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INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED LOAN

IN THE AMOUNT OF US\$200 MILLION

TO THE

REPUBLIC OF INDIA

FOR THE

TECHNOLOGY CENTER SYSTEMS PROGRAM

April 2, 2014

India Country Unit  
South Asia Finance and Private Sector Development

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## CURRENCY EQUIVALENTS

(Exchange Rate Effective April 03, 2014)

Currency Unit  
US\$1.00 = 59.91 INR

FISCAL YEAR  
July 1 – June 30

## ABBREVIATIONS AND ACRONYMS

CAG	Comptroller and Auditor General of India
CNM	Cluster Network Managers
CoP	Community of Practice
CPS	Country Partnership Strategy
CQS	Consultant Qualification Selection
CTTC	Central Tool Room & Training Centre
DA	Designated Account
DC	Direct Contracting
DC-MSME	Development Commissioner, MSME
DEA	Department of Economic Affairs, Ministry of Finance
DGE&T	Directorate General of Employment & Training, Ministry of Labor
EMF	Environmental Management Framework
ERP	Enterprise Resource Planning
ERR	Economic Rate of Return
ESDM	Electronics System Design & Manufacturing
FFDC	Fragrance & Flavour Development Centre
GC	Governing Council
GFR	General Financial Rules
GoI	Government of India
IBRD	International Board for Reconstruction & Development
ICB	International Competitive Bidding
IDA	International Development Association
IFR	Interim Financial Reporting
IP	Implementation Partner
ITP	IT Platform
JWGs	Joint Working Groups
KPIs	Key Performance Indicators
LIB	Limited International Bidding
M&E	Monitoring and Evaluation

MoMSME	Ministry of Micro, Small & Medium Enterprise
MSME	Micro, Small, & Medium Enterprises
NCB	National Competitive Bidding
NPV	Net Present Value
NSDA	National Skill Development Agency
OP/BP	Operations Policy / Bank Procedure
ORAF	Operational Risk Assessment Framework
OEM	Original Equipment Manufacturer
PAC	Program Advisory Committee
PAD	Program Appraisal Document
PAO	Pay and Accounts Office, Government of India
PC	Program Coordinator
PD	Program Director
PDO	Program Development Objectives
PIU	Program Implementation Unit
PPC	Productivity Promotion Centers
PSC	Program Steering Committee
PSDC	Penang Skills Development Centre
QBS	Quality Based Selection
QCBS	Quality and Cost-Based Selection
R&D	Research and Development
RFD	Results Framework Document
SBD	Standard Bidding Document
SEPA	Procurement Plan Management System
SME	Small and Medium-sized Enterprises
SPVs	Special Purpose Vehicles
SSS	Single Source Selection
TC	Technology Center
TCSP	Technology Center Systems Program
TPs	Technology Partners
UNDB	United Nations Development Business

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## PAD DATA SHEET

*India*

*TECHNOLOGY CENTER SYSTEMS PROJECT (TCSP) (P145502)*

### PROJECT APPRAISAL DOCUMENT

*SOUTH ASIA*

*SASFP*

Report No.: PAD836

Basic Information			
Project ID P145502	EA Category B - Partial Assessment	Team Leaders Vincent Palmade and Manju Haththotuwa	
Lending Instrument Specific Investment Loan	Fragile and/or Capacity Constraints [ ]		
	Financial Intermediaries [ ]		
	Series of Projects [ ]		
Project Implementation Start Date 21-Jun-2013	Project Implementation End Date 30-Jun-2020		
Expected Effectiveness Date 20-Jun-2014	Expected Closing Date 30-Jun-2020		
Joint IFC No			
Sector Manager Henry K Bagazonzya	Sector Director Sujata Nitin Lamba	Country Director Onno Ruhl	Regional Vice President Philippe H. Le Houerou
Borrower: Dept. of Economic Affairs, Ministry of Finance, Government of India			
Responsible Agency: MSME Ministry			
Contact: Telephone No.: 9123062561	R.K. Rai	Title: Email: Rk.rai@nic.in	Director
Project Financing Data(in USD Million)			
<input checked="" type="checkbox"/> Loan	<input type="checkbox"/> Grant	<input type="checkbox"/> Guarantee	
<input type="checkbox"/> Credit	<input type="checkbox"/> IDA Grant	<input type="checkbox"/> Other	
Total Project Cost:	400.00	Total Bank Financing:	200.00
Financing Gap:	0.00		

<b>Financing Source</b>		<b>Amount</b>							
Borrower		200.00							
International Bank for Reconstruction and Development		200.00							
Total		400.00							
<b>Expected Disbursements (in USD Million)</b>									
Fiscal Year	2015	2016	2017	2018	2019	2020	0000	0000	0000
Annual	21.50	31.00	68.70	54.70	17.30	6.80	0.00	0.00	0.00
Cumulative	21.50	52.50	121.20	175.90	193.20	200.00	0.00	0.00	0.00
<b>Proposed Development Objective(s)</b>									
The Program's Development Objective (PDO) is to enhance the productivity of MSMEs by improving their access to technology and business advisory services as well as skilled workers through systems of financially sustainable Technology Centers (TCs).									
<b>Components</b>									
<b>Component Name</b>						<b>Cost (USD Millions)</b>			
Component 1: Technical assistance to the existing and new Technology Centers						34.00			
Component 2: Investments to upgrade existing and develop new Technology Centers						351.00			
Component 3: Technical assistance to the MSME Ministry for Project implementation and Monitoring and Evaluation						15.00			
<b>Institutional Data</b>									
<b>Sector Board</b>									
Competitive Industries Practice									
<b>Sectors / Climate Change</b>									
Sector (Maximum 5 and total % must equal 100)									
Major Sector		Sector		%	Adaptation Co-benefits %		Mitigation Co-benefits %		
Finance		SME Finance		50					
Industry and trade		Other industry		50					
Total				100					
<input checked="" type="checkbox"/> I certify that there is no Adaptation and Mitigation Climate Change Co-benefits information applicable to this project.									

<b>Themes</b>			
Theme (Maximum 5 and total % must equal 100)			
Major theme	Theme	%	
Financial and private sector development	Micro, Small and Medium Enterprise support	100	
Total		100	
<b>Compliance</b>			
<b>Policy</b>			
Does the project depart from the CAS in content or in other significant respects?	Yes [ ]	No [ X ]	
Does the project require any waivers of Bank policies?	Yes [ ]	No [ X ]	
Have these been approved by Bank management?	Yes [ ]	No [ ]	
Is approval for any policy waiver sought from the Board?	Yes [ ]	No [ ]	
Does the project meet the Regional criteria for readiness for implementation?	Yes [ X ]	No [ ]	
<b>Safeguard Policies Triggered by the Project</b>	<b>Yes</b>	<b>No</b>	
Environmental Assessment OP/BP 4.01	X		
Natural Habitats OP/BP 4.04		X	
Forests OP/BP 4.36		X	
Pest Management OP 4.09		X	
Physical Cultural Resources OP/BP 4.11	X		
Indigenous Peoples OP/BP 4.10	X		
Involuntary Resettlement OP/BP 4.12	X		
Safety of Dams OP/BP 4.37		X	
Projects on International Waterways OP/BP 7.50		X	
Projects in Disputed Areas OP/BP 7.60		X	
<b>Legal Covenants</b>			
<b>Name</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Implementation Units - I	X		
<b>Description of Covenant</b>			
Borrower to maintain: (i) a Program Steering Committee (PSC) for policy guidance and general oversight of the Project; and (ii) an Implementation Partner (IP) to assist the Small Dedicate Project Management Team with Project planning and implementation.			
<b>Name</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>



Implementation Units – II	X		Semi Annual
<b>Description of Covenant</b>			
Borrower to establish and maintain: (i) a Small Dedicated Project Management Team (SDPMT) to carry out the day-to-day implementation of Project activities; (ii) three joint working groups, covering tooling, ESDM, and fragrance and flavors sectors, to assist the PSC, the SDPMT and the IP to provide technical advice for the design of Project activities in their respective sectors and assess the impact			
<b>Name</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Implementation Unit - III	X		Quarterly
<b>Description of Covenant</b>			
Borrower to establish and maintain a Project advisory committee (PAC) with representatives from industries and academia, to advise the PSC on execution phases of the Project and the determination of strategic choices.			
<b>Name</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Project Documents	X		
<b>Description of Covenant</b>			
Borrower to implement the Project in accordance with the Project Implementation Manual (PIM) and the Anti-corruption Guidelines.			
<b>Name</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Technology Centers – Plan of Activities	X		
<b>Description of Covenant</b>			
Borrower to: (i) request the Technology Centers (TCs) to submit proposals for a plan of activities (for new or existing TCs) in accordance with the PIM; and (ii) screen those proposals and determine their eligibility for financing under the Project in accordance with the criteria set forth in the PIM.			
<b>Name</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Technology Centers – Undertakings	X		
<b>Description of Covenant</b>			
Borrower to enter into written undertakings with TCs whose proposals have been approved for financing, as per the terms and requirements set forth in the PIM, prior to the provision of any advances for the implementation of such approved activities; which undertakings shall include the TCs' required compliance with Safeguard Documents, acceptance of random visits and/or documentary inspections, an			
<b>Name</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Safeguard Documents	X		
<b>Description of Covenant</b>			
Borrower to carry out the Project in accordance with the EMF, the SMF and whenever required the TCs-specific ESMMPs and RAPs.			
<b>Name</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>

Screening of Activities	X		
<b>Description of Covenant</b>			
Borrower shall have: (i) screened the proposed activities as per the EMF and SMF; (ii) ensured the preparation of the respective ESMMP(s) and/or RAP(s), if require as per screening exercise; and (iii) publicly disclosed the foregoing documents in local language(s) at MoMSME/ODC and the respective TCs, thirty (30) days prior to the contract award.			
<b>Name</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Government Permits/Clearances and Compensation Payments (if any)	X		
<b>Description of Covenant</b>			
Borrower to ensure that: (i) all necessary governmental permit and clearances for the respective civil works have been obtained from competent authorities; (ii) pre-construction conditions have been met; and (iii) all resettlement assistance/compensation set forth in the RAP (if applicable), shall have been carried out/paid, prior to the taking of any action that would cause any displacement of...			
<b>Name</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Contractors' Safeguards Obligations	X		
<b>Description of Covenant</b>			
Borrower to include compliance with the Safeguard Documents as part of the contractors' obligations pursuant to the bidding documents.			
<b>Name</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Safeguard Monitoring	X		
<b>Description of Covenant</b>			
Borrower to maintain, or cause the TCs to maintain, monitoring and evaluation protocols and record keeping procedures to supervise and assess compliance with Safeguard Documents.			
<b>Name</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Ineligible expenditures – Items to be financed by the Borrower	X		
<b>Description of Covenant</b>			
Borrower to finance out of its own resources: (i) any land acquisition required for the Project; and (ii) any compensation, resettlement and rehabilitee payment (cash transfer) to displaced persons.			
<b>Conditions</b>			
<b>Source Of Fund</b>	<b>Name</b>	<b>Type</b>	
<b>Description of Condition</b>			
<b>Team Composition</b>			
<b>Bank Staff</b>			

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Samuel Thangaraj	Consultant	Social Development Specialist	SASDS
Junxue Chu	Senior Finance Officer	Senior Finance Officer	CTRLN
Michel M. V. Botzung	Principal Operations Officer	Principal Operations Officer	CSASB
Abduljabbar Hasan Al Qathab	Lead Procurement Specialist	Lead Procurement Specialist	SARPS
Vincent Palmade	Lead Economist	Team Lead	SASFP
Nalin Jena	Senior Education Specialist	Senior Education Specialist	SASED
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Aza A. Rashid	Program Assistant	Program Assistant	SASFP
Martin M. Serrano	Senior Counsel	Senior Counsel	LEGES
Neha Pravash Kumar Mishra	Senior Environmental Specialist	Environmental Specialist	SASDI
Shiny Jaison	Program Assistant	Program Assistant	SASFP
Roland Lomme	Senior Governance Specialist	Senior Governance Specialist	SASGP
Bharatha Manju S. Haththotuwa	Senior Private Sector Development Specialist	Senior Private Sector Development Specialist	SASFP
Tugba Gurcanlar	Trade Specialist	Trade Specialist	AFTFW
Naoto Kanehira	Strategy and Operations Officer	Strategy and Operations Officer	OPSRE
Thomas Kwasi Siaw Anang	Procurement Specialist	Procurement Specialist	SARPS
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**Locations**

<b>Country</b>	<b>First Administrative Division</b>	<b>Location</b>	<b>Planned</b>	<b>Actual</b>	<b>Comments</b>

# I. STRATEGIC CONTEXT

## A. Country and Sector Context

1. The proposed Program is about upgrading and expanding the network of Technology Centers (TCs) that have as their mission to improve the competitiveness of Micro, Small, and Medium Enterprises (MSMEs) in key manufacturing industries across India— with a strong emphasis on Low Income States. Technology Centers provide an integrated suite of services to MSMEs on a fee basis, ranging from technical and management advisory to technical training of workers. The Proposed Program will reinforce the technical capability of the Technology Centers as well as their governance, by further increasing the participation of the private sector in key decisions at both the national and local levels.

2. India is one of the world’s largest and most dynamic emerging markets with vast economic potential. The objective of the 12<sup>th</sup> Five-Year Plan (FY2013–17) is to return to Gross Domestic Product (GDP) growth rates in excess of 8 percent, with a strong emphasis placed on the manufacturing sector.

3. While India stands to benefit from an immense demographic dividend, with the largest youth population in the world (around 66 percent of the total population is under the age of 35), it has an overall employment rate of 4.7 percent and an overall labor force participation rate of 50.9 percent.<sup>1</sup> For the country to gain from this demographic dividend, increasing the skills of its youth are key priorities for the Government of India (GoI).

4. The manufacturing sector will have to play an important role in taking the Indian economy to a high growth trajectory. Manufacturing has long been recognized as an essential driver of economic development for most countries, as it has an important economic and employment multiplier effect. India’s manufacturing performance has not been encouraging, despite a strong potential. The share of manufacturing in India’s GDP has stagnated at around 15 percent, compared to more than 30 percent (and growing) in other Asian countries. India’s manufacturing also has problems, such as low value addition, low productivity, and less-than-desirable up scaling. Interestingly, there also exist world-class production units that started small. Recognizing its potential, the Government of India has set the objective of “enhancing the share of manufacturing in GDP from its current level of 15 to 25 percent within a decade and creating 100 million additional jobs” in the recently announced National Manufacturing Policy 2011.

5. The main constraints to the growth and productivity/competitiveness of India’s manufacturing are well known and include: difficulties accessing markets (including within

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<sup>1</sup> According to the Report on the Third-Annual Employment & Unemployment Survey (2012 – 2013) of the Ministry of Labor, Government of India.

India), difficulties accessing finance (especially for MSMEs), infrastructure deficiencies, disincentives for MSMEs to grow, and difficulties for MSMEs to access technology and skills.

6. Against this backdrop, this proposed National Program is aiming to develop the technological and skill base of MSMEs in selected manufacturing industries, via upgraded and expanded specialized Technology Centers (currently called Tool Rooms or TR and Technology Development Centers) and through public funding. The Technology Centers will support industry clusters across manufacturing value chains, both upstream (tooling industry) and downstream. These downstream industries include those exposed to global competition close to the technology frontier, such as the automotive and electronics sectors, as well as industries evolving through indigenous innovations, such as Fragrance and Flavor.

7. In upstream industries, the tooling industry consists of developing and manufacturing dies, molds, and casts, as well as testing and prototyping. As such, it serves as the interface between product design and product manufacturing. The right tools help increase throughputs, reduce material waste, improve product quality, and thus improve competitiveness. The importance of the tooling industry increases with accelerating technological developments, product sophistication, innovation, customization and decreasing time to market. Because it sits in between design and production and is highly specialized, tooling is a local industry (more than 60 percent of tools in the world are locally produced and consumed – including in India) dominated by SMEs (more than 80 percent of firms in India, Europe, US and Japan).

8. As in other countries, the private tooling industry in India has grown hand in hand with the manufacturing industry. The turnover of the Indian tooling industry is approximately US\$ 3 billion, with more than a thousand firms employing over 120,000 workers according to the 2011 Tool & Gauge Manufacturers Association of India (TAGMA) report. There is thus today no longer a market failure (in the production of tools by the private sector in India) justifying public investment in the production of tools. The constraints to the growth and competitiveness of the Indian tooling industry mirror the ones affecting manufacturing as a whole, as articulated above. The scarcity of skilled workers and problems related to their retention, as well as the lack of access to a high-quality design and prototyping facility, has hurt growth. More specifically, the 2011 TAGMA report cites on page 17 the following main weaknesses for the Indian tooling industry, as reported by 523 of the main purchasers of tools (automotive, electronics, plastic, and general engineering industries): inadequate capacity to meet growing domestic demand, lacking capability for high-precision tools manufacturing, limited try-out facility, scarcity of skilled people, conventional and secondhand machines being used, lacking consistency and poor financial condition, and unavailability of funds to invest in infrastructure and try out facilities.

9. In downstream industries there is also a shortage of skilled labor and limited access to advanced technologies. The main downstream industries include automotive, electronics, and Fragrance and Flavor. These industries include large numbers of MSMEs, often working as part of supplier networks of larger enterprises and subject to increased international competition.

10. The automotive industry is the most mature and globally competitive of India's manufacturing sectors, as the country is already a major exporter of auto parts. The challenge going forward will be to ensure that the automotive components industry develops design and

system integration capabilities as well as keeps in touch with a rapidly changing technological landscape (e.g. electrical power, 3D printing and 3D tunneling).

11. In comparison, the electronics industry is much less developed but faces very high and fast growing levels of domestic demand, which is largely met by imports today. The Government has recently passed the National Policy on Electronics 2012 which entails in particular the development of electronics parks as Special Purpose Vehicles (SPVs). One of the main challenges will be to help the industry adopt technological standards as well as provide skilled manpower, local testing and calibration facilities, etc.

12. The Fragrance and Flavor industry in India is still largely traditional and has great potential thanks to India's diverse natural climate, ideal for a vast variety of flora. There is a need for the development and commercialization of new varieties through patenting, extension services, and certification of processing. With the support of the Technology Center in Kannauj (UP), such programs were successfully carried out in the case of mint oil, where India has emerged as a world leader in exports.

13. Global experience shows that a workforce with higher schooling and skill levels leads to higher productivity and personal income. A 2011 study showed that students who attended three-year vocational training courses at the Industrial Training Institute (ITI) earned 25 percent more than two-year course students, who earned 14 percent more than did one-year course students.<sup>2</sup> These results confirmed a 2007 study showing that the returns on vocational training in India have been found to be 8 percent, almost equivalent to the 8.4 percent related to an additional year of education. The same study found that the incidence of vocational training in manufacturing is lower in India (7 percent) than in Pakistan (10 percent) and Bangladesh (14 percent). The proportion of formal in-service training in manufacturing firms is also lower in India (16 percent) than in Bangladesh (23 percent), Malaysia (35 percent), and China (90 percent). Increased educational attainment by one year is associated with 5.8 percent higher firm-level productivity in India.<sup>3</sup> A recent study based on a randomized sampling technique, has shown that advisory services increases the productivity of firms in India by 17 percent through improved quality and efficiency, and faster scaling in the longer run

14. India has a labor force of about 470 million, of which less than 10 percent has received any kind of skills training, either through formal or informal means<sup>4</sup>. About 13 million young people enter the labor force annually. Despite the huge expansion of skills training provision during the 11<sup>th</sup> Five-Year Plan, the country's skills development system requires massive up scaling, with the capacity to provide some kind of work-related skills to about 4 million people. This gap between skills demand and supply could become even wider in the years to come, since the 12<sup>th</sup> Five-Year Plan (2012-17) aims to produce 50 million additional non-farm jobs. In its 11<sup>th</sup> and 12<sup>th</sup> Five-Year Plans, India recognized that skills development is critical to achieving faster, sustainable, and inclusive growth, on the one hand, and to providing decent employment opportunities to the growing young population, on the other.

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<sup>2</sup> Vocational Training in the Private Sector (Goyal 2011).

<sup>3</sup> The Knowledge Economy and Education and Training in South Asia (World Bank 2007).

<sup>4</sup> 11<sup>th</sup> and 12<sup>th</sup> Five-Year Plans

15. The Plan clearly emphasizes: doubling the skill training capacity and significantly enhancing quality through innovative approaches, public-private partnerships, expanding outreach with equity, systemic reforms, strengthening the institutional framework, scaling up the programs that have worked, creating more choices for the youth, and generating awareness among the people at large. The Tool Rooms (now called Technology Centers) have been providing practical machine based and hands-on vocational training targeted at MSMEs and youth in selected manufacturing industries and clusters. The proposed Program, in consonance with the objectives of the 12th Five-Year Plan, will not only increase the training capacity through the establishment of new/better Technology Centers but will also help improve the quality of the overall vocational training system in India, by contributing to the improvement of curricula and capacity building. In addition to skill development, a significant level of revenues (estimated 20 percent to 40 percent - varying across TCs) comes from design and production support to MSMEs.

16. Public support through the proposed Program for the development of the technological and skill base of MSMEs and youth can thus be justified because of: (i) the high expected economic and social returns (see the Economic Analysis in Annex 5) together with the need to have an adequate provision of technology and skills; (ii) the public good aspect of government support that provides firms and workers with access to technology and skills is illustrated by the fact that one of the main reasons cited by firms for not providing training is their concern that the trained workers will be hired elsewhere;<sup>5</sup> and (iii) the coordination failure associated with the sharing of expensive equipment by MSMEs, which is also present in developed countries that are also providing public support to Technology Centers/common shared facilities (see Annex 6 on the lessons learned from international good practices).

## **B. Institutional Context**

17. The MSME Ministry, through the Office of the Development Commissioner, operates eighteen Technology Centers (hereafter referred to as TCs): ten for the tooling industry and eight for the ESDM (electronics system design and manufacturing), glass, footwear, and Fragrance and Flavor industries etc. (the last two being particularly important for Low-Income States). Half of these eighteen TCs are located in Low Income States (Uttar Pradesh, Odisha, Jharkhand, Assam and Uttarakhand) – see the list of the 18 existing TCs in the box below.

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<sup>5</sup>Batra and Stone, 2004

### Box 1: Existing Technology Centers of the Office of the Development Commissioner, MoMSME

1. Central Tool Room & Training Centre (CTTC), Bhubaneswar (Odisha)
2. Indo Danish Tool Room (IDTR), Jamshedpur (Jharkhand)
3. Central Tool Room & Training Centre (CTTC), Kolkata (West Bengal)
4. Tool Room & Training Centre (TRTC), Guwahati (Assam)
5. Indo German Tool Room (IGTR), Aurangabad (Maharashtra)
6. Indo German Tool Room (IGTR), Indore (Madhya Pradesh)
7. Indo German Tool Room (IGTR), Ahmedabad (Gujarat)
8. Central Tool Room (CTR), Ludhiana (Punjab)
9. Central Institute of Hand Tools (CIHT), Jalandhar (Punjab)
10. Central Institute of Tool Design (CITD), Hyderabad, (Andhra Pradesh)
11. Institute for Design of Electrical Measuring Instruments (IDEMI), Mumbai, (Maharashtra)
12. Electronics Service & Training Centre (ESTC), Ramnagar (Uttarakhand)
13. Process and Product Development Centre (PPDC), Agra (Uttar Pradesh)
14. Process cum Product Development Centre (PPDC), Meerut (Uttar Pradesh)
15. Central Footwear Training Institute (CFTI), Agra (Uttar Pradesh)
16. Central Footwear Training Institute (CFTI), Chennai (Tamil Nadu)
17. Fragrance & Flavour Development Centre (FFDC), Kannauj (Uttar Pradesh)
18. Centre for Development of Glass Industries (CDGI), Firozabad (Uttar Pradesh)

18. The TCs were set up between 1967 and 1999 as autonomous societies through collaborations with German and Danish government agencies as well as with technical assistance from (in two cases) the United Nations Industrial Development Organization (UNIDO). The TC's primary focus is on improving access to advanced technologies and providing technical advisory support for entrepreneurs and workers (by exposing and providing them access to state of the art technology), and offering opportunities for hands-on technical skill development to the youth at varying levels.

19. The TCs of the MSME Ministry have been evaluated several times over the last two years. The following strengths and weaknesses have been noted:

a. *Strengths.* The provision of well received hands-on vocational training programs, with a placement rate of over 95 percent, has been the main achievement of the existing 18 TCs. The TCs which have been able to generate revenues from these trainings in excess of their operational costs. This activity has grown rapidly, from 40,000 trainees in 2008 to more than 77,000 in 2012, and now accounts for more than 70 percent of the total revenues of TCs. Other notable accomplishments and strengths include:

- The continued competitiveness of the TC in Mumbai which has managed to keep ahead of private sector laboratories with respect to calibration and testing



- The important role played by the TC in Kannauj (UP) with respect to the development of the mint oil industry
- Strong financial incentives for executives of TCs to perform, which contributed to the financial turnaround of TCs over the last few years
- Local Governing Councils with private sector representatives
- Central Institute of Hand Tools Jalandhar responsible for bringing technology for a hand tool cluster at Jalandhar

b. *Weaknesses.* In some cases, TCs have fallen behind from a technology advancement perspective vis-à-vis the Indian private sector. Moreover, equipment utilization and revenue growth from access to technologies have both been modest, compared to training activities. Today most TCs lack high-end specialization and linkages with academia, local industries, and other stakeholders. Evaluation reports have also noted Key Performance Indicators (KPIs) overtly focused on financial targets and not on the impact these enabling institutions are having on the MSMEs they serve (which can be substantial). Although some TCs have been engaging in the commercial production of tools, thereby competing with private sector tool rooms, it should be noted that the volume of such production has been relatively small (representing less than 3 percent of total tool production in India) and that no complaints of unfair competition or of crowding out the private sector were reported during program preparation. In fact, the main private sector associations have expressed strong support and high expectations for the Program. The Program will increase the capacity and incentives of TCs to support private sector actors (as opposed to competing with them) and will consult regularly with the private sector to ensure it is not being crowded-out.

20. In addition to building on these strengths and addressing these weaknesses, the proposed Program will seek to develop synergies (and avoid duplications) with a number of related public/private sector institutions and schemes in three areas:

a. The Program seeks to establish 15 new TCs and upgrade technological capabilities of the existing 18 TCs and develop linkages with Indian and international research institutes and leading manufacturers. The Program will connect leading practices that will contribute to advanced technology, knowledge, and innovation that can be transferred to MSMEs served by each TC.

b. Second, and building on the main strength of the current TCs, the Program will complement and reinforce hundreds of public and private providers of vocational training (e.g., the ITIs, the Polytechnics, the ATIs, and Nettur Technical Training Foundation (NTTF)), helping them to improve their curricula and training their trainers by placing more emphasis on learning and problem-solving skills, and being more practical and adapted to local conditions and needs. To that end, the proposed Program will develop linkages between the TCs and the Trainer Institutes being set up by other ministries (e.g., Ministry of Labor) as well as with the Sectoral Skill Councils being established by the National Skill Development Council (NSDC) and the newly created National Skill Development Agency (NSDA). The development of such synergies and linkages will also

be supported by existing World Bank programs aimed at improving vocational training in India.

c. Third, the Program will leverage and complement other programs supporting MSMEs and manufacturing clusters being implemented by various organizations in the public and private sectors.

### **C. Higher-Level Objectives to which the Program Contributes**

21. The proposed Program is in line with the overarching objective of the World Bank Group's Country Partnership Strategy (CPS) for the period FY2013–17 of supporting poverty reduction and shared prosperity in India, as well as with the vision for development outlined in the country's 12th Five-Year Plan (FY2013–17), which calls for "faster, sustainable, and more inclusive growth" focusing on poverty reduction, group equality, regional balance, empowerment, environmental management, and employment. The CPS aims to contribute to three main engagement areas: integration, transformation, and inclusion. The Program includes interventions that aim to strengthen market mechanisms, including the development of a vibrant manufacturing sector and the promotion of human development. It will directly contribute to the CPS outcome 1.3 (improved demand-driven skills for productive employment), and indirectly contribute to outcome 1.4 (enhanced private investments, including in Less-Developed States).

22. Furthermore, the proposed Program fulfills the GoI's request that World Bank support be given to programs that have a systemic or transformational impact, that help innovate and pilot new approaches, and those that introduce innovative financing instruments and leverage resources.

23. The Program will help MSMEs in key industries become more productive by acquiring improved technology and employing better-skilled workers. This will be done directly through the services provided to them by the TCs, as well as indirectly through their linkages with larger firms (e.g., as part of the supplier network of original equipment manufacturers - OEMs), which will have access to the services of the TCs on the condition that it benefits their suppliers. In Less-Developed States, the value provided by the TCs will consist in providing better employment opportunities (including in other, more advanced States) through training, as well as by providing basic technological and managerial support to the local MSMEs.

24. Integrated nature of the proposal. Each TC will offer a range of integrated services designed to upgrade both the technological and core business capabilities of client SMEs. As the Bloom and Van Reenen work has shown, core leadership and management capabilities must be world-class if these businesses are to compete globally and if they are to make effective and productive use of new production technologies. Thus, TCs will address both the technological and broader management capabilities together. The Centers will provide a holistic range of advisory and brokering services that will help the client work through the implications of new technology for the way business is structured and managed, including how it affects their products and service mix, and the implications of the technology for the overall strategy of the business. The Program will enable clients to access modern Enterprise Resource Planning (ERP) tools so they can properly manage their operations and their new technology. The Centers will

bring groups of clients together to allow them to learn from, and benchmark against, each other as they implement changes driven by the new technology. This group learning approach (also enabled by the IT Platform) is both powerful and efficient. Where sectorally relevant, TCs will work with the value chains of vertically integrated industries like the automotive sector, linking with the Prime Contractors to drive change and develop new capabilities throughout the supplier networks.

25. Over time, TCs can expect to help develop a much larger number of Indian SMEs that are not only efficiently run, but that have both the internal competencies and desire to move into higher-value-added activity. TCs will be well placed to broker joint Research and Development (R&D) market development activity, as this cohort starts developing new products and services. The Cluster Network Managers (CNM) will also drive joint activity to explore new markets, share infrastructure and tackle mutual blockages such as infrastructure or regulations.

26. National Systems of TCs. The TCs will not operate as isolated entities but will be networked with each other along industry/technology lines. This will enable several Centers to work jointly with the supply chains of large Prime Contractors in vertically integrated industries such as automotives, whose operations are not contained in one state. It will also enable good practice and learning to flow through the network, but will also provide a degree of healthy internal competition between Centers.

27. Selection method for the new TCs. Following a call for proposals, most States have already offered specific lots of land for new TCs in excess of the capacity of the proposed Program. The final selection of the sites for the new TCs will be done during the first six months of the Program and will be based on the priority industries, as outlined in the National Manufacturing Policy. The choice of States will depend on whether or not TCs are already present in the States, the need for expansion to service more enterprises and develop training facilities within the same State, the choice of location and clusters will depend on whether or not there is strong demand from the private sector, as well as growth potential. The quality of the business plan and the strength of the TC's governance structure will also be important criteria. If and when proven successful, there will be opportunities to further expand the TCs' systems, beyond the fifteen new ones.

## **II. PROGRAM DEVELOPMENT OBJECTIVES**

### **A. PDO**

28. The Program's Development Objective (PDO) is to enhance the productivity of MSMEs by improving their access to technology and business advisory services as well as skilled workers through systems of financially sustainable Technology Centers (TCs).

## **B. Program Beneficiaries**

29. The Program beneficiaries are Indian MSMEs and larger firms, as well as students and workers. Manufacturing MSMEs in India are defined as firms with less than US\$1.6 million in paid-up capital.

## **C. PDO-Level Results Indicators**

30. The PDO-level results indicators are as follows:

- a. Number of enterprises paying for the services of the TCs
- b. Number of long-term trainees employed by industry, including MSMEs, within six months after being trained at TCs
- c. Profit of TCs before depreciation and land

31. Intermediate results indicators are designed to monitor critical progress toward achievement of the PDO with primary emphasis on market-tested outputs of the TCs and the partners' activities. Examples of such indicators include capacity utilization of TCs' machines; number of technology strategies/roadmaps developed by Technology Partners and endorsed by industry associations; and value of TCs' businesses generated with support of Cluster Managers.

32. The Results Framework (together with the Results Chain) in Annex 1 tabulates the results indicators at the PDO level and intermediate outcome level together with the baselines and targets over the life of the Program.

33. The Program will conduct an Impact Evaluation with the objective of determining if the TCs have materially improved the productivity, competitiveness, profits, revenues, and employment of the MSMEs it has been serving. The Impact Evaluation will also assess whether there are any signs of significant private sector crowding by surveying the TCs' main potential private sector competitors. To that end, an independent firm will be procured during the first year of the Program to establish the methodology and baseline, to be repeated in time for the Mid-Term Review and the final year of the Program. This will provide the evidence for making any necessary mid-course corrections.

# **III. PROGRAM DESCRIPTION**

## **A. Program Components**

34. The Program cost is US\$400 million, to be financed with an IBRD flexible Loan of US\$200 million and US\$200 million from the Government of India. State Governments will contribute land for the new TCs. The private sector is also expected to contribute financing in at least one pilot SPV. The proposed national Program will finance the following activities grouped into the following three components (see Annex 2 for a more detailed description):

**Component 1: Technical assistance to the existing and new Technology Centers (US\$34 million)**

35. The TCs and their private sector clients will benefit, for the duration of the Program, from the technical assistance of world class firms that will provide superior technology related inputs with respect to the technological and business needs. These two streams of technical assistance will run in parallel and inform each other under the guidance of Industry Specific Joint Working Groups comprising the main industry leaders and representatives.

36. Technology Partners (TPs) for each System of TCs will specialize in specific industries or technologies (US\$14 million). The TPs will help the TCs achieve the capacity to support MSMEs with respect to: (i) being exposed to the potential impact of new technologies; (ii) learning how to use new technologies and equipment; (iii) providing access to cutting-edge equipment; (iv) developing and testing new products; and (v) patenting.

37. Cluster Network Managers (CNMs) for each System (or sub-System) of TCs specialized in specific industries and clusters (US\$12 million). The CNMs will help TCs develop their capacity to provide advisory/training services in managerial skills (the same way that TPs will help TCs develop their capacity to provide advisory/training services in technological skills). The CNMs will also help TCs develop linkages across their ecosystem.

38. IT Platform (ITP) Service Provider (US\$8 million). The Program will support a cloud-based IT platform, including a National Portal (NP) for MSMEs, through which users will be able to access (virtually) most of the technical information and training services provided by the TCs, as well as many other services. This platform will extend the reach of the Program to its remote beneficiaries well beyond the TCs' physical location through e-learning and simulation, at low marginal cost. Users in remote locations could benefit from three channels; web access to digital content from the portal, or e-learning private providers operating locally willing to offer these services or TC affiliates in some local areas offering limited e-services enabled by the ITP. The business and governance model for the ITP will be one where the functionality it would have and service levels to which it will adhere will be determined by the Program Implementation Unit (PIU), in consultation with its user community. The ITP services will be fee based ("pay per use") and initially free or subsidized for workers or students and MSMEs. Gradually however, this will be increased so as to be sustainable beyond program funding. The ITP service provider will competitively procure and market test every 5 years. The intellectual property associated with the ITP will be vested with the Government of India.

**Component 2: Investments to develop new and upgrade existing Technology Centers (US\$351 million)**

39. The Program will finance the development of 15 new TCs and upgrade the 18 existing TCs under the responsibility of the MSME Ministry. These investments will be informed by the TPs and CNMs discussed under Component 1 above, as well as by the Implementation Partner that has been competitively hired (see Component 3 below). The development of new TCs will be phased over time. The construction should start in the second year and be completed by the fourth year of program implementation.

40. Buildings and other infrastructure (US\$70 million). The physical facilities of the TCs will be upgraded and developed with the following objectives in mind:

- a. World-class with respect to facilitating the provision of their services
- b. Eco-friendly, to minimize their environmental impact
- c. Economical, to reduce costs
- d. Flexible with respect to usage and expansion/contraction

41. Equipment and Software (US\$131 million). The equipment required to upgrade the existing TCs and develop the new ones will be purchased following the advice of the Technical Partners (TP) and Cluster Managers (CM).

42. Operating costs of new Technology Centers (US\$150 million). The Government of India (including through TCs and the MoMSME) will finance 100% of the operating costs of the new Technology Centers to bring them to full operationalization expected within four years of their launch. This includes contingency of 10 percent of the total Program cost.

**Component 3: Technical assistance to the MSME Ministry for Program implementation and Monitoring and Evaluation (US\$15 million)**

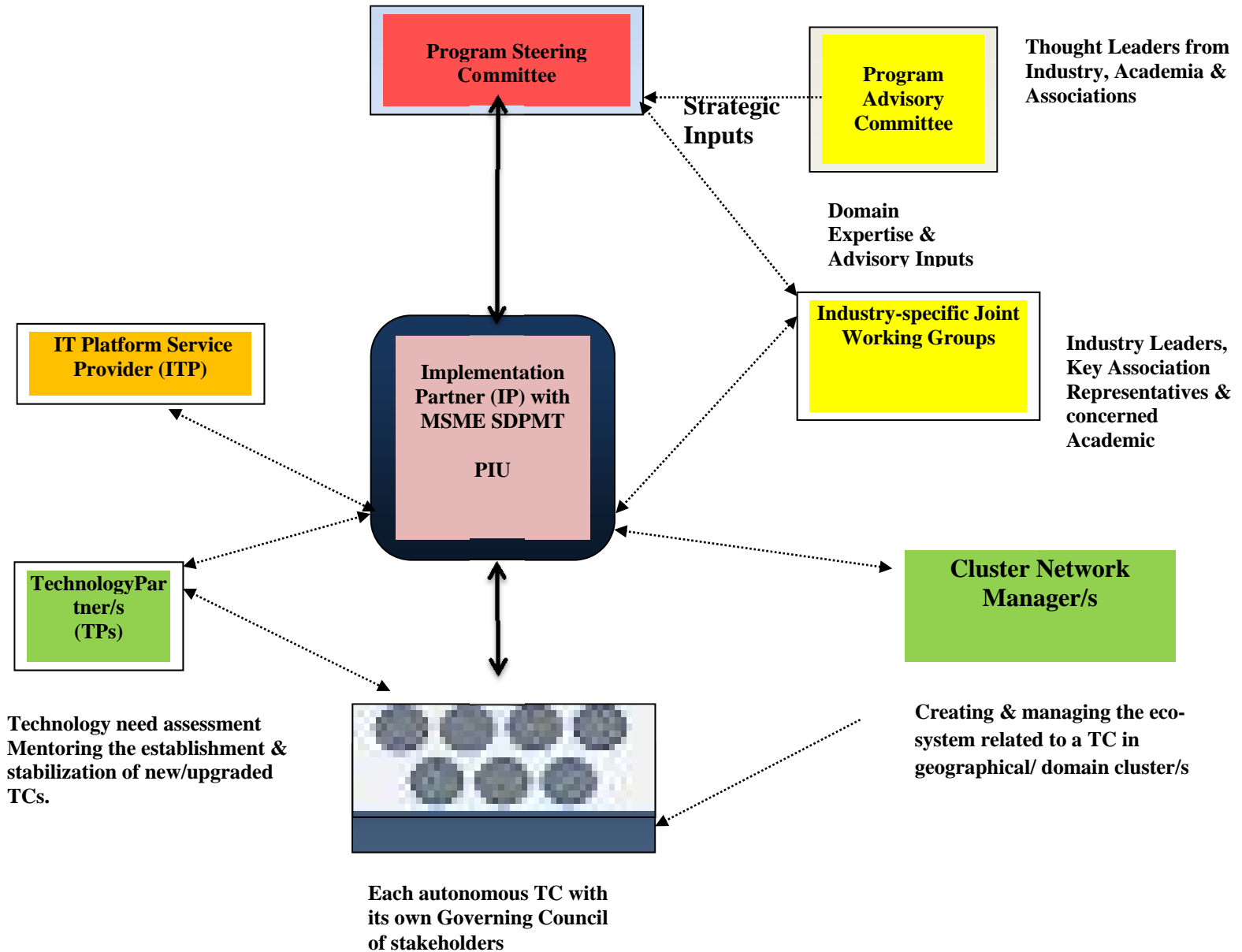
43. Implementation Partner (US\$8 million). The Program will be implemented with the support of Ernst & Young, with RITES and MTC (Manufacturing Technology Consultant) as sub-consultants, the latter being a leading company in the field of Technology Centers from the United Kingdom.

44. Small, dedicated program management team (US\$2 million). This team will act as the interface between the Implementation Partner and the Program Coordinator of the Office of DC, MSME.

45. Other technical assistance to the Office of DC, MSME, and the MSME Ministry (US\$5 million). This will include support to carry out in-depth impact evaluation studies and to implement the environmental and social activities as per the Environmental and Social Management Frameworks, capacity building, and communication strategy developed during the preparation of the Program.

46. The Monitoring and Evaluation (M&E) system will include, in particular, independent surveys of customers and stakeholders (including potential private competitors to the TCs) to assess the transformative impact of the program, as well as to ensure there is no significant crowding-out of the private sector. Such surveys will be designed and launched during the first year of program implementation.

**Figure 1: Technology Centre Systems Program: Governance Framework & Eco System**



**Table 1: Program Cost and Financing (US\$ Millions)**

Program Components	Program cost	World Bank Financing	GoI Financing	% of World Bank Financing
1. Technical assistance to TCs				
1.1. Technology Partners	14	11.2	2.8	80
1.2. Cluster Network Managers	12	9.6	2.4	80
1.3. IT Platform Service Provider	8	6.4	1.6	80
2. Investments to upgrade existing/develop new TCs				
2.1 Buildings	70	56	14	80
2.2 Capital Investments	131	104.8	26.2	80
2.3 Operating costs of new TCs and contingencies	150	0	150	0
3. TA to DC/MSME Ministry-				
3.1 Implementation Partner	8	6.4	1.6	80
3.2 SDPMT at PIU	2	1.6	0.4	80
3.3 Other TA	5	4.0	1.0	80
<b>Total Costs</b>	<b>400</b>	<b>200</b>	<b>200</b>	<b>50</b>

**Table 2: Program Disbursement Table (US\$ Millions)**

Program Disbursement Table (US\$ Millions)								
Components	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Assumptions
<b>1. Technical assistance to TCs</b>	<b>34</b>	<b>3.5</b>	<b>7.6</b>	<b>7.3</b>	<b>6.8</b>	<b>5.0</b>	<b>4.0</b>	Component Total
1.1. Technology Partners	14	1.5	3.0	3.5	3.0	2.0	1.0	High priority item for program. IP to ensure Year 1 procurement of TPs on ICB & disburse 10% mobilization Fees. TPs paid by Program funds reduce over time.
1.2. Cluster Network Managers	12	1.2	2.2	2.2	2.2	2.2	2.2	As above for CMs except the fees over time remain even.
1.3. IT Platform Service Provider	8	0.8	2.4	1.6	1.6	0.8	0.8	Design of ITP in first half year 1. ICB for PaaS /SaaS service provider(s) second half Year 1. 80% of cost assumed for Service Provider(s), equally spread over Yrs. 2-6. 20% for Capex for local HW and SW licenses
<b>2. Investments to upgrade existing and develop new TCs</b>	<b>351</b>	<b>21.5</b>	<b>38.5</b>	<b>96</b>	<b>99</b>	<b>54</b>	<b>42</b>	Component Total
2.1 Buildings	70	7.0	14.0	28.0	21.0	0.0	0.0	Direct Contract; 10% Mobilization disb. possible in yr 1. 20%,40%, 30% in subsequent yrs for classic "S" curve of expense.
2.2 Capital Investments	131	14.5	14.5	48.0	38.0	14.0	2.0	\$25mil; in existing TCs within first 2years. Balance in Years 3,4 & 5.
2.3 Operating costs of new TCS	150	0.0	10.0	20.0	40.0	40.0	40.0	Recruitment of key personnel to be completed during construction period
<b>3. Technical assistance to ODC, MSME Ministry</b>	<b>15</b>	<b>1.9</b>	<b>2.6</b>	<b>2.6</b>	<b>2.6</b>	<b>2.6</b>	<b>2.6</b>	Component Total
3.1 Implementation Support Partner	8	1.5	1.3	1.3	1.3	1.3	1.3	Year 1 includes Retro Expenses.
3.2 SDPMT at PIU	2	0.4	0.3	0.3	0.3	0.3	0.3	200K Retro expenses in Year 1 & thereafter equally spread.
3.3 Other TA	5	0.0	1.0	1.0	1.0	1.0	1.0	Year 2 onwards equally. But total spent by Year 3 is a possibility.
<b>Total Financing Required</b>	<b>400</b>	<b>26.9</b>	<b>48.7</b>	<b>105.9</b>	<b>108.4</b>	<b>61.6</b>	<b>48.6</b>	
<b>Cumulative Disbursement</b>		<b>26.9</b>	<b>75.5</b>	<b>181.4</b>	<b>289.8</b>	<b>351.4</b>	<b>400.0</b>	



## **B. Lessons Learned and Reflected in the Program Design**

47. The proposed national Program is based on a number of design principles and features aimed at building on the strengths and overcoming the constraints of the existing MSME TC program. It is informed by international good practices (see Annex 6 for a discussion of these international good practices) and also seeks to develop synergies with the other related public/private institutions and schemes.
48. The design principles and features of the proposed Program are:
- a. Technology Centers to achieve technological and training excellence for transformational impact – The TC, with the support of world-class Technology Partners (TPs, discussed in more detail below), will need to reach and keep in touch with the global technological frontier and rely on world-class education skill development techniques and curricula. The transformative impact of TCs will be assessed using regular independent surveys of beneficiaries.
  - b. Technology Centers to be demand-driven – All clients of the Technology Centers will need to pay for a significant portion of the cost of the services received (some beneficiaries will benefit from support provided by other programs). The price will vary depending on the nature of the services and the beneficiaries.
  - c. No crowding-out of the private sector –The Technology Centers will support (rather than compete with) private providers of technology and skills. Representatives of the private sector (including representatives of private providers of technology and skills) will sit on the Governing Councils or Boards (in the case of at least one TC proposed as an SPV) of the autonomous TCs. This will be further monitored through regular independent surveys of potential private sector competitors to the TCs.
  - d. Good governance – Each autonomous Technology Center will be governed by a Governing Council representing key stakeholders (especially private sector) or, in the case of an SPV, by a Board (the latter to be developed and tested first on a pilot basis).
  - e. Linked to ecosystem – Each Technology Center will be supported by an internationally and competitively recruited CNM ensuring that it keeps in touch with the needs of the business and student communities and that it contributes to or benefits from the ecosystem in which it operates (discussed in more detail below).
  - f. National relevance – the Program will be governed by a Program Steering Committee (PSC) representing key stakeholders to ensure that the Program keeps on track in fulfilling its main objectives and contributes to or benefits from other related national programs and initiatives.
  - g. Effective implementation – the design and implementation of the Program will be supported by an internationally and competitively recruited firm (discussed in more detail below).

## **IV. IMPLEMENTATION**

### **A. Institutional and Implementation Arrangements**

49. The National Program will be governed by a Program Steering Committee (PSC) chaired by the Secretary of the MSME Ministry and comprising representatives of the main stakeholders: Ministry of Science and Technology, Ministry of Communication and Information Technology, Ministry of Heavy Industry, and Ministry of Labor (DGE&T), State Governments through their Principal Secretaries or Secretaries of industry, the NSDA, academia and research institutes, as well as the relevant leading industry associations. The MSME Chief Vigilance Officer and Public Information Officer will sit on the PSC as observers to strengthen program governance aspects. The Program Steering Committee is expected to play an important role during Program preparation and implementation.

50. The program implementation responsibility will lie with the Development Commissioner of the MSME Ministry. The Development Commissioner (DC, MSME) will designate a Program Coordinator (PC) assisted by the program management team, which will act as the interface between the Development Commissioner (MSME) and the IP. The IP was procured competitively through international bidding, and will, together with the program management team and the PC, form the Program Implementation Unit (PIU). The PIU will carry out the day-to-day management of the entire program.

51. The IP is expected to rapidly boost the capacity and expertise of the MSME PC and the program management team in all key implementation aspects, including, but not limited to: World Bank procurement; financial management; environmental, social, health, and safety safeguards specialists; and the deployment of other subject expertise as and when needed.

52. A Program Advisory Committee (PAC) will be set up, comprised of thought leaders from academia and industry associations to provide strategic inputs on strengthening the Indian MSME ecosystem through this Program. This Committee will work closely with the National Program Director, Chairman and Implementation Committee through the design and execution phases of the Program to ensure continuity.

53. Industry-specific Joint Working Groups (JWGs) will also be constituted to provide domain expertise and advisory inputs to help ensure that the Program is as relevant and impactful to the specific industry stakeholders as possible. The JWGs will consist of domain-specific industry leaders, representatives from the relevant business associations, government institutions, and academia.

54. Each TC is and will be an autonomous Society as per the Societies Registration Act of 1860, each governed by a Governing Council (GC) representing key stakeholders, in particular from the relevant parts of the private sector (e.g., providers of services being offered by the TCs and local business associations). The Program will be the opportunity to test different governance models for the TCs—including SPVs—with the Board of Directors. At least one TC will pilot the SPV model under the Program. As responsibility centers under the MSME performance management system, TCs will draft subsidiary Results Framework Documents (RFDs) stating their objectives,

performance benchmarks, and planned actions, in alignment with MSME RFD. TCs will be certified ISO 9001.

55. Each TC and its Community of Practice (CoP) will be linked to one or more CNM in key industry clusters associated with that TC. The CNM will ensure that each TC is paired with other TCs, and all key actors relevant to the thematic area, nationally and internationally, including experts and advisors. The CNM ensures that it keeps abreast with the needs of the business and student communities and that it contributes to and benefits from the ecosystem.

56. Also, the TC and its CoP will be supported by world-renowned internationally recruited TPs, who will ensure that the TC and its CoP are well informed of the latest technology developments, future trends, specialized equipment that needs procuring, and common infrastructure required for a given domain at a given TC.

57. In addition, to ensure that the TC also stimulates real-time knowledge sharing and virtual learning, it needs to become the hub of communication and innovation for its CoP. To this end, an IT Service Provider (ITSP) will be procured through international bidding that will essentially provide comprehensive fee-based web based (portal) IT services supporting TCs and their clients.

58. The 15 new TC will be designed and built using environmentally friendly practices. The scope of the civil works may also include some existing TCs that need refurbishment and/or extension.

59. The technical assistance in Component 3 (other TA) promotes safer and better work environments in the TCs and SMEs it supports, as well as better environmental and social practices through awareness campaigns, counseling services, etc. In particular, TC services such as training will feature some activities that foster gender inclusion. This TA will also support entrepreneur development activities, such as incubation services for MSME startups.

## **B. Results Monitoring and Evaluation**

60. The Program will maintain robust M&E systems through the PIU and the IP to evaluate the progress of programs against indicators in the Results Framework and GoI RFD. The management information processes of the Program will be part of the PIU's responsibilities. The monitoring system will track the performance indicators at the required frequency and will be reviewed during implementation support missions. Much of the data is already being collected by the MSME Ministry at regular intervals and is well documented and will serve as baseline for a robust M&E framework. MSME RFD lists its objectives and performance indicators and should be disaggregated at the TC level into subsidiary RFDs; these documents will be used to help monitor and evaluate the program's outcomes.

61. The Program will rely on third-party monitoring, especially with respect to the civil works and capital investments associated with new TCs. The Program will conduct an Impact Evaluation with the objective of determining if the TCs have materially improved the productivity, competitiveness, profits, revenues, and employment of the MSMEs it has been serving. The Impact Evaluation will also assess whether there are any signs of significant private sector crowding by

surveying the TCs’ main potential private sector competitors. To that end, an independent firm will be procured during the first year of the Program to establish the methodology and baseline, to be repeated in time for the Mid-Term Review and the final year of the Program. This will provide the evidence for making any mid-course corrections.

### C. Sustainability

62. The current organizational model, together with strong leadership, has over the last few years resulted in markedly improved financial performance by the TCs. Most of them have experienced strong revenue growth (mostly due to training activities) and have achieved financial sustainability (before depreciation and land costs). The current model is based on TCs as autonomous societies, headed by competitively recruited management with financial incentives to achieve agreed upon targets. The program will further strengthen the current model to achieve a transformational impact on SMEs through strategic technical and management advice and cutting-edge technology platforms and systems. The program will also support good environmental, health and safety as well as social practices in a sustainable and durable manner. Downside risks for sustainability—such as crowding out the private sector, private sector capture, public sector capture, as well as political capture—have been mitigated through Program design, governance structure, and MSME’s own RFD (see also ORAF in Annex 4).

## V. KEY RISKS AND MITIGATION MEASURES

### A. Risk Ratings Summary Table

**Table 3: Risk Ratings Summary Table**

<b>Risk Category</b>	<b>Rating</b>
<b>Stakeholder Risk</b>	<b>Moderate</b>
<b>Operating Environment Risks</b>	
Country	<b>Low</b>
Sector and multi sector	<b>Moderate</b>
<b>Implementing Agency Risk</b>	
- Capacity	<b>Moderate</b>
- Governance	<b>Moderate</b>
<b>Program Risk</b>	
- Design	<b>Moderate</b>
- Social and Environmental	<b>Moderate</b>
- Program and Donor	<b>Low</b>
- Delivery Monitoring and Sustainability	<b>Moderate</b>
<b>Overall Implementation Risk</b>	<b>Moderate</b>

## **B. Overall Risk Rating Explanation**

63. Adequate quality control and implementation capacity for the program have been addressed since the Concept Stage by the procurement of an internationally reputed IP that possesses all key domain skills necessary for successful program preparation and implementation, including donor-funded program experience. However, the overall risk rating of moderate was assigned bearing in mind that the uptake of new TC services by stakeholders (SMEs) is still to be validated.

64. The risk of crowding-out private sector service providers has been mitigated by the involvement of private sector representatives in all key decisions at the national and local levels of TC management. This will be monitored through regular independent surveys of potential private sector competitors.

65. Risk of interference and the complexity of the program design have been mitigated by clear institutional ownership within the Indian Government (the MSME Ministry), reliance on a proven model of demand-driven autonomous Technology Centers, and a clearly identified list of activities to be financed.

66. Risk of inadequate transformative impact by the Program interventions has been mitigated by competitively recruited international TPs and CNMs and will be monitored through regular surveys evaluating the impact of the Program on the productivity of the MSMEs it supports.

67. The risk of duplication or conflicts with other government schemes and institutions has been mitigated by involving all relevant public sector stakeholders in all key decisions at the national and local levels of TC management.

68. Environmental and social risks are quite limited, given the nature of the activities that will be financed, which are mostly related to training, with manufacturing activities carried out only for the sake of providing hands-on training (often through simulation software or low-impact training machines), testing, and developing prototypes. The social risks are even more limited; in fact, this program presents the opportunity to promote better and safer working practices among MSMEs. The program will also positively promote gender equity, training, and employment opportunities for those in underserved communities in lagging regions.

## **VI. APPRAISAL SUMMARY**

### **A. Economic Analysis (see Annex 5 for more details)**

#### *Development impact*

69. This Program has three components that aim to enhance the competitiveness of MSMEs served by existing and new TCs, as well as the employability and net benefits to the trainees affected by the upgrades and new TCs.

70. The Program cost is US\$ 400 million over a six-year period, to be financed with a US\$ 200 million IBRD loan and US\$ 200 million contribution from the GoI.

71. In broad terms, the financial and economic analysis for this Program is based on a model that focuses on two types of gains: 1) expected returns to training-related investments; and 2) expected returns to investments that aim to support and enhance competitiveness of the MSMEs affected by the Program. The Program also estimates the returns to the existing TCs after upgrades to ascertain their financial sustainability and offer insights as to why public investments in TCs may be justified and private sector groups do not offer the same bundle of services with the foreseen benefits.

72. The analysis is built with the estimated difference in cash flows to the beneficiaries (trainees and MSMEs affected by the Program) and cash flows to the TCs accounted for as cash flows to the Program. The model is based on a series of assumptions and baseline data provided by the existing TCs and supported by relevant impact evaluations. Accordingly, the total Program investment is estimated to result in a net present value (NPV) of US\$472 million, at a discount rate of 10 percent<sup>6</sup> and an economic rate of return (ERR) of 31 percent with the base case scenario.

**Table 4: Total returns to the Program with the base case**

<b>Assumed Discount Rates</b>	<b>NPV</b>
<b>Discount rate 10%</b>	\$472
<b>Discount rate 12%</b>	\$382
<b>Discount rate 15%</b>	\$274

73. The projections cover a 12-year period, starting from year 1 of Program effectiveness. The investments are made over six years, with a majority completed in the first five years of the Program, in accordance with the disbursement schedule, as well as the timetable for the construction of new TCs. The costs are allocated between new TCs and TC upgrades, along with those that affect training vs. MSME support in both the new and the existing TCs in line with the Program details. Investment in land has been accounted for in the form of 2 percent of the total land value as an annual payment. Depreciation expense has been included for both buildings and capital equipment and a different depreciation schedule is built based on the date investments are made. Buildings are depreciated to 70 percent of their value (salvage value) in eight years and capital equipment is depreciated fully over five years, using straight-line depreciation.

*Bank value added*

74. The World Bank support will help the Government of India tap into international good practices, provide implementation support and provide important financial support at a time of increasing budget constraints.

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<sup>6</sup>Discount rate: The Bank traditionally has not calculated a discount rate but has used 10-12 percent as a notional figure for evaluating Bank-financed projects. This notional figure is not necessarily the opportunity cost of capital in borrower countries, but is more properly viewed as a rationing device for World Bank funds.

75. The sensitivity analysis presented in Annex 5 shows a 16 to 63 percent range for the ERR of the Program. The ERR is most dependent on the assumptions made about what happened to the profitability of the MSMEs (directly linked to their productivity and competitiveness) supported by the Program, reinforcing the fact that this is the strategic objective of the Program.

76. The analysis also shows that, while the economic returns are high, the financial returns to the Technology Centers are low, making the case for public support. Public support, through the proposed Program, to the development of the technological and skill base of MSMEs in selected industries, can be justified because of the existence of the following market failures:

- a. Low incentives to invest in skills from both the employee and employer's perspectives. From the employee's perspective, a wage bargain between employees and employers can lead to wages below the fair level, thereby discouraging future employees to invest in the development of their skills. From the employer's perspective, skills are transferable across firms and thus employers may have low incentives to invest in training because they would not be able to fully appropriate the benefits of the investment.
- b. Lack of reliable information of future opportunities may result in firms and individuals underinvesting in technological/business consulting and training services.
- c. The coordination failure associated with the sharing of expensive equipment by MSMEs, which is also present in developed countries that are also providing public support to Technology Centers or common shared facilities (see Annex 6 on the lessons learned from international good practices).

### *Cost-benefit analysis*

77. More-educated and skilled workers not only have better job opportunities, earn more and have more stable and rewarding jobs, they also are more adaptable and mobile.<sup>7</sup> Workers who acquire additional skills also make other workers and capital more productive while facilitating within the firm the adaptation, adoption, and ultimately invention of new technologies. If successful, the Program is poised to increase the number of employees in the targeted sectors and States, increase the earnings of households that benefit from those TCs, increase the productivity of the firms that will employ those trainees, and make those firms adopt new technologies. Many of these workers and graduates will be living in less developed States. Some will be from low income households. Some will be women.

## **B. Technical**

78. The technical design and governance structure draws on international best practice, lessons learnt from other similar Bank programs, applied within the country-sector context. The program already benefits from some elements of the ecosystem for TCs to become more relevant, useful, and transformative for the SMEs, for example with extensive representation of private sector leadership and trade associations on the governing council of TCs. Addressing the issue of sustainability of the

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<sup>7</sup> There is a vast literature empirically supporting the value of investing in education to develop human capital and on the contribution of education to growth and development (see, for example, Vandenbussche et al., 2004; Aghion 2008; Helpman, 2006; Hanushek and Kimko 2000; Krueger and Lindahl 2000; Hanushek and Woessmann 2007).

TCs beyond the Bank-funded program, many of the TCs are also already demonstrating potential to be financially sustainable through good leadership and management practices that have been put in place.

79. The Program Steering Committee has met twice already and taken key decisions to progress design, preparation, and implementation of the TCSP. The IP that will supplement the capacity of the MSME core team is already in place and is adequately resourced to ensure the good progress of program activity from the outset. Overall implementation readiness is satisfactory.

### **C. Financial Management**

80. The program will be implemented by the office of Development Commissioner, Ministry of Micro, Small and Medium Enterprises (DC-MSME), GoI. The activities relating to civil works, equipment and consultancies are being centralized at the O/o DC, MSME with funds flowing to new technology centers for financing operating costs. In respect of expenditures at central level, the reliance will be placed on financial management systems of the Ministry which are considered adequate for the purpose of accounting and financial reporting. A separate budget head has been created for the program in the Ministry budget, with suitable object heads, which will enable recording of expenditures including Grant in Aid to TCs. This together with the financial reports on actual utilization from TCs will form the basis of reporting in the Interim Financial Reports (IFRs).

81. At the Central level, the expenditures will be paid and accounted for by the Pay & Accounts Office (PAO). An Implementation Partner has been contracted by the Ministry which includes financial management specialist who will provide necessary support on financial management. The Bank disbursements will be based on quarterly Interim Financial Reports (IFRs). The Comptroller and Auditor General of India (CAG) will be the external auditor for expenditures at the central level and audit will be conducted as per standard terms of reference agreed between DEA, CAG and the Bank. In respect of TCs, independent firms of chartered accountants will carry out the external audit. The audit reports of both the Central level and the TCs which will benefit from grant in aid from the Program will be submitted to the Bank within six months from the close of each financial year.

82. *Retroactive financing:* The payments made for program expenditures incurred 12 months prior to the expected loan signing date will be eligible for Bank financing. These payments are estimated to be approximately US\$ 40 million.

### **D. Procurement**

83. It is proposed that capital expenditure—including new equipment procured for the TCs—will be planned, procured, and its payment disbursed based on the value and complexity of the procurement package. The MSME PIU will undertake the entire procurement centrally as per the procurement plan.

84. The program's civil works will be procured by the MSME/PIU through competitive bidding adopting ICB or NCB method depending upon the estimated value of the package(s).



85. Procurement of all goods, works, and non-consulting services required for and to be financed from the program shall be in accordance with the “Guidelines: Procurement of Goods, Works, and Non-Consulting Services under IBRD Loans and IDA Credits and Grants by World Bank Borrowers” (January 2011). Procurement of consulting services shall be in accordance with “Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrowers” (January 2011) and the provisions stipulated in the Financing Agreement.

86. The MSME, with support from the IP, will be responsible for procurement planning, management, and oversight for the activities directly executed by them. The investments in the first 18 months have been defined and the corresponding draft procurement plan has been prepared. The procurement plan will be uploaded in SEPA (the procurement plan management system) and any other sophisticated tool designed for the purpose with concurrence of the Bank and will be updated online as and when needed, then submitted to the Bank for clearance. The procurement and the entire compliance mechanism are detailed in Section C of Annex 3.

#### **E. Social and Environmental (including Safeguards)**

87. In line with the Bank’s operational policies, environmental and social assessments were conducted. Based on the findings from these studies, an Environment Management Framework (EMF) and a Social Management Framework (SMF) for the program have been prepared. Since the actual locations and specific technical features of the Technology Centers are still under review, a framework approach is being followed for the program. The borrower’s organizational capacity to achieve environmental and social objectives against the range of environmental and social impacts and opportunities for social development that may be associated with the program are also being assessed as part of the SMF.

88. The Program offers an opportunity to promote improved environmental performance of the selected industrial sectors and safer working practices through the introduction of new technology and training. These possibilities are also being explored through safeguards and technical studies.

89. *Environment:* The establishment of 15 new Technology Centers and the strengthening of 18 existing ones is envisaged over a six-year period under the Program. The ultimate goal is to ensure easy access to high-quality technology and holistic skill development and training across the industry value chain, geographies, and functionalities.

90. *Environmental Issues:* While the Program interventions would have an overall positive impact on economic growth, skill development, and job creation, specific interventions (under Component 2) envisaged under the Program—such as the creation of 15 new Technology Centers and the upgrading of buildings and related infrastructure of the existing 18 Tool Rooms—may have some potentially adverse environmental impacts in the local context. Even though it is expected that the new buildings or blocks would be located within an existing industrial estate or on available government land elsewhere, planning, construction, and operation of buildings would require the appropriate integration of environment, health, and safety measures to ensure that adverse environmental impacts are minimized and properly managed.

91. *Impacts pertaining to:* (a) location (environmental and social features of the site and surrounding land-uses); (b) design (sanitation, water supply, drainage, solid waste arrangements, waste water management, ventilation, access, energy efficiency, material usage, fire safety, storage facility, and natural disaster dimension); (c) worksite safety management, including occupational health and safety of construction workers during the construction stage, and; (d) operation and maintenance aspects of buildings, equipment, tools, machinery would require attention.

92. On other Program interventions pertaining to training/curriculum development and testing/developing prototypes, the anticipated environmental impacts are not likely to cause any significant or serious damage to the natural and physical environment. In fact, the Program offers an opportunity to promote improved environmental performance of the selected industrial sectors and safer working practices through the introduction of new technology (equipment/machines) and training. There is also an opportunity to improve the overall environmental footprint by creating “green buildings” or “greener facilities” under the program.

93. In view of the Program’s potential impacts on the environment, the Bank’s OP 4.01 on Environmental Assessment and OP 4.11 on Physical Cultural Resources have been triggered, and the Program is designated as Category B.

94. *Environment Management:* The environment management process and the instrument for the Program has been designed keeping in mind the varied scope of work, which includes setting up 15 new Technology Centers; upgrading 18 existing Tool Rooms, including building, supporting infrastructure or equipment, and technical assistance for technological and business needs support, including exposure of new technologies, providing access to cutting-edge equipment, developing and testing new products, and patenting. Accordingly, to effectively plan, design, and integrate environmental dimensions into the overall Program preparation and implementation, an Environment Management Framework (EMF) has been prepared. The EMF has been informed by the results of a limited environment assessment exercise that was conducted by the Ministry of MSME and experiences from the Bank-funded Vocational Training Improvement Project (VTIP), currently under execution apart from other projects associated with the MSMEs in the country.

95. The key elements of the Environment Management Framework developed for the Program includes: (i) a screening exercise to identify key issues (such as availability of unencumbered site) and consider those in the selection of sites for 15 new Technology Centers; (ii) application and implementation of Codes of Practice for Design and Construction of Green Buildings for the 15 new and 18 existing Tool Rooms and Technology Centers and; (iii) mainstreaming or strengthening environmental, health, and safety dimensions in the operations based on the nature, need, and scope of trades/sectors finally selected under the Program.

96. As part of training and capacity-building activities, the Program will support the development of appropriate mechanisms to deal with issues of occupational health and safety. Further, based on the final selection of trades or activities, the Implementation Partner will explore opportunities for bringing in new technologies and materials that are cost-effective, efficient, and yet environment friendly.

97. *Social Safeguards.* In case new land is required for new TCs or the extension of existing TCs, the Social Management Framework will apply. The Social Management Framework has, among others the Resettlement Policy Framework that includes guidelines for undertaking social impact assessment, mitigation principles, entitlement matrix and preparation of Resettlement Action Plan.

98. *Stakeholder Participation:* Stakeholder participation is central to design and implementation of the Program and provides for information sharing, consultation, and collaboration measures. A consultation framework has been laid out in the EMF and SMF to ensure proper consultation and participation of stakeholders at the various stages of Program preparation and implementation. More details can be found in Annex 3.

99. *Disclosure:* The environment management and safeguards instrument prepared for the Program—namely, the Environment Management Framework (EMF) —has been disclosed in the Program Authority’s website. The same has been disclosed in the Bank’s Infoshop on the December, 10, 2013. The executive summary of the document will be translated in vernacular language (Hindi) and will be made public through Ministry of MSME’s website. Further, the document, including the executive summary, will be available at the office of the Development Commissioner, MSME; office of the Implementation Partners and at all 18 existing Tool Rooms and Technology Centers for reference and use by interested stakeholders.

100. *Social Management:* On the social development aspects, the SMF would highlight potential entry points on dimensions such as gender, equity and inclusion for the targeted interventions and up-scaling of good practices for improving overall Program delivery. Social Development is an important outcome of the Program as it is expected to provide young people, including women, who belong to vulnerable sections of society, with opportunities for social and economic returns. This is in accordance with the Government of India’s focus on poverty reduction and group equality and also with the World Bank’s Country Partnership Strategy that emphasizes engagement, transformation, and inclusion. Equity and socially inclusive opportunities are expected to take place as students and workers access training for skill development and employment. Similarly, these outcomes are achieved within the value chain in which extension services are an integral part, such as the ones provided by FFDC, Kannauj.

## Annex 1: Results Framework and Monitoring

The Program's Development Objective (PDO) is to enhance the productivity of MSMEs by improving their access to technology and business advisory services as well as skilled workers through systems of financially sustainable Technology Centers (TCs).

Results Indicator	Core	Unit of Measures	Baseline (2012)	Cumulative Target Values						Frequency	Data source, methodology	Responsibility for data collection	Description/main assumptions
				2015	2016	2017	2018	2019	2020				

### Program Development Objective Indicators

Number of enterprises paying for the services of TCs		Number (1,000)	23	28	34	40	47	53	60	Semi-annual	TCs report	MSME	Mostly driven by existing TCs – being conservative as to the contribution of new TCs in early years
Number of long term trainees employed by industry, including MSMEs, six months after graduating from the TCs		Number (1,000) %	8	11	14	17	20	23	26	Annual	TCs report	MSME	Proxy to TCs' contribution to trainees acquisition of demand driven skills
TCs' gross profit before depreciation (not including land)		\$ (Million)	3.5	5	8	10	11	11	12	Annual	TCs report	MSME	Financial sustainability (based on exchange rate of 0.061)

### Intermediate Result (Component 1): Technical assistance to the existing and new Technology Centers

#### Access to Technology

Revenue of TCs from access to technology activities (production support and consultancy)		\$ (Million)	4.8	6	7	8	10	12	14	Semi-annual	TCs report	MSME	Proxy to TCs' market-tested contribution to MSMEs' technology adoption
Capacity utilization of TCs machines		%	55%	60%	65%	70%	70%	70%	70%	Semi-annual	TCs report	MSME	Measure of alignment of machine investment to market demands
Number of technology strategies/roadmaps developed by TPs and endorsed by Industry Associations and IC		Number	0	3	5	10	15	15	15	Annual	Endorsement protocols to be established	MSME	Measure of alignment of TCs' technology services to the needs of stakeholders

Access to Skilled Workers

Number of trainees trained (direct program beneficiary) o/w external trainers trained o/w with newly developed contents o/w female o/w from low income states o/w from disadvantaged section of society (SC/ST)	X	Number (1,000)	77	105	134	164	193	223	250	Semi-annual	TCs report	MSME	
		%	1%	1%	2%	2%	2%	2%	2%				
		%	0%	10%	25%	30%	35%	40%	50%				
	X	%	10%	11%	11%	12%	13%	14%	15%				
		%	30%	35%	40%	40%	40%	40%	40%				
		%	29%	30%	30%	30%	30%	30%					
Number of skills development contents (e.g. curricula, standards, certification schemes) developed and adopted by industry associations, and/or certifying agencies		Number	2	2	2	2	3	3	3	Annual	Endorsement protocols to be established	MSME	Measure of alignment of TCs' training services, supported by TPs, to the needs of stakeholders

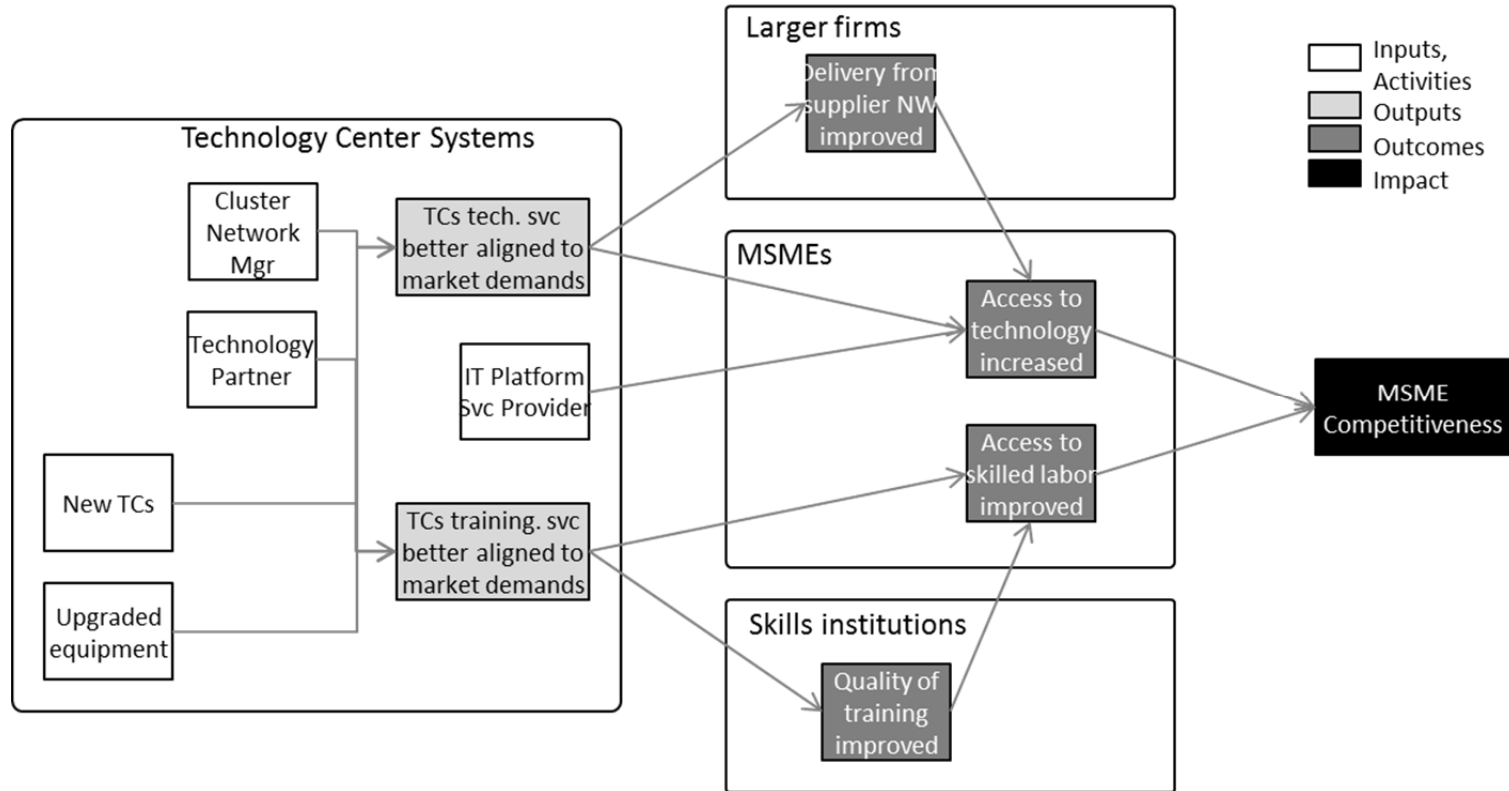
Access to Business Advisory

Number of needs assessment and related business plans developed by CNMs and endorsed by Industry Associations		Number	0	3	5	6	6	8	10	Annual	Endorsement protocols to be established	MSME	Measure of alignment of TCs' cluster development activities, supported by CNMs, to the needs of stakeholders
Value of TCs' businesses generated with support of Cluster Network Managers		\$ (Million)	0	0.8	1.6	3.2	4.8	6.4	6.4	Semi-annual	TCs report	MSME	Measure of alignment of TCs' activities to the clusters they serve (based on exchange rate of 0.061)
Number of users of IT Platform		Number (1,000)	0	0	20	50	80	120	150	Semi-annual	ITPM report	MSME	Registered users including trainees

**Intermediate Result (Component 2): Investments to upgrade existing and develop new Technology Centers**

Number of new Technology Centers built		Number	0	0	2	5	5	3	0	Annual	According to Procurement Plan	MSME	
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**Figure 2: Results Chain**



## Annex 2: Detailed Program Description

101. The Program cost is US\$400 million, to be financed with an IBRD flexible Loan of US\$200 million and a contribution of the Government of India of US\$200 million. The private sector is also expected to contribute financing in at least one pilot SPV.

102. The proposed national Program will finance the following activities grouped into the following three components:

### **Component 1: Technical assistance to the existing and new Technology Centers (US\$34 million)**

103. The TCs and their private sector clients will benefit, for the duration of the Program, from the technical assistance of world-class firms that will provide superior technology related inputs with respect to their technological and business needs. These two streams of technical assistance will run in parallel and inform each other under the guidance of Industry-Specific Joint Working Groups composed of the main industry leaders and representatives.

104. Technology Partners for each System of TCs specialized in specific industries/technologies (US\$14 million). The ToRs of these internationally and competitively recruited Technology Partners will include:

a. *Technology development* – Identification of existing and expected future technologies (e.g., 3D printing in the area of manufacturing) that need to be worked on and disseminated by the TCs among MSMEs, which could have a transformational impact on their efficiencies and competitiveness. This would include developing a detailed strategy/roadmap so that the MSMEs in each selected industry can take advantage of such cutting-edge/competitive technology inputs. This will be done through alignment and consultations with industry leaders, academia, and research institutes. The Technology Partners will help the TCs put in place the capacity to support MSMEs with respect to: (i) being exposed to the potential impact of new technologies, (ii) learning how to use new technologies/equipment, (iii) providing access to cutting-edge equipment, (iv) developing and testing new products, and (v) patenting.

b. *Human skill development* – Development of a demand analysis, skills gap assessment, and strategy/roadmap by consulting stakeholders to develop skills of the workers and students in the identified technologies and clusters. This will entail, among other things, the development of world-class training curricula, pilot training modules, new e-learning modules, standards and certification schemes, etc. This will also entail training of trainers (for TCs as well as other public and private training institutions), faculty exchanges, the development of examination/validation/certification systems, etc. These new tools and interventions will be put forward for mainstreaming within the current national vocational training systems (e.g. ITIs and Polytechnics). To make it more

effective and durable, the training/curricula will include teaching on the underlying sciences/technologies, as well as the development of problem-solving skills.

c. *Advisory of TCs on their technical set up* – Based on a) and b) above, the Technology Partners would be expected to advise on the type of software and equipment required to upgrade existing TCs or establish new TCs. This would include detailing vendor-neutral, appropriate specifications of machines and equipment, providing recommendations on the curriculum and training to be imparted to workers and students, and offering advice/recommendations to MSMEs (clients) on improving their efficiencies and competitiveness.

d. *Businesses Advisory on technology matters* – Helping TCs provide technical advice to their key clients (e.g., industrial clusters or leading manufacturing firms/OEMs with large networks of MSME suppliers). Benchmarking the performance of the key players in the industry with relevant international benchmarks, leading to specific recommendations on improving efficiencies and overall competitiveness of the clusters served.

105. Cluster Network Managers (CNMs) for each System (or sub-System) of TCs specialized in specific industries/clusters (US\$12 million). The ToRs for these CNMs recruited through international competitive bidding will include:

a. *TC advisory* – Conduct needs assessment of MSMEs in the given cluster served by the TCs; help TCs develop and implement a strategy based on identification of opportunities and needs of the industrial clusters it will support (in partnership with the Technology Partners - TPs). The identification of MSME needs should include the needs for improving management skills as well as technological skills. The Cluster Managers (CMs) will help TCs develop their capacity to provide advisory/training services on managerial skills (the same way that Technology Partners will help TCs develop their capacity to provide advisory/training services on technological skills).

b. *Cluster and business advisory* – This will include helping TCs provide assistance to the industrial clusters they serve in identifying common opportunities (new markets, technology upgrading, innovation) as well addressing impediments (policy, infrastructure, access to finance, environmental and social challenges), including through policy advocacy. In less-developed states, CMs will also help TCs provide basic managerial advisory services to MSMEs.

c. *Development of linkages across the TCs ecosystem* – Help TCs serve the needs of the industrial clusters, including assistance in developing partnerships with vocational training providers, linking with research institutes and leading manufacturers, as well as helping industrial clusters benefit from other government support programs. Cluster advisory will also help TCs and their clusters across state borders through national conferences and webinars.



106. IT Platform (ITP) Service Provider (US\$8 million) – The Program will support a cloud-based IT platform, including a national portal for MSMEs through which users will be able to access (virtually) most of the technical information and training services provided by the TCs, as well as many other services. This platform will considerably extend the reach of the Program to its remote beneficiaries, well beyond the TCs’ physical location, through e-learning and virtualization/simulation, at low marginal cost. This has been made possible by technological advances, proliferation of ICT access, and usage throughout India, as well as the fact that simulation software is increasingly becoming the interface between workers/students and the TC machines. Users in remote locations could benefit from three channels: web access to digital content from the portal, or e-learning private providers operating locally that are willing to offer these services, or TC affiliates in some local areas offering limited e-services enabled by the ITP:

- a. The National Portal (NP) will enable an online system of information exchange, communication, and transactions between GoI and MSMEs 24x7, as well as peer-to-peer learning between TC and clusters, not constrained by time and distance. The NP will also provide ready access to useful productivity tools for MSMEs, such as enterprise resource planning modules (ERP) for accounting, billing, sales (e-Commerce), human resources, and inventory management.
- b. The business and governance model for the ITP will be one in which its functionality and the service levels to which it would adhere will be determined by PIU in consultation with its user community. The ITP services will be fee-based (“pay per use”) and initially free or subsidized for workers/students and MSMEs. Gradually, however, this will be increased so as to be sustainable beyond program funding. The ITP service provider will competitively procure and market tested every 5 years. The intellectual property associated with the ITP will be vested with the Government of India.

## **Component 2: Investments to develop new and upgrade existing Technology Centers (US\$351 million)**

107. The Program will finance the development of 15 new TCs and upgrade the 18 existing TCs under the responsibility of the MSME Ministry. These investments will be informed by the Technology Partners and Cluster Managers discussed under Component 1 above as well as by the Implementation Partner that has been competitively hired (see Component 3 below). The development of new TCs will be phased over time. The construction should start in the second year and be completed by the fourth year of program implementation.

108. Buildings/other infrastructure (US\$70 million) – The physical facilities of the TCs will be upgraded and developed with the following objectives in mind:

- e. World-class with respect to facilitating the provision of their services
- f. Green, to minimize their environmental impact
- g. Economic, to reduce costs
- h. Flexible with respect to usage and expansion/contraction

109. Equipment/Software (US\$131 million) – The equipment required to upgrade the existing TCs and develop the new ones will be purchased following the advice of the Technical Partners and Cluster Managers, as discussed above, and following the same broad principles as for the buildings.

110. Operating costs of new Technology Centers (US\$150 million). The Government of India (including through TCs and the MoMSME) will finance 100% of the operating costs of the new Technology Centers to bring them to full operationalization expected within four years of their launch. This includes contingency of 10% of the total Program cost.

**Component 3: Technical assistance to the MSME Ministry for Program implementation and Monitoring and Evaluation (US\$15 million)**

111. Implementation Partner (US\$8 million) – The Program will be implemented with the support of Ernst & Young, with RITES and Manufacturing Technology Consultant (MTC) as sub-consultants, the latter being a leading company in the field of Technology Centers from the United Kingdom. The Implementation Partner was recruited during program preparation through an international competitive bid and will provide support in the following areas:

- a. Procurement (e.g., preparation of ToRs and bidding documents)
- b. Financial management
- c. Contract management
- d. Environmental and social safeguards
- e. Monitoring and Evaluation

112. Small, dedicated team (US\$2 million) – This team will consist of a National Program Manager (NPM), a Procurement Specialist, and a Financial Management Specialist. The team will act as the interface between the Implementation Partner (IP) and the Program Coordinator (PC) of the MSME Ministry (see the section on the implementation and governance framework for the Program below).

113. Other technical assistance to the MSME Ministry (US\$5 million) – This will entail support for carrying out in-depth impact evaluation studies, and for implementing the environmental and social activities as per the Environmental and Social Management Frameworks (EMF and SMF) developed during the preparation of the Program. It will also entail training staff to support the capacity of the Ministry with respect to the design and implementation of other related MSME support programs: financial management, procurement, IT, and M&E systems. It will also support the development of new initiatives to help MSMEs access sources of finance, as well as help them improve their labor, health, safety, and environmental development standards.

114. The M&E system will include, in particular, independent surveys of customers and stakeholders (including potential private competitors to the TCs) to assess the transformative impact of the program, as well as to ensure there is no significant crowding-out of the private sector. Such surveys will be designed and launched during the first year of program implementation.

115. In conclusion, the Program will strengthen the current organizational model and performance management of TCs to achieve a transformational impact in a substantial and durable manner, including through accountability measures building on the Results Framework Document (RFD) and subsidiary RFDs at the TC level. The MSME RFD states its objectives, performance (including governance and accountability) indicators, and related planned actions. It is drafted every year and publicly disclosed. It significantly strengthens the program governance framework (e.g., by committing to MSME ISO 9001 certification, the elaboration of a mitigating strategy of the risks of fraud and corruption, and to the independent auditing of its public grievance mechanism and citizens' charter). When conditions permit, Technology Centers will be market tested to explore other organizational models to deepen private sector participation. In order to protect against the risk of private capture, these initiatives will incorporate appropriate safeguards such as having explicit provisions enabling the Government of India (GoI) to buy back the investment of the private partners at any time.

## **Annex 3: Implementation Arrangements**

### **Program Institutional and Implementation Arrangements**

116. The National Program will be governed by a Program Steering Committee (PSC), chaired by the Secretary of the MSME Ministry and comprising representatives of the main stakeholders, including from: Ministry of Science and Technology, Ministry of Communication and Information Technology, Ministry of Heavy Industry, Ministry of Labor (DGE&T), State Governments through their Principal Secretaries/Secretaries of Industry, the NSDA, academia and research institutes, as well as the relevant leading industry associations. This Program Steering Committee is expected to play an important role also during Program preparation.

117. The program implementation responsibility will lie with the Development Commissioner of the MSME Ministry. The Development Commissioner (DC, MSME) will designate a Program Coordinator (PC), assisted by a small, dedicated team that will act as the interface between the Development Commissioner (MSME) and the Implementation Partner (IP). The IP was procured competitively through international bidding and will, together with the PC and his core team form the Program Implementation Unit (PIU), carry out the day-to-day management of the Program.

118. The IP is expected to rapidly boost the capacity and expertise of the MSME PC and his core team in all key implementation aspects. These will include but not be limited to: World Bank procurement; financial management; environmental, social, health, and safety safeguards specialists; and other subject expertise as and when needed.

119. A Program Advisory Committee (PAC) will be set up, which will comprise thought leaders from research institutes, academia, and industry associations to provide strategic inputs on strengthening the Indian MSME ecosystem through this Program. This Committee will work closely with the National Program Director/Chairman, Implementation Committee through the design and execution phases of the Program and ensure continuity. MSME Chief Vigilance Officer and Public Information Officer will sit on the PAC.

120. Industry-specific Joint Working Groups (JWGs) will also be constituted to provide domain expertise and advisory inputs to help ensure that the Program is as relevant and impactful to the specific industry stakeholders as possible. The JWGs will consist of domain-specific industry leaders, representatives from the relevant business associations, government institutions, and academia.

121. Each TC is/will be an autonomous Society, as per the Societies Registration Act of 1860, and each governed by a Governing Council (GC) representing key stakeholders, in particular from the relevant parts of the private sector (e.g., providers of services being offered by the TCs and local business associations). The Program will be the opportunity to test different governance models for the TCs—including SPV—with the Board of Directors. At least one TC

will pilot the SPV (Special Purpose Vehicle) model under the Program. As responsibility centers under the MSME performance management system, TCs will draft subsidiary Results Framework Documents (RFDs) stating their objectives, performance benchmarks, and planned actions in alignment with MSME RFD. TCs will be certified ISO 9001.

122. One of the most important contributions the Program makes to the existing business environment of the TCs is to develop the critical ecosystem in which TCs can evolve into “Learning and Innovation Platforms” that provide SMEs services beyond just manufacturing facilities, such as: networks, partners, advice, management expertise, cutting-edge technology innovations, incubation, peer-to-peer learning and virtualization, to name a few. International experience demonstrates that these are critical ingredients necessary to transform the existing user community, including SMEs, and catalyze a new breed of entrepreneurs and knowledge workers.

123. To this end, each TC and its Community of Practice (CoP) will be linked to one or more Cluster Network Managers (CNM) in key industry clusters associated with that TC. The CNM will ensure that each TC is peered with other TCs, and all key actors relevant to the thematic area, nationally and internationally, including experts/advisors. CNM ensures that it keeps abreast with the needs of the business and student communities, and that it contributes to/benefits from the ecosystem.

124. Also, the TC and its CoP will be supported by world renowned, internationally recruited Technology Partners (TPs), who will ensure the TC and its CoP is well informed of the latest technology developments, future trends, specialized equipment and common infrastructure for a given domain, at a given TC.

125. In addition, to ensure that the TC also stimulates real-time knowledge sharing, virtual learning, and simulation, it needs to become the hub of communication and innovation for its CoP. To this end, an IT service Provider (ITP) will be procured through international bidding.

126. The ITP will support a cloud-based IT platform that will have a portal, and its functionalities developed on the basis of user needs and the ecosystem (firms, government, research bodies, academia, workforce, and students) the TCs are required to support\*.

\*The ITP is expected to support: a) the full range of Enterprise Resource Planning (ERP) for TCs and SMEs, including inventory management, Supply Chain Management (SCM), Customer Relationship Management accounts, debtors & creditors; b) Program Management; c) eLearning and a virtual learning environment (VLE); d) access to finance, markets, market research; and e) e-Commerce, among others. Aspects pertaining to service delivery support through online and contact centers, user training and change management, capacity planning and augmentation (as the transactions increase on the platform) will also be considered.

127. The business and governance model for the ITP will be one in which the business model and its service level will be determined by PIU, in consultation with its user community. The ITP will be operated on a “Pay for Use” basis, where the ITP contractor will provide individual “metering” for each service at each TC or registered user on a monthly basis (Platform as a

service - PaaS) to an agreed Service-Level Agreement (SLA). This should ensure the financial sustainability of the ITP within five years. Initially, however, this fee will be waived or subsidized for workers/students and MSMEs. The ITP service provider will be competitively procured and market tested every five years. The intellectual property associated with the ITP will be vested with the Government of India.

128. ITP users in remote locations could benefit from three channels: web access to digital content from the portal, or e-learning private providers operating locally willing to offer these services or TC affiliates in some local areas offering limited e-services enabled by the ITP.

129. The 15 new TCs will be designed and built in using environmentally friendly practices. The scope of the civil works may also include some existing TCs which need refurbishment.

130. The technical assistance in Component 3 (other TA) promotes safer and better work environments in the TCs and SMEs they support as well as better environmental and social practices through awareness campaigns, counseling services etc. This will also support entrepreneur development activities such as incubation services for MSME startups.

The governance and implementation arrangements for the Program are summarized in Figure 1 Page 12.

### **Procurement Arrangements**

131. Procurement for the proposed program would be carried out in accordance with the World Bank's "Guidelines: Procurement of Goods, Works and Non-Consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers," dated January 2011 (Procurement Guidelines); and "Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits & Grants by World Bank Borrowers," dated January 2011 (Consultant Guidelines) and the provisions stipulated in the Financing Agreement. For each contract to be financed by the proposed Loan, the different procurement methods or consultant selection methods, the need for prequalification, estimated costs, prior review requirements, and time frame are agreed between the Recipient and the Bank program team in the Procurement Plan. The Procurement Plan would be updated at least annually or as required to reflect the actual program implementation needs and improvements in institutional capacity, using SEPA or any other sophisticated tool designed for the purpose in concurrence with the Bank. The following NCB provisions shall apply:

- a) Only the model bidding documents for NCB, as agreed with the GoI Task Force (and as amended from time to time), shall be used for bidding.
- b) The Invitation to bid shall be advertised in at least one widely-circulated national daily newspaper (or on a widely-used website or electronic portal with free national and international access, along with an abridged version of said advertisement published in a widely-circulated national daily inter-alia giving the website/electronic portal details from which the details of the invitation to bid can be downloaded), at least 30 days prior to the deadline for the submission of bids.

- c) No special preference will be accorded to any bidder either for price or for other terms and conditions when competing with foreign bidders, state-owned enterprises, small-scale enterprises or enterprise from any given State.
- d) Except with the prior concurrence of the Bank, there shall be no negotiation of price with the bidders, even with the lowest evaluated bidder.
- e) Extension of bid validity shall not be allowed with reference to Contracts subject to Bank prior review without the prior concurrence of the Bank: (i) for the first request for extension if it is longer than four weeks; and (ii) for all subsequent requests for extension irrespective of the period (such concurrence will be considered by Bank only in cases of Force Majeure and circumstance beyond the control of the Purchaser/Employer).
- f) Re-bidding shall not be carried out with reference to Contracts subject to Bank prior review without the prior concurrence of the Bank.
- g) The system of rejecting bids outside a pre-determined margin or “bracket” of prices shall not be used in the program.
- h) Rates contracts entered into by Directorate General of Supplies and Disposal (DGS & D) will not be acceptable as a substitute for NCB procedures unless agreed with the Bank on case by case basis. Such contracts will be acceptable however for any procurement under the Shopping method.
- i) Two or three envelope systems will not be used (except when using an e-procurement system assessed and agreed by the Bank).

132. Procurement of Works: Works procured under the program shall be with respect to up-gradation of existing 18 TCs and the construction of 15 new ones under Component 2 (Investments to upgrade the existing and develop new Technology Centers) of the Program. Buildings worth about US\$70 million will be built to world-class standards by awarding contracts through no. of packages as specified in the procurement plan on a design and build basis. Procurement of Works will be carried out using Bank’s Standard Bidding Document (SBD) for all National Competitive Bidding (NCB). The NCB Standard Bidding documents of the Bank, as agreed with the GoI task force (and as amended from time to time), would be used for procurement of all NCB civil works.

133. Procurement of Goods: Goods procured under the program estimated to cost about US\$131 million. Goods will include IT Equipment (e.g., computers, printers, network infrastructure, and servers), office equipment and heavy industrial equipment for Technology Centers, which will be procured through ICB and NCB procedures using Bank’s standard bidding documents. IT software packages will be procured using Bank’s standard BDs for IT single or two stages, as appropriate. The NCB standard bidding documents of the Bank, as agreed with the GoI task force (and as amended from time to time), would be used for procurement of all NCB Goods. For ICB/Limited International Bidding (LIB) contracts, the Bank’s latest SBDs would be used. Some sophisticated R&D equipment and some software, being proprietary in nature, would be procured by Direct Contracting. Directorate General of Supply and Disposal (DGS&D) rate contracts could be used up to NCB threshold as per paragraph 127 (h).

134. Selection of Consultants: Consultancy Services will include works design and construction supervision, program design and implementation, Technical Assistance in technology development, human skills development, advisory services Technology Centers on their technical set up, advisory of Business on technology matters, cluster network management and IT Platform (ITP) Services. There will also be technical assistance to the MSME and M& E. Short lists of consultants for services estimated to cost less than US\$800,000 or equivalent per contract may be composed entirely of national consultants, in accordance with the provisions of paragraph 2.7 of the Consultant Guidelines. The Bank's Standard Request for Proposal Document would be used for all selection of consultancy services under the Program.

135. Training: Training would cover study tours, workshops, training for staff, etc. Appropriate training shall be carried out in accordance with the Program Implementation Plan, and will be carried out on the basis of approved programs that would identify the general framework for training activities of the year. This will include information on the number of trainees, the cost estimates, and the venue to be reviewed and cleared by the Bank. Training programs offered by training centers could be offered to beneficiaries/staff as part of the operational cost. Other training requirements of a special nature on the basis of established TORs will be selected competitively. The procurement plan will include those activities subject to competitive selection.

#### **Assessment of the agencies' capacity to implement procurement**

136. To ensure the appropriate procurement capacity is in place, prior to program effectiveness, an assessment of the procurement capacity of the Office of DC, MSME, the Implementing agency, was carried out in October 2013. The assessment outlines the main issues and recommendations and is in the program files. The assessment revealed that: (i) the implementing agency, the Office of DC, MSME, at present does not procure goods (machinery & equipment to be used by TCs) and as a result does not have enough capacity in World Bank Procurement Procedures, nor does a dedicated procurement cell exist in the Office of DC, MSME. However, TCs have a well-defined procedure for carrying out procurement, as per the guidelines provided in General Financial Rules (GFR) 2005, issued by the government of India.

137. Further, these procurements are made as per the authority delegated in the delegation of powers notified by the Governing Body of the society. This delegation of powers limits the extent to which respective authority can purchase, and for all the procurements made by TCs, proper documentation is kept, including tender documents, bidders' details, comparison sheets, approval notes, and minutes of the Committee meeting to evaluate bidders. For complaint redressal there exist the system of Corporate Governance and Risk Management where any entity can come and register complaint for any procurement related matter.

138. As under TCSP, MSME/PIU may be required to procure goods and services centrally, as per the procurement plan agreed; therefore, MSME/PIU would have to deploy dedicated procurement staff with the requisite experience of carrying out the procurement, and also develop best practices for procurement proposed to be made under TCSP program.



139. Currently, the overall procurement risk rating is Substantial.

140. The implementation responsibility of the proposed program lies with the Office of DC, MSME, with support from the Implementing Partner (IP); to handle all procurement financed by the program.

### **Procurement Risk Mitigation**

141. The main areas of procurement risks, based on the general public financial management in the country are: (a) procurement of goods and works at the MSME level has normal fiduciary risks of transparency, fairness, and capacity, but to be realigned to Bank's procedure; (b) put in place a complaint monitoring system as detailed below; and (c) established system of public disclosure of information on procurement actions as indicated below, (d) a Matrix of Responsibility has been agreed, as stipulated below. The above and the other applicable deficiencies have been addressed in the Operational Risk Assessment Framework (ORAF) risk mitigation measures (see Annex 4). The overall program risk for procurement is Substantial. After mitigation measures are implemented, the residual risk would be Moderate.

142. The MSME procured an Implementation Partner (IP) to provide support in the design and implementation of the program. It followed the Bank's procedures using QCBS, and expenditure on the firm's operations will be reimbursed through retroactive financing. This is reflected in the procurement plan.

143. Disclosure. The following documents shall be disclosed on the MSME website: (a) the Procurement Plan and all subsequent updates; (b) invitations for bids for goods and works for all ICB and NCB contracts; (c) requests for expression of interest for selection/hiring of consulting services; (d) contract awards of goods and works procured following ICB/NCB procedures; (e) lists of contracts/purchase orders placed following Shopping procedure on quarterly basis; (f) short lists of consultants; (g) contract awards for all consultant services; (h) lists of contracts following Direct Contracting (DC), Consultant Qualification Selection (CQS), or Single Source Selection (SSS) on a quarterly basis; and (i) action-taken reports on the complaints received on a quarterly basis. The following details shall be sent to the Bank for publishing on the Bank's external website and United Nations Development Business (UNDB): (a) invitations for bids for procurement of goods and works using ICB procedures; (b) requests for expression of interest for consulting services, with estimated cost more than US\$300,000; (c) contract award details of all procurement of goods and works using ICB procedure; (d) contract award details of all consultancy services, with estimated cost more than US\$300,000; and (e) lists of contracts/purchase orders placed following DC, SSS, or CQS procedures on a quarterly basis. MSME would also publish on its website any information required under the provisions of disclosure, as specified by the Right to Information Act.

144. Complaint Handling Mechanism: To address procurement complaints received by the MSME, a complaint handling mechanism for the program would be implemented. On receipt of complaints, immediate action would be initiated to acknowledge the complaint and redress within a reasonable timeframe. All complaints would be addressed at levels higher than that of

the level at which the procurement process was undertaken. Any complaint received would be forwarded to the Bank for information, and the Bank would be kept informed after the complaint is redressed.

## Responsibility Matrix

145. The following tables establish the matrix of responsibility throughout the procurement/selection process, with defined players and timeline.

**Table 5: Matrix of Responsibility for the Procurement of Goods/Works (MSME & IP)**

<b>MATRIX OF RESPONSIBILITY FOR THE PROCUREMENT OF GOODS/WORKS (MSME &amp; IP)</b>				
<b>PROCUREMENT STEP</b>	<b>BY WHOM</b>	<b>DURATION</b>	<b>APPROVER</b>	<b>TIME LINE</b>
Draft Bidding Documents (Specs, Quantities, Draft Invitation for Bids)	Prep & Submission by IP/Office of DC, MSME	4-7 wks	Program Director (PD) or Competent Authority (CA)	1 wk
Invitation for Bids, On-Line UNDB, Gateway, National Press	Office of DC, MSME	1.5-2 wks	PD or CA	1 wk
Bidding Period	Bidders	6-12 wks ICB 4 wks for NCB	N/A	N/A
Bid Evaluation	IP/Evaluation Committee	1.5-3 wks	PD/CA	1 wk
Contract Finalization	Office of DC, MSME	1 - 3wk	PD/CA	1 wk
Contract Implementation (GOODS) Arrival of Goods, Inspection Final Acceptance	IP/Office of DC, MSME		PD/CA	2 wks
Contract Implementation (WORKS) Final Inspection and Taking Over	Office of DC, MSME/IP		PD/CA	2 wks
Contract Amendments	IP/Office of DC, MSME		PD/CA	1 wk

**Table 6: Procurement Responsibility Matrix for Consultancy Services**

<b>PROCUREMENT RESPONSIBILITY MATRIX FOR CONSULTANCY SERVICES</b>				
<b>PROCUREMENT STEP</b>	<b>BY WHOM</b>	<b>DURATION</b>	<b>APPROVER</b>	<b>TIME LINE in days</b>
Preparation of RFP	IP/Office of DC, MSME	2-4 wks	PD/CA	1 wk
Request for EOI (Expression of Interest) (where required) On Line UNDB, Gateway, National Press	IP/Office of DC, MSME	2-4 wks	PD/CA	1 wk
Short List	IP/Office of DC, MSME	1 wk	PD/CA	1 wk
Consultant's Proposals	Short-listed consultants	4 wks to 12 wks	N/A	
Submission EvalRpt (Technical)	IP/Office of DC, MSME	2-3 wks	PD/CA	2 wks
Opening and Evaluation of Financial Proposals	IP/Office of DC, MSME	1 wk	PD/CA	1 wk
Preparation EvalRpt Combined (T) (F) Negotiations (N) Draft Contract	IP/Office of DC, MSME	2 wks	PD/CA	2 wks
Contract Finalization/Award/Signature	IP/Office of DC, MSME	2 wks	PD/CA	2 wks
Extensions/Amendment	IP/Office of DC, MSME	1 week	PD/CA	2 wks

146. **Procurement Plan (PP).** MSME has prepared a draft Procurement Plan for program implementation which provides the basis for the procurement methods and review by the Bank. This Plan would be agreed between the Recipient and the Bank's program team by Loan Negotiations, and made available in the program file. It would also be published on the MSME website in SEPA and on the Bank's external website. The first 18 months' procurement plan is shown in the table below.

**Table 7: Initial Procurement Plan for the Whole Program Dated**

**a) Works and Goods**

Package No.	Description/ Location	Estimated Cost (US\$) /m	No. of Packages	Procurement Method	Review By Bank (Prior/ Post)	Invitation Date	Expected Bid- Opening Date	Contract Award Date	Start Date	Comple tion Date
	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>	<b>I</b>	<b>K</b>
1. WORKS	Renovation and construction of new buildings for TCs	70	4	NCB	Prior	April 2014	August 2014	Sept 2014	Oct 2014	March 2018
	Total 1. for works	<b>70</b>								
<b>2. GOODS</b>										
2. GOODS	Procurement of various machinery & equipment and software for existing TCs (Several packages)	20	13	ICB/NCB	Prior	April 2014	August 2014	Sept 2014	Oct 2014	March 2016
	Procurement of various machinery & equipment and software for new TCs (Several packages)	111	15	ICB/NCB	Prior	April 2015	June 2015	July 2015	August 2015	March 2018
	Total 2. for goods	<b>131</b>								
	NB: Domestic Preference=	Will not apply								

**Table 8: Consultants' Services**

**b) Consultants' Services**

Package No.	Description of Assignment/ Location	Estimated Cost (US\$) / m	Selection Method	Review by Bank Prior / Post	Advertisement for EOI Date	Expected Proposal Submission Date	Contract Award Date	Start Date	Completion Date
A	B	C	D	E	F	G	H	I	J
<b>3. CONSULTANTS' SERVICES</b>									
	Selection of long term technical adviser /s to provide advocacy support (6 packages)	14	QCBS	Prior	March 14	June 14	Sept 14	Oct 14	March 15
	Selection of Cluster Network Manager/s to promote the activities of Industry specific Technology Centers (6 packages)	12	QCBS	Prior	March 14	June 14	Sept 14	Oct 14	March 15
	Selection of IT Service provider (1 package)	8	QCBS	Prior	April 14	June 14	Sept 14	Oct 14	March 15
	Selection of Consultant for Establishment of PMU for Designing the program, undertaking the Pre-program activities and implementation support	8	QCBS	Prior	June 13	Sept 13	Nov 13	Nov 2013	March 18
	Selection of Individual Consultant as National Program Manager	0.67	Individual	Prior	March 14	May 14	May 14	June 14	March 18
	Selection of Individual Consultant as Financial Management Expert	0.67	Individual	Prior	March 14	May 14	May 14	June 14	March 18
	Selection of Individual Consultant as Procurement Expert	0.66	Individual	Prior	March 14	May 14	May 14	June 14	March 18
	Other Technical Assistance to the Office of DC, MSME and MSME Ministry	5	Individual	Prior	March 14	May 14	May 14	June 14	March 18
	<b>Total Consultancy Services</b>	<b>49</b>							
	<b>Grand Total</b>								
	<b>Works</b>	<b>70</b>							
	<b>Goods</b>	<b>131</b>							
	<b>Consultancy</b>	<b>49</b>							
	<b>Grand Total</b>	<b>250</b>							

147. **SEPA:** SEPA is a Web-based system owned by the Bank that was developed in 2006 by the LAC Region to prepare, review, and approve procurement plans and track dates of the different stages of a procurement activity that is planned or under implementation. The system establishes a new, easy to use, and more efficient way for Bank teams and Bank clients to interact, while at the same time providing an audit trail of the process. SEPA has been used for more than five years in Latin America, and therefore its reliability is proven. SEPA has been introduced in SAR and TCSP has agreed to adopt it.

148. **Methods of procurement:** The following methods of procurement shall be used for procurement under the program. It has been agreed that if a particular invitation for bid comprises several packages, lots, or slices, and invited in the same invitation for bid, then the aggregate value of the whole package determines the applicable threshold amount for procurement and also for the review by the Bank.

**Table 9: Procurement Methods**

Category	Method of Procurement	Threshold (US\$ Equivalent)
Goods and Non-consulting services(excluding TI contracts)	ICB	>3,000,000
	LIB	wherever agreed by Bank
	NCB	Up to 3,000,000 (with NCB conditions)
	Shopping	Up to 100,000
	DC	As per para 3.7 of Guidelines
	Force Account	As per para 3.9 of Guidelines
	Framework Agreements	As per para 3.6 of Guidelines
Works	ICB	>40,000,000
	NCB	Up to 40,000,000 (with NCB conditions)
	Shopping	Up to 100,000
	DC	As per para 3.7 of Guidelines
	Force Account	As per para 3.9 of Guidelines
Consultants' Services	CQS/LCS	Up to 300,000
	SSS	As per para 3.9-3.11 of Guidelines
	Individuals	As per Section V of Guidelines
	QCBS/QBS/FBS (Fixed Budget Selection)	for all other cases
	(i) International shortlist	>800,000
(ii) Shortlist may comprise national consultants only	Up to 800,000	

### Review by the Bank

149. The Bank will undertake prior review following contracts:

- **Works.** All contracts more than US\$10 million equivalent;
- **Goods.** All contracts more than US\$1 million equivalent;
- **Services (other than consultancy).** All contracts more than US\$1 million equivalent;

- **Consultancy Services.** >US\$500,000 equivalent for firms; and >US\$200,000 equivalent for individuals.

150. First contract of each category of goods, works and consulting services and under each method issued by MSME will be prior reviewed by the Bank, irrespective of its value. In addition, the justifications for all contracts to be issued on LIB, single-source (>US\$30,000) or direct contracting (>US\$30,000) basis will be subject to prior review. These thresholds are for the initial 18-month period and are based on the procurement performance of the program and could be modified over the course of implementation. The prior review thresholds would also be given in the Procurement Plan. The Procurement Plan would be updated at least annually in SEPA and would reflect the change in prior review thresholds, if any. In addition, the Bank would conduct an annual ex-post procurement review of the procurement falling below the prior review thresholds mentioned above.

151. It is proposed that all procurements of the Program be planned, procured, and their payment disbursed based on the value and complexity of the procurement package. All procurements of the Program will be carried by the MSME PIU at the center.

### **Financial Management**

152. The implementing agency, office of Development Commissioner, Ministry of Micro, Small and Medium Enterprises (DC-MSME), GoI has adequate financial management arrangements in place to account and report on program expenditures. The DC-MSME will have the overall responsibility for the financial management of this program and in ensuring that these are carried out in accordance with legal agreements. These include: (a) adequate budget provision; (b) release of funds to TCs; (c) maintenance of financial management staff; (d) preparation and submission of Interim Financial Reports (IFRs); and (e) submission of audit reports and financial statements to the Bank.

153. **Budgeting and Funds Flow:** A separate budget head (2851-77-01) for Externally Aided Program and relevant object head numbers 31 for Grant in Aid and 35 for Capital Assets has been provided by the Ministry in 'Demand for Grants'. In future, depending upon the nature of program activities, separate object heads will be opened by the O/o of DC-MSME. The Annual Work Plans will be prepared for each financial year, which will form the basis of budget provision for each year. The expenditures at the central level are being incurred and paid by O/o DC-MSME. These will include (i) contracting of and payments to contractors for construction of Technology Centers, (ii) purchase of capital equipment, and (iii) payments for various consulting services and training/capacity building activities. The funds for incurring operating costs at the new technology centers will be funded by the Ministry using its own funds and these will be transferred as Grant in Aid once the TCs are operational. The payment function in the Ministry is centralized at Pay and Accounts Office (PAO). The bills/invoices along with administrative sanction will be submitted by Drawing and Disbursement Officer (DDO) to PAO for payment to consultants/suppliers.

154. **Accounting and Internal Controls:** The accounting and maintenance of financial records for the program activities will be carried out by the O/o of DC-MSME as per the General Financial Rules (GFRs) of the Government of India (GoI). The program will periodically reconcile the expenditures as per its books with the Pay and Accounts Office (PAO) as per the norms prescribed in GFR. The existing Technology Centers have good accounting systems in place and these are submitting year end audit reports within 6 months from the close of financial year. The Ministry has a web based 'Progress Monitoring System-PMS' to monitor the physical and financial performance of the TCs. The TCs benefiting from Grant in Aid will also provide periodic financial reports to O/o DC, MSME. The financial management arrangements will be elaborated in the Project Implementation Manual (PIM).

155. **Financial Reporting (IFR):** The Interim Financial Reports (IFRs) will reflect actual expenditures incurred by the Ministry and operating costs incurred by TCs. This IFR will be submitted to the Bank within 45 days from the end of each calendar quarter and will form the basis of disbursement.

156. **Disbursement:** Applicable Disbursement method will be "Reimbursement". GoI will use its own budgetary resources to pre-finance the program expenditures. The Bank will finance 80% of the expenditures incurred at Central level while operating costs incurred by new TCs will be financed by the Ministry.

157. **Finance Staffing:** The finance staff of the office of DC, MSME has limited exposure to externally aided programs. The program has suitably addressed this by contracting an Implementation Partner which includes financial management specialist to provide necessary support and guidance on financial management functions. With respect to new TCs, the funding of operating costs will also include finance staff.

158. **External Audit:** The annual audit for the expenditures incurred under this Program will be limited to Bank financed portion and will be carried out by the Comptroller and Auditor General of India (C&AG). The audit will be conducted as per the standard terms of reference agreed between the DEA, CAG and the Bank and will be submitted within six months from the close of each financial year. The annual audit report would consist of (i) auditor's opinion; (ii) program financial statements; and (iii) management letter highlighting weaknesses, if any. With respect to the expenditures incurred by TCs benefiting from Grant in Aid, the audit will be conducted by firm/s of Chartered Accountants and the audit reports will be submitted to the Bank within six months from the close of each financial year.

159. The following audit reports will be monitored:



**Table 10: Audit Report Monitoring**

<b>Implementing Agency</b>	<b>Audit Report</b>	<b>Auditor</b>	<b>Due Date</b>
The Office of DC, MSME	Audit Report and Financial Statements	Comptroller & Auditor General of India	September 30 each year
Technology Centers benefiting from Grant in Aid	Audit Report and Financial Statements	Firms of Chartered Accountants	September 30 each year

160. **Project Supervision:** The Project risk is assessed as **Moderate**. During the initial stages of project implementation, the team will focus on providing training on financial management related aspects and addressing disbursement issues (if any). As implementation progresses, the supervision would involve half yearly field visits, review of IFRs and external audit reports etc.

161. **Public Disclosure:** As per the Bank’s disclosure policy the program audit reports will be publically disclosed on the website of the Ministry.

**Environmental and Social Development (including safeguards)**

**Environmental Safeguards**

162. The establishment of 15 new Technology Centers and strengthening of 18 existing ones is envisaged over a six-year period under the Program. These facilities will focus on improving access to technology, providing skill up-gradation and offering advocacy support for specific industries with high growth potential. The centers are to provide technical advisory support for entrepreneurs and workers while offering opportunities for technical skill development for the youth. The long term vision of this Program is to ensure competitiveness of the MSME system by strengthening further their linkage to the mainstream manufacturing sector in the country. The ultimate goal is to ensure easy access to high quality technology and holistic skill development and training across the industry value chain, geographies and functionalities.

163. *Environmental Issues:* While the Program interventions would have an overall positive impact on economic growth, skill development, and job creation, specific interventions (under Component 2) envisaged under the Program—such as the creation of 15 new Technology TCs and upgrading of buildings and related infrastructure of the existing 18 Tool Rooms—may have some potentially adverse environmental impacts in the local context. Even though it is expected that the new buildings/blocks would be located within an existing industrial estate or on available government land elsewhere, planning, construction, and operation of buildings would require appropriate integration of environment, health, and safety measures to ensure that adverse environmental impacts are minimized and properly managed.

164. *Impacts pertaining to:* (a) location (environmental and social features of the site and surrounding land-uses); (b) design (sanitation, water supply, drainage, solid waste arrangements, waste water management, ventilation, access, energy efficiency, material usage, fire safety,

storage facility, and natural disaster dimension); (c) worksite safety management, including occupational health and safety of construction workers during the construction stage; (d) operation and maintenance aspects of buildings; and e) equipment, tools and machinery would require attention.

165. The anticipated environmental impacts of other Program interventions pertaining to training, curriculum development, testing and developing prototypes are unlikely to cause any significant or serious damage to the natural and physical environment. In fact, the Program offers an opportunity to promote improved environmental performance of the selected industrial sectors and safer working practices through the introduction of appropriate technology and training. There is also an opportunity to improve the overall environmental footprint by creating “green buildings” or “greener facilities” under the program.

166. In view of the Program’s potential impacts on the environment, the Bank’s OP 4.01 on Environmental Assessment and OP 4.11 on Physical Cultural Resources have been triggered, and the Program is designated as Category B.

167. *Environment Management:* The environment management process and the instrument for the Program has been designed keeping in mind the varied scope of work, which includes setting up 15 new Technology Centers and upgrading 18 existing Tool Rooms. These include the construction of building, specialized equipment and technical assistance for TCs. The technical assistance will address the technological and business needs cross support (exposure to new technologies), providing access to cutting-edge equipment, developing and testing new products, and patenting. Accordingly, to effectively plan, design and integrate environmental dimensions into the overall Program preparation and implementation, an Environment Management Framework (EMF) has been prepared. The EMF has been informed by the results of a limited environment assessment exercise that was conducted by the Ministry MSME and experiences from the Bank-funded Vocational Training Improvement Project (VTIP), currently under execution apart from other projects associated with/supporting the MSMEs in the country/region.

168. The key elements of the EMF developed for the Program include: (i) a screening exercise to identify key issues (such as availability of unencumbered sites) and consider those in the selection of sites for 15 new Technology Centers; (ii) application and implementation of Codes of Practice for Design and Construction of Greener Buildings for the 15 new and 18 existing Tool Rooms and Technology Centers and; (iii) strengthening environment, health, and safety dimensions in the operations based on the nature of the sectors finally selected under the Program.

169. As part of training and capacity-building activities, the Program will support the development of appropriate mechanisms to deal with issues of occupational health and safety. Further, based on the final selection of activities (based on nature, need and scope), the Implementation Partner will explore the opportunities for bringing in new technologies and materials that are cost-effective, efficient, and yet environment friendly.

170. *Stakeholder Participation:* Stakeholder participation is central to the design and implementation of the Program and provides for information sharing, consultation, and collaboration measures. A consultation framework has been laid out in the EMF and Social Management Framework (SMF) to ensure proper consultation and participation of stakeholders at the various stages of Program preparation and implementation.

171. In accordance with applicable Bank policies, consultations at the local or Tool Room/TC level) so far have been carried out as part of the limited environment and social assessment process. The public consultation process has indicated that the stakeholders strongly support the proposed Program. The feedback/inputs from these field-based discussions have been primarily used for preparing the environment and social management instruments (EMF and SMF) of the Program. Once the detailed plan preparation process for the various sites is initiated, specific inputs on site selection, design of the facility, technological choices, and other such matters will be sought.

172. Additionally, at the national level, stakeholders from the line ministries (such as Science and Technology and Ministry of Labor and Employment), industry associations, cluster leaders, academia and officials from the National Skill Mission have been consulted on December 2, 2013. Consultations in the field as well as at the national level are expected to be a regular feature of the Program and will add value to the decisions being finally made to support and execute the Program, including on issues related to mainstreaming environmental and social dimensions into the Program design and execution.

173. *Monitoring and Evaluation (M&E):* The environment management instruments provide guidance on M&E parameters and describe the institutional arrangements to facilitate the “process” and “progress” monitoring. The application/ implementation of environment management instruments, EMF (already prepared) and Technology Center specific plans (when these will be prepared during the course of the Program) will be monitored using parameters prescribed in these instruments. A comprehensive assessment report on environmental performance will be prepared by the Program Authority at mid-term and end-term.

## **Social Safeguards**

174. On the social development aspects, the SMF would highlight potential entry points on dimensions such as gender, equity, and inclusion for the targeted interventions and up-scaling of good practices for improving overall Program delivery. Social Development is an important outcome of the Program, as it is expected to provide young people, including women who belong to vulnerable sections of society, with opportunities for social and economic returns. This is in accordance with Government of India’s focus on poverty reduction and group equality and also with World Bank’s Country Partnership Strategy that emphasizes engagement, transformation and inclusion. Equity and socially inclusive opportunities are expected to take place as students and workers access training for skill development and employment. Similarly, these outcomes are achieved within the value chain in which extension services are an integral part, such as the ones provided by FFDC, Kannauj.

175. As far as access to training for skills development is concerned, the eligibility and admission criteria are based on the Reservation policies of the Government of India and State Governments that are socially inclusive because of the emphasis on women and young people from weaker sections of society. The SMF has explicit terms of reference for Gender, Equity and a Social Inclusion Plan that would also include up-scaling and replication of some of the good practices.

### **Monitoring & Evaluation**

176. The Program will maintain robust monitoring and evaluation systems through the PIU and the Implementation Partner to evaluate the progress of programs against indicators in the Results Framework and GoI RFD. The management information processes of the Program will be part of the PIU's responsibilities. The monitoring system will track the performance indicators and the required frequency and will be reviewed during implementation support missions. Much of the data is already being collected by the MSME ministry at regular intervals and is well documented and will serve as baseline for a robust M&E framework. MSME RFD lists its objectives and performance indicators and should be disaggregated at the TC level into subsidiary RFDs; these documents will be used to help monitor and evaluate the program's outcomes.

177. The Program will conduct an Impact Evaluation with the objective of determining if the TCs have materially improved the productivity and competitiveness of several of its user communities and clusters. An independent firm will be procured at Mid-Term Review (MTR) of the Program and also repeated in the final year of the program to analyze the evidence, and provide learning and recommendations for future improvement.

## Annex 4: Operational Risk Assessment Framework (ORAF)

**INDIA: Technology Center Systems Program (P145502)**  
**Stage: Board**

1. Program Stakeholder Risks						
<b>1.1. Stakeholder Risk</b>	<b>Rating</b>	<b>Moderate</b>				
<b>Description:</b>	<b>Risk Management:</b>					
<p>Interference with respect to the location, activities and beneficiaries of the Technology Centers is possible.</p> <p>The program will involve many stakeholders from the private sector as well as from all levels of government. Coordination between them will be a challenge and may slow implementation.</p>	The program will be governed by a Steering Committee involving the main stakeholders from the private and public sectors at the national level. Each Technology Center will be governed by a local Council involving the main stakeholders from the private and public sectors at the local level. This will be further mitigated through detailed consultations with various stakeholders during the design of the program, and ensuring that the concerns expressed are duly considered therein.					
	<b>Resp:</b>	<b>Stage:</b>	<b>Recurrent:</b>	<b>Due Date:</b>	<b>Frequency:</b>	<b>Status:</b>
	Govt				Semi-annually	In progress
	<b>Resp:</b>	<b>Stage:</b>	<b>Recurrent:</b>	<b>Due Date:</b>	<b>Frequency:</b>	<b>Status:</b>
	Bank				Yearly	In Progress
	(a) Given the high level pent up demand and large technology/skill gap among the vast number of existing manufacturing MSMEs, it is expected that the demand for the services of the Technology Centers will far exceed their capacity, even in the case of continued low level of growth in the domestic manufacturing sector.					
	<b>Resp:</b>	<b>Stage:</b>	<b>Recurrent:</b>	<b>Due Date:</b>	<b>Frequency:</b>	<b>Status:</b>
	Both	Implementation			Yearly	Not Yet Due
	<b>Risk Management:</b>					
	(b) The main government contribution for the program will be made in kind (land).					
<b>Resp:</b>	<b>Stage:</b>	<b>Recurrent:</b>	<b>Due Date:</b>	<b>Frequency:</b>	<b>Status:</b>	
Both		<input type="checkbox"/>			Not Yet Due	
2. Implementing Agency Risks (including fiduciary)						
<b>2.1. Capacity</b>	<b>Rating</b>	<b>Moderate</b>				
<b>Description:</b>	<b>Risk Management:</b>					
The MSME Ministry is	An internationally competitively firm will support program preparation and implementation.					

implementing a World Bank supported program for the first time.	<b>Resp:</b>	<b>Stage:</b>	<b>Recurrent:</b>	<b>Due Date:</b>	<b>Frequency:</b>	<b>Status:</b>
	Govt		<input type="checkbox"/>		Continuous	In progress
<b>2.2. Governance</b>	<b>Rating</b>	<b>Moderate</b>				
<b>Description:</b>	<b>Risk Management:</b>					
The main program-related governance risk pertains to the ineffectiveness of the institutional framework, e.g. lack of leverage of MSME on TCs' performance and weakness of accountability mechanisms.	The effectiveness of the program delivery chain rests on MSME's own governance framework, including its performance management system made of its Results Framework Document (stating its objectives, benchmarks and relations actions/policy/programs), its citizens charter, its public grievance redress mechanism and its certification ISO 9001.					
	<p><b>Program-funded Technology Centers will be draft their own subsidiary RFDs (as responsibility centers) to ensure the effectiveness of the performance and accountability framework down to the bottom line of service delivery under the program.</b></p> <p>MSME public grievance redressal mechanism and citizens' charter are to be independently audited in 2013-14. MSME citizens' charter commits to prompt release of funds to training institutions and handling of public grievance. The fulfillment of these two commitments will be monitored under the program. Both accountability mechanisms may have to be strengthened based on the recommendations of such audit.</p> <p>MSME ISO 9001 certification and action plan will strengthen the effectiveness of its procedures. The certification of program-funded technology centers will be initiated.</p>					
	<b>Resp:</b>	<b>Stage:</b>	<b>Recurrent:</b>	<b>Due Date:</b>	<b>Frequency:</b>	<b>Status:</b>
	Both				Forthcoming MSME RFD performance indicators will be aligned with The program development objectives. Each year, as responsibility centers TC will draft and disclose subsidiary RFDs aligned with the umbrella RFD of MSME.	
<b>3. Program Risks</b>						
<b>3.1. Design</b>	<b>Rating</b>	<b>Moderate</b>				
<b>Description:</b>	<b>Risk Management:</b>					
Supply driven (public sector) as well as poor quality and slow implementation due to complexity of Program	Clear institutional ownership within Indian Government (the MSME Ministry), reliance on proven model of demand driven autonomous Technology Centers and clearly identified list of activities to be financed. IP is already on board.					
	<b>Resp:</b>	<b>Stage:</b>	<b>Recurrent:</b>	<b>Due Date:</b>	<b>Frequency:</b>	<b>Status:</b>
	Govt		<input type="checkbox"/>			On going
	<b>Rating</b>	<b>Moderate</b>				

<b>3.2. Social and Environmental</b>						
Description:	<b>Risk Management:</b>					
The proposed program is a Category B program. these are quite limited given the nature of the activities which will be financed – mostly related to training, with manufacturing activities carried out only for the sake of providing hands on training (often through simulation software or low impact training machines), testing and developing prototypes. The social risks are even more limited – in fact this Program will be the opportunity to promote better and safer working practices.	A safeguards specialist will be part of the program team. An Environmental and Social Management Framework (EMF AND SMF) will be developed during the preparation of the Program – it will specify the measures to be taken once the actual locations and features of the new TCs will be known.					
	<b>Resp:</b>	<b>Stage:</b>	<b>Recurrent:</b>	<b>Due Date:</b>	<b>Frequency:</b>	<b>Status:</b>
	Both	Preparation		29 Nov. 2013		
<b>3.3. Program and Donor</b>	<b>Rating</b>	<b>Low</b>				
Description:	<b>Risk Management:</b> The process to identify, select and secure the sites for the Technology Centers will follow a transparent and objective process to be spelt out during program preparation.					
Land given by State Governments. Demand for this program by State Governments is already very high.	<b>Resp:</b>	<b>Stage:</b>	<b>Recurrent:</b>	<b>Due Date:</b>	<b>Frequency:</b>	<b>Status:</b>
	Both	Preparation		28 February 2014		
<b>3.4. Delivery Monitoring and Sustainability</b>	<b>Rating</b>	<b>Moderate</b>				
Description:	<b>Risk Management:</b>					
	The competitively recruited firm to support implementation will also be in charge of monitoring and evaluation					

Inadequate capacity to monitor performance in an objective manner.	<b>Resp:</b>	<b>Stage:</b>	<b>Recurrent:</b>	<b>Due Date:</b>	<b>Frequency:</b>	<b>Status:</b>
	Client	Implementation	<input type="checkbox"/>			Not Yet Due
<b>4. Overall Risk</b>						
<b>Implementation Risk Rating: Moderate</b>						
<p>Comments: These risks are being mitigated by involving from the beginning of the design phase and during implementation the main private and public sector stakeholders in the governance of the program at both the national and local levels. They are also being mitigated by ensuring that services rendered by the TCs are paid for by the beneficiaries and by relying on internationally competitively recruited firms to support timely and effective implementation in all aspects and ensure the Technological Centers reach/remain on the global technology frontiers and that they are firmly embedded in their ecosystem.</p>						



## Annex 5: Economic Analysis

178. This Program has three components that aim to enhance the competitiveness of MSMEs served by the existing and new Technology Centers (TCs), as well as the employability and net benefits to the trainees affected by the upgrades and the new TCs.

179. The total Program cost, including the government's contributions, will be US\$400 million over a six-year period, with an IBRD loan equivalent to US\$200 million.

180. In broad terms, the financial and economic analysis for this Program is based on a model that focuses on two types of gains: 1) expected returns to training-related investments, and 2) expected returns to investments that aim to support and enhance competitiveness of the MSMEs affected by the Program. The Program also estimates the returns to the existing TCs after upgrades to ascertain their financial sustainability and offer insights as to why public investments in TCs may be justified and private sector groups do not offer the same bundle of services with the foreseen benefits.

181. The analysis is built with the estimated difference in cash flows to the beneficiaries (trainees and MSMEs affected by the Program) and cash flows to the TCs, accounted for as cash flows to the Program. The model is based on a series of assumptions and baseline data provided by the existing TCs and supported by relevant impact evaluations. Accordingly, the total Program investment is estimated to result in an NPV of US\$472 million, at a discount rate of 10 percent and an ERR of 31 percent with the base case scenario.

**Table 11: Total Returns to the Program with the Base Case**

Assumed Discount Rate	NPV
Discount rate 10%	\$472
Discount rate 12%	\$382
Discount rate 15%	\$274

182. The projections cover a 12-year period, starting from year 1 of Program effectiveness. The investments are made over six years, with a majority completed in the first five years of the Program, in accordance with the disbursement schedule, as well as the timetable for the construction of new TCs. The costs are allocated between new TC and TC upgrades, along with those that affect training vs. MSME support in both the new and the existing TCs, in line with the Program details. Investment in land has been accounted for in the form of 2 percent of the total land value as an annual payment. Depreciation expense has been included for both buildings and capital equipment and a different depreciation schedule is built based on the date investments are made. Buildings are depreciated to 70 percent of their value (salvage value) in eight years and capital equipment is depreciated fully over five years using straight-line depreciation. These apply to all three types of economic analyses provided below (returns to MSME support, training, and the TCs).

183. Below we provide a summary of the model, including the assumptions and the baseline data that derived it. Sensitivity analyses are provided for each of the sub-models that estimate returns to investments pertaining to training and MSME support, which follow.

## **1. Economic analysis of investments that affect support provided to training**

### *a. Conceptual framework of expected benefits*

184. The major benefits of the Program are expected to be in the form of increased quality of training provided to the trainees by TCs and the increase in wages as a result, and to a lesser extent an increase in the number of students trained. The existing centers already train 94 thousand students a year, and this Program aims to sustain, improve, and scale up this capacity.

185. Accordingly, the total Program investments in training are estimated as returns to the Program based on the model and assumptions explained below and are expected to result in an NPV of US\$87 million at a discount rate of 10 percent and an ERR of 32 percent, with the base case scenario.

### *b. Results from similar interventions*

186. A range of studies look at post-school training and wages in India, Sri Lanka and Pakistan (2004), and find that returns are positive and statistically significant in all three countries, even after controlling for educational attainment and other worker attributes (World Bank 2007). In India and Pakistan, returns to formal vocational training (in the form of wage increases) are 8 percent, whereas in Sri Lanka they can be as high as 21 percent. Also relevant to our assumptions (as the training programs in TCs are more comprehensive than basic vocational training) are the returns estimated to secondary and tertiary education. Between 1993 and 2004, returns to higher secondary and tertiary education in India rose from 12 to 19 percent. More recently, too, research shows that premiums for completing TVET have been sizable in Sri Lanka and Malaysia, rising from 12 percent to 17 percent between 2000 and 2012 (World Bank 2011; Penang Skills Development Center 2010).

187. The analysis here considered the average base salary of a typical TC trainee and the average salary of a typical trainee graduating and being placed on the job market after training. The average increase in wages was reported as 25 percent after 1 year of training by TCs. This compares conservatively to the increase in hourly wages found in vocational training of a similar kind in Lebanon (72 percent), however it compares favorably to the returns quoted above. The base case model has adjusted this expected increase in wages downward to 20 percent without the Program and 23 percent with the Program.

### *c. Description of the Model*

188. The following economic analysis accounts for the total fixed costs for existing and new TCs (borne by the Program), depreciation expenses (borne by the Program), operational costs to the TCs and social costs to the trainees (borne by the trainees). Social costs to the trainees include the fees paid by the trainees to the TCs (same as the revenues to the TCs from training) and foregone wages during training. The base case scenario includes an average training period of four months (weighted average of the training provided in a typical TC), in accordance with the historical performance of the existing TCs. Each trainee graduating and being placed in the job market is expected to accrue wage benefits for the following 10 years after completing his training (similar analyses expect as high as 30 years of benefits, however this model adjusted this figure sharply downwards to account for changing trends, mechanization, and diminishing returns in manufacturing-related training).

189. Benefits accruing from the training components are accounted for by the total wage differential to the trainees affected by the Program as well as the increase in the number of trainees resulting from the Program. The Program assumes that the graduation and market participation rates will be in line with historical averages (each 95 percent), adjusted downwards in the base case scenario to account for risks related to the expansion of the training capacity (85 percent for both graduation and market replacement rates). Historically, the number of trainees graduating from TCs grew by 18 percent; however the training capacity of the TCs is assumed to have reached a ceiling and is expected to decline in the absence of the Program due to technology obsolescence. Accordingly, the projections assume an 18 to 5 percent gradual decline of the number of trainees trained by year four in the absence of the Program, and 20 percent to 5 percent gradual decline in growth by year five with the Program (with constant 5 percent growth for the remainder of the forecast in both cases).

190. For new TCs, a schedule has been developed to assume gradual operationalization of each TC to full capacity by year five, at which time they are expected to train the same number of students as the current average TC. Similar to the “no Program” scenario, a flat 5 percent increase is assumed from there on. A parallel schedule has been applied to the revenues from training for each TC after construction.

191. Based on the existing average wages for ITI graduates, the average increase in wages by past trainees of the existing TCs, and the increase in wages from similar interventions in India and other comparable countries, the following assumptions are made to compute the wage differential. Increase in wages after Program is adjusted downwards to account for the effects of four-months of training as opposed to one year.

**d. Table of Assumptions for the Base Case**

**Table 12: Table of Assumptions for the Base Case**

Average annual wage of an ITI graduate targeted by TC training	\$ 1,200.00
Average annual wage differential per trainee after training by existing TCs (after 4 month training) without program	\$ 80.00
Average annual wage differential per trainee after training by existing TCs (after 4 month training) with the upgrades to be financed by the program)	\$ 92.00
Average # training months by TCs	4
Average period of training (in years)	0.3
Average increase in wages after 1 year training by TC	20%
Average increase in wages after 1 year training by TC after program	23%
Average increase in wages after 4 month training by TCs	7%
Average increase in wages after 4 month training by TCs after program	8%
Graduation rate	85%
Market placement rate	85%
Total # years a single (graduated and replaced trainee) is affected by changes to wages	10
Base monthly salary of a typical trainee (average wage of an ITI graduate)	\$ 100.00

**e. Sensitivity analyses:**

**Table 13: Sensitivity analyses**

	Baseline	Sensitivity testing	Component ERR	Component NPV	Program ERR	Program NPV
Average annual wage of a ITI graduate targeted by TC training	\$ 1,200	1000-1800	25-63%	50 -182 m	29-36%	408-553 m
Average # training months by TCs	4	6	63%	182 m	36%	553 m
Average increase in wages after 1 year training by TC with and without the Program	20-23%	15- 18%-22-25%	16-40%	17-108 m (27)	28-32%	371-472 m
Graduation rate	85%	60-90%	(2)-40%	104m	26-32%	320-468m
Market placement rate	85%	60-90%	(2)-40%	(29)-104m	26-32%	320-408m
Total # years a single (graduated and replaced trainee) is affected by changes to wages	10	12	54%	158m	35%	527m

## **2. Economic analysis of investments that affect support provided to MSMEs**

### **a) Conceptual framework of expected benefits:**

192. The Program aims to improve and expand TCs' support to MSMEs, especially with technology upgrade and adoption, industry linkages, standards and testing, and cluster formation, among others. These services are expected to enhance MSMEs' productivity. In broad terms, this model considers changes in gross profits of the MSMEs as a proxy for productivity. Gross profits would then be distributed to businesses (for reinvestment, SG&A, or as owner equity), workers, and government (in the form of taxes), all of which are deemed to contribute to economic growth in the affected areas. This analysis considers a relatively marginal impact on sales volume (increase from average 5 percent to 7 percent annual growth) and relatively marginal increase in MSMEs' gross margin (average increase from 10 to 11 percent); these assumptions are very conservative in comparison to the impact evaluations of similar SME programs discussed below. However, as the affected population of firms is relatively large, the overall returns to the Program remain high. Accordingly, the total Program investments in MSME support are estimated to result in an NPV of US\$342 million at a discount rate of 10 percent and an ERR of 30 percent, with the base case scenario.

### **b) Results from similar Programs:**

193. A series of impact evaluations was reviewed to develop a basis for the assumptions used in this analysis. These included recent SME programs in Chile, Mexico, Colombia, Peru, and Sri Lanka that provided TA, support for technology adoption and cluster formations, and credit to MSMEs, among other services (Acevedo and Tan 2010). They showed that TA and technology support, two sub-areas covered in this Program, increased sales 5-20 percent, and an impact evaluation on Peru's Program found that the profitability of the firms increased 21–26 percent. We also considered a set of more dated impact evaluations on programs developed and implemented between 1990 and 2007 in Bangladesh, Chile, Mexico, Argentina, Brazil and Turkey. These showed that gains with similar interventions differed significantly and were more mixed (whereas positive gains in sales growth are observed consistently in the newer aforementioned SME support programs that constituted the basis for our assumptions). According to these earlier evaluations, sales growth changed between 0 and 40 percent and productivity or TFP increased between 11 and 14 percent following these interventions.

### **c) Description of the model:**

194. The following economic analysis accounts for the total fixed costs for existing and new TCs (relevant to the services to the MSMEs) (borne by the Program), depreciation expense (borne by the Program), operational costs to the TCs and costs to the MSMEs (borne by the MSMEs). Costs to the MSMEs include the payments made to the TCs (same as the revenues to the TCs from MSMEs).

195. Benefits accruing from the upgrades and investments made to support the MSMEs are accounted for by the total increase in profits to those MSMEs affected by the Program. Historically the number of MSMEs supported by the TCs increased 20 percent annually on average; this analysis has adjusted this growth rate downwards, both with and without the Program, to err on the side of conservatism. Accordingly, the growth rate of the number of MSMEs supported by the TCs is expected to decline from 20 to 5 percent growth by year seven (constant growth there on) without the Program, and from 20 to 5 percent by year 11 with the Program.

196. For new TCs, a schedule has been developed to assume gradual operationalization of each TC to full capacity by year five, at which time a new TC is expected to support the same number of MSMEs currently supported by an existing TC. Similar to the “no Program” scenario, a flat 5 percent growth is assumed from there on. A parallel schedule has been applied to the revenues from MSME support for each new TC following its construction.

197. Based on the average size of an MSME supported by the TCs, and interventions of similar kinds in India and elsewhere following are assumed as average annual revenue, average increase in revenue and profitability before and after the Program.

d) Table of assumptions for the base case:

**Table 14: Table of assumptions for the base case**

Average annual revenue per MSME supported (millions)	0.1
Average profitability of MSME supported	10.0%
Average profitability of MSME supported with program	11.0%
Average increase in revenue of a single MSMEs supported	5.0%
Average increase in revenue of a single MSME supported after program	7.0%
Percentage of MSMEs benefitting meaningfully by TC interventions	75.0%
<i>No effects nor revenue from production of tools are accounted for</i>	
Opex for average TC on training (percentage of revenue)	0.72
Opex for average TC on Tech (percentage of revenue)	0.98
<b>Depreciation</b>	
<i>Buildings depreciate in 8 years to 70 percent of their value (salvage value)</i>	
<i>Capital equipment depreciates fully in 5 years after purchase</i>	

**Table 15: Sensitivity analyses:**

		Sensitivity testing	Component ERR	Component NPV	Program ERR	Program NPV
Average annual revenue per MSME supported	0.08	50-150 thousand	16-60%	78-262 m	23-55%	262-1062m
Average increase in sales of an average MSME affected by the Program	5-7%	No change - 9%	27-34%	258-353m	28-34%	375-511m
Average profitability of an average MSME affected by the Program	10-11%	No change - 13%	11-71%	19-924m	16-63%	111-1107m
Percentage of MSMEs benefitting meaningfully by TC interventions	75.0%	50-90%	18-35%	107-407m	21-35%	208-538m

**3. Financial analysis of returns to new and existing TCs**

198. Total cash flows to existing and new TCs have been estimated based on the projected revenues from training and MSME support, as discussed above, as well as the operational costs borne by the TCs. Not accounting for land costs and depreciation expenses, the internal rate of return to existing TCs over the projected 12 years results in 0 percent. This finding supports the notion that the TCs would not be viable on purely market-driven terms in their existing circumstances, yet have the potential of delivering significant returns to the public at large.

**Table 16: Total Program Investment Allocations between new and Existing TCS and Training and MSME support**

Total Program Investment Allocations Between New And Existing Tcs And Training And Msme Support				
Allocation to existing TCs	Allocation of costs between existing and TCs			
	Existing TCs		NEW TCS	
	Training	MSME	Training	MSME
10%	50%	50%	50%	50%
22%	30%	70%	30%	70%
0%			50%	50%
50%	25%	75%	25%	75%
50%	20%	80%	20%	80%
50%	40%	60%	40%	60%
0%			0%	100%
50%	35%	65%	35%	65%

## Annex 6: Lessons from International Good Practices

199. The proposed Program has been, and will continue to be, informed by international experiences and leading practices. These international good practices share a number of common design principles/characteristics that informed the design of the Program:

a. **A formal and inclusive corporate governance model**

**Example:** Fraunhofer in Germany, IMEC in Belgium, ETRI Holdings in Korea, and ITRI (Industrial Technology Research Institute) in Taiwan, China, are all public companies with formalized Boards, including a specified number of seats for industry representatives, out of which executive officers are elected. Careful selection processes are in place to govern membership admission and nomination of Board members. Fraunhofer has a highly decentralized governance model in which the senate, executive board, policy committee, institutes, and a scientific and technical advisory board, etc., shares various decision-making and supervision responsibilities.

**Way Ahead:** The creation of the Program Steering Committee and the reinforcement of the TCs' Governing Councils (both with formal representation of the main stakeholders, including from the private sector) is a first step towards a more formal, inclusive, and transparent model of corporate governance.

b. **Autonomy combined with rigorous performance criteria/incentives**

**Example:** The Fraunhofer-board, 60 institutes, six institute groups, and 20 institute alliances operate in a decentralized manner. The organization applies criteria to consolidate the fragmented set of institutions. This includes scientific competence, proved by the recognition of the scientific community; a well-balanced financial mix of different independent sources; market success and entrepreneurial competence proved by contracts with industry and government; and professional networking with other Fraunhofer Institutes and external partners. A Scientific and Technical Council that exploit measures used to evaluate the efficiency of scientific and technical programs.

TIC in the UK emulates Fraunhofer's method for selecting and deselecting institutions: a confirmed market potential of products from the research of over US\$2 billion a year; demonstrable existing UK strength or pre-eminence in the research field; a clear ability for the UK to retain and defend parts, if not all, of the value chain for future products; lead time to commercial products from the research of over 10 years; and clear commitments of industry support for each Institute and its focus – concrete pledges of financial support. The system of 2,200 public Technology Centers in China also relies on autonomy, combined



with a system of internal competition whereby the best-performing TCs are rewarded by extra financial support from the government (see Box 1 below).

**Way Ahead:** The benefits of autonomy and performance-based incentives (e.g., achieving financial sustainability) have been demonstrated by the best performing TCs, such as CTTC, Bhubaneswar (which has designed hi-tech components for Mangalyaan and other satellites and helped MSMEs become part of the value chain); IGTR, Aurangabad (which has been supplying designs/prototypes to Auto components for all the Auto majors); and the CTTC, Kolkata (which helped fabricate a cyclotron for the CERN Research Facility). The Program will build on those strengths by introducing a new set of KPIs related to the (transformative) impact TCs are having on their customers (such KPIs will include the revenue earned from supporting MSMEs, adopt new technologies and the number of long-term trainees employed six months after graduating – see the Results Framework in Annex 1).

## Box 2: Technology Centers in China

### Technology Centers in China

China has 2,200 public PPCs (Productivity Promotion Centers) across the country, established under a major national program for technology dissemination and skills development. According to the achievement of KPIs on both financial performance and outputs of consultancy services and cluster network linkages (the number of service provided to SME; link to research institutions and experts; cooperation with international partners; revenue increase of SME; increase of employment rate.), the PCCs are promoted or demoted across three tiers. Higher-ranked PCCs have access to additional funding through national R&D programs. The Productivity Promotion Center Statistical Report published every year by the Ministry of Technology indicates the service performance result of all PPCs.

### c. Innovative service delivery models to SMEs

**Example (i):** IMEC in Belgium has a structured process to expose SMEs to new technologies being developed at the institution and to facilitate technology transfer and commercialization through staged competitive selection of proposals. “The Industrial Affiliation Programs (IIAP) are broad R&D schemes by which industrial partners embed in IMEC as resident researchers members of their staff together with relevant equipment, where necessary. The principle behind these schemes is the sharing of risk and resources, as well as the sharing of new knowledge generated through information exchanges, joint work, and cross-fertilization of programs. According to the extent of their interest and capacity in partnering with IMEC, firms can contribute to, and acquire in exchange, non-proprietary knowledge shared among different partners, shared licensed IP, co-owned IP, or proprietary and exclusive rights. To join the research “pool”, firms pay a fee that entitles them to non-exclusive

and non-transferable rights to exploit the existing know-how of the program and participate in joint research activities. When valuable results are generated in the course of R&D processes, possibly leading to patents, each firm that has contributed to it can choose to co-own the IP. This can be made freely available on a non-exclusive and non-transferable basis, also to a partner that has not contributed to it but might have an interest in using this know-how, for example as an end-user/manufacturer. Moreover, if a partner has an interest in pursuing specific research activities that cannot be shared with other firms collaborating with the IMEC program, the firm can negotiate with IMEC terms and conditions for conducting proprietary research.”

**Example (ii):** Fraunhofer’s model of research based on contract tends to be responsive to existing market needs and is more suited to react to technology trends than to anticipate them.

**Example (iii):** MTC in the UK, with financial aid from the government, supports manufacturing innovation with SMEs and industry consortiums through joint technology development.

**Way Ahead:** The Cluster Managers will help the TCs identify such joint R&D opportunities with the private sector, which will be supported technically by the Technology Partners.

d. **Funding mechanism encourages private sector engagement**

**Example:** Fraunhofer, IMEC, ETRI, and ITRI all have a large and growing percentage of funding from the private sector. Approximately two-thirds of Fraunhofer’s research is funded through contracts from industry and publicly funded organizations. It developed a competitive key that promotes to operate within a specific ratio of industrial revenues. When institutes acquire between 25 percent and 55 percent of their total budget through contract research with industry, they are rewarded with a higher share of federal funding than institutes operating outside the corridor. IMEC’s total contract research income average is 80 percent (including revenues from government contracts independent from the core funding grant.) ITRI’s revenues come in even proportion from the provision of industrial services (still includes revenues from government procurement contracts) for client organizations and from dedicated government programs. Malaysia has developed a successful PPP model for vocational training (see Box 2 below).

**Way Ahead:** In India, the Council of Scientific and Industrial Research System was invented to fund their resources some two decades back. Starting from totally Government funded industrial research; some of the institutions have followed a highly successful model of partnering with the Indian industry, funded by the industry. Some of the Indian Institutes of Technology (IITs) have also established a similar system.

The TCs will follow a similar model, based on international best practices, to move into areas of practical, applied Industrial Research that can lead to value additions for the Indian MSMEs. This is a vital missing link. Along the lines of the Malaysian model of PPP and as discussed above, the Program will include, as a pilot, a TC developed as a Special Purpose Vehicle led by the private sector.

### **Box 3: An Effective Public-Private Partnership in Malaysia**

#### **An Effective Public-Private Partnership in Malaysia**

The Penang Skills Development Centre (PSDC) was the first industry-led training center to be set up in Malaysia. It was conceptualized in 1989 out of an urgent sense that if Penang was to continue to attract foreign direct investment, its human capital must keep pace with changes in technology. Although the initiative, land, and some financial support came from the state and federal governments, the lead role—with support from U.S. electronics firms already operating in Penang—was taken by private industry, which not only provided the initial trainers and equipment but also designed programs that met their needs.

The government acts as a facilitator, supporting PSDC through cash grants and subsidized training materials, equipment, and trainers, and helps evaluate the impact of the training. It is represented on the PSDC management council by an ex officio member.

PSDC, which now has 140 members, operates as a nonprofit association. Its mission is to pool resources to provide up-to-date training and education programs that support current commercial requirements and to keep abreast of current technological advances. Companies pay to send employees to the center for training. To ensure that the training meets current industry needs, programs are continually adapted as skill needs evolve.

The PSDC now caters to the firms in the free industrial zones and industrial parks in Penang, where as of late 2007 1,277 factories employed about 220,000 workers. The center has trained more than 150,000 workers in more than 7,000 courses, pioneered local industry development initiatives, advised on national policies for building human capital, and contributed directly to Malaysian workforce transformation initiatives. The PSDC recently set up a new Shared Services Centre to house Malaysia's largest Electromagnetic Compatibility Lab, which will provide training in partnership with member companies to fast-track the work-readiness of university graduates and bridge the competency gap between what they know and what industry needs. The unique PSDC model has since been adopted throughout the country; 11 of 13 states in Malaysia now have skills development centers.

*Sources:* World Bank 2011 (based on Penang Skills Development Centre 2010); Invest Penang 2010.

#### e. **Technology transfer through spin-offs.**

**Example:** IMEC and ITRI sets up spinoff companies based on successful research results. IMEC sets a precondition protecting intellectual property and the incubation process. ITRI's two spin-offs grew into market leaders of the global semiconductor business (United Microelectronics Corporation, (UMC) & Taiwan Semiconductor Manufacturing Company (TSMC). Much of the technology transfer was bought on the market through a special government R&D fund.

**Way Ahead:** the Program will test this attractive new model of technology development and transfer, which is driven by industry needs.

f. **Innovation with internal collaboration and a combination of top-down and bottom-up approaches**

**Example:** Fraunhofer encourages horizontal collaborations and strategic alliances with more varied contractual arrangements. “A Future-oriented Fraunhofer Process was developed to identify and develop research topics across knowledge domains represented by institutes and groups of institutes. A needs-oriented approach and cross-institute problem solving should open new contract-research markets in a 3–7 year perspective. Begin with the top-down derivation of specific challenges, followed by bottom-up generation of specific technological solutions. Within a competitive call, institutes teamed up to develop technological solutions to the challenges in the form of collaborative programs proposals. The most convincing programs were internally funded. With this approach, a learning process towards needs-oriented thinking across institutes was started.”

**Way Ahead:** the grouping of TCs focusing on similar industries/technologies within systems supported by world-class Technology Partners will facilitate such collaborative processes.

g. **Access to Incubation Services**

**Example:** Entrepreneurs rarely have the resources or a comprehensive blend of skills required to address the complexity of running a business. In countries such as Germany, Canada, and the UK, SMEs have access to incubation services. Germany’s Fraunhofer Service Factory focuses on providing incubation services to SMEs in a regional cluster, adding a service dimension to the regional innovation system.

**Way Ahead:** the opportunity to develop incubation services will be explored.

200. Other relevant international examples include service-based networks, the Manufacturing Extension Partnership (MEP) in America, the Manufacturing Advisory Service (MAS) in the UK, Systems in the Netherlands, and Enterprise Connect in Australia.

## Annex 7: Implementation Support Plan

### Strategy and approach for Implementation Support

201. Component 3 of the program is dedicated to supporting implementation. The MSME ministry core team supported by the international *Implementation Partner*, already in place during preparation, has led to a fully functional PIU at Appraisal. Moreover, the MSME core team has already demonstrated reasonable competence in supervising and guiding the existing TC network.

202. Furthermore, the *Cluster Managers* and the *Technology Partners* also are expected to add technical and management capacity to the PIU in building the ecosystem for the MSMEs around the expanded TC network under the program. The advisory and governance structures supporting the PIU will also take timely action to mobilize technical support (TA) funded by the program.

203. However, given the program’s complexity and geographical spread across several different clusters, significant bank resources are also recommended, especially for the first two years of implementation. In addition to usual implementation supervision expertise, the Bank will, where appropriate, add the following expertise in a timely manner: global knowledge on TC deployment, MSME development, opportunities to integrate Environmental and Social development, Monitoring, Evaluation, and Impact assessment.

204. The following implementation support is therefore envisioned:

**Table 17: Implementation Support**

Time	Focus	Skills Needed	Resource Estimate
First 24 months	EMF AND SMF (PIU/TCs) Procurement/PRMP (PIU/TCs) FM (PIU/ TCs) PIM update (IP) Specialized TA	<ul style="list-style-type: none"> <li>• International domain expertsx10.</li> <li>• FM, Procurement, Environment&amp; Social management (E&amp;S), Legal, CTRLD</li> </ul>	6 trips x 3 No. HQ staff  Delhi based staff weeksx72  HQ based staff wksx50weeks
24-72 months	Specialized TA Disbursement Review Stakeholder consultations Impact assessments (IAs) Fiduciary & safeguards	<ul style="list-style-type: none"> <li>• International domain expertsx5</li> <li>• Surveys x2 per cluster x 5 clusters = 10total over program period</li> <li>• 2 Impact assessments (1 @MTR &amp;1 @close of program)</li> <li>• FM, Procurement, E &amp; S, Legal, CTRLD</li> </ul>	10 trips x 2No. HQ staff  Delhi based staff weeksx100  HQ based staff weeksx70