innovator and
expert both with their signature(**in original**). TUC should send original signed document to TePP HQ. The photo-copy of the documents may be retained at TUC.
(c.) TUC should note that TUC assessment form should be duly filled by the Coordinator(s) of respective TUCs. TUC Coordinator should not act as an expert for any TePP proposals being forwarded by them for consideration under TePP.
(d.) While evaluating TePP proposals, TUC should vet the budget requirement of TePP proposals and should seek proper justification from innovators before forwarding to TePP HQ.

viii. Guidance for Innovators:

(a.) Innovators should send original documents wherever needed along with the proposals.
(b.) It has been observed that innovator are charging rentals for their residential buildings/rentals for their offices out of TePP funds. TUC may verify those details.

(c.) TePP fund is not meant for creating Office Infrastructure, Manpower on regular basis, creation of permanent /semi-permanent assets and so on. Innovators should be guided properly.

(d.) In case of existing products/technologies/systems, the innovators should clearly define the innovative merit/novelty of his/her proposals giving due justification.

3. Monitoring of TePP Projects:

Observations: It has been observed that TUC(s) are constituting Project Review Committee consisting of Expert Members from the host Institutions only. It has also been observed that same set of experts are members of PRCs for all type of TePP projects.

Suggestions: It is suggested that TUC should constitute project-specific PRC by identifying the relevant experts. One of the major role of PRC is to provide guidance to the innovator apart from routine progress-review such as activities/milestones achieved, project duration extension(if required), vetting of project financials and accordingly recommending next release, recommending project for fore-closure/short-closure.

The minimum number of external expert members for each TePP project PRC may be two apart from representatives of host institutions/TUC. However, PRC for proposals supported under Micro-technopreneurship category may have one external expert.

In case, PRC are not held at project site, TUC may organize visit to project site for on site inspection by PRC members.

4. Any other

i. TUC should organize quarterly review of all TePP proposals being scouted/monitored and report of such reviews should be sent to DSIR/TePP preferably within two weeks after such reviews.

ii. TUC should explore means for employing people for TePP work. While employing any person for TePP work, the host institution(s) should ensure that the nature of employment should be contractual/purely temporary and the person employed will have no right in future for claiming jobs in Government of India/DSIR whatsoever. The tenure of any employment will be co-terminus with TUC activities being undertaken by the host institutions. TUC should note that TePP is a PLAN Programme, which may not continue in next plan period [read as XII Plan: 2012 -
2017].

iii. Instances have come to notice where TUC are asking equity for forwarding TePP Phase-I application/insisting applicant to become incubatee at respective STEP/TBIs, where TUCs are in operation. It is suggested that such institutions should avoid such practices. TUC can come into an agreement with innovators, where TePP Phase-II support are being granted.

iv. It has been observed that some TUCs are performing quite well and some of them are languishing far behind/still to take off. It is suggested that TUC (non- performing) should interact with TUCs, who have made considerable progress in scouting and identification of innovators.

Evaluation: [HD]

TUC should note that the Evaluation Form in original signed by Experts should be sent along with TePP Proposals. TUC may retain a photo copy of the same.

TUC are hereby requested that they should not forward proposals along with expert comments where experts has not written any specific comments. [It has been noticed that experts are writing Good, OK, Reasonable and so on. This type of comments should be avoided while forwarding TePP proposals.

While evaluating TePP proposals, TUC should vet the budget requirement of TePP proposals and should seek proper justification from innovators before forwarding to TePP HQ.

ix. Innovators should send original documents wherever needed along with the proposlas.
x. It has been noticed that innovator are charging rentals for their residential buildings/rentals…..
xi. TePP fund is not meant for creating Office Infrastructure, Manpower on regular basis, creation of permanent /semi-permanent assets and so on..
xii. In case of existing products/technologies/systems, the innovators should clearly define the innovative merit/novelty of his/her proposals giving justification…
xiii. P.K