

**Tangible Outputs**

- HRD Program Expanded
  - CSFs established (Phase 1)
  - ISO Certified Companies (25% of Interested Firms)
  - Locally-fabricated MPEPs
  - Developed Design Capability on Target MPEPs
  - Upgraded Incubation Facility
  - Testing Facilities Expanded
  - Upgraded/Expanded Production Facilities
- CSFs Established (Phase 2)
  - ISO Certified Companies (50% of Interested Firms)
  - Locally-fabricated MPEPs (expanded)
  - New markets developed
  - Upgraded/Expanded Production Facilities
  - Expanded Incentives for Machining & Fabrication Sectors
- CSFs Established (Phase 3)
  - ISO 9001 certified companies (100% of Interested Firms)
  - Upgraded/Expanded Production Facilities
  - Partnership with Foreign Companies

- HR Development Plan
- R&D Programs
- IEC Campaign Plan

- Technology Needs
- Identification of Machinery, Parts and Engineered Products (MPEPs) for Design and Dev't.
- Benchmarking
- Training Needs
- Capability Gap Assessment of Training Providers
- Industry Campaign on Plant Upgrade/Expansion and Certification
- Promote TBI
- Industry FGD on Testing
- Assessment Study on Setting up of CSFs
- Review of Incentives for Localization of MPEPs
- Provision of Skills
- Development of Design
- Development of Skills Certification
- Midterm Assessment of Industry
- Industry Campaign on
- Foreign Trade Missions/Exhibitions
- Skills

2011

2012

2013

2014

2015

2016

- Assessment of R&D and Technology Transfer Programs
- Commercialization of Localized MPEPs (New)
- Foreign Trade Missions/Exhibitions (Phase 2)
- Skills
- Commercialization of Localized
- Industry FGD on New Testing
- Industry Business Matching (New Local & Foreign Markets)

**Activities**

**Appendix B1  
Machining and Fabrication  
Technology Road Map**

# Appendix B2 Tool and Die Sector Technology Road Map

## Tangible Outputs

- Product Certification Program
- Commercially produced components
- Common Service Facility (CSF)
- State of the art facility to meet the demands of the industry
- Industry Clustering
- Continuing Professional Education (CPE)
- CNC Maintenance Program
- Design Facility
- IEC Campaign conducted
- HR Development Plan
- R&D Programs
- Technology needs assessment
- Benchmarking
- Identification of machinery, parts , engineered products and servicing job that can be locally done
- Training needs assessment
- Scholarships

- Tool & Die Curriculum for various Courses
- Proposed Standard Salary Scale
- Design capability

- Testing laboratory for T&D products
- New markets developed
- Energy conservation

- Establishment of a Die Engineering Ctr.
- Standard Salary Scale for T&D personnel(proposal)
- Incentive programs for T& D personnel
- Product reliability testing

- Local availability of special raw materials (local mills that certify job per International Standards)

- Chemical etching or photo etching, Polishing, Metal Finishing,
- Localization of Tool & Die components
- Partnership of the industry association with equipment manufacturers to put up a local service facilities and training

- Establishment of Design facility
- Maintenance Programs (preventive /corrective)
- Productivity improvement (best practices)
  - Energy Audit - QMS - TQM
- Industry immersion
- Expanded skills & trade accreditation

- Development of Training Programs & Certification Scheme on CNC operation & other related T&D processes & technology

## Activities

2011

2012

2013

2014

2015

2016

# Appendix B3 Metalcasting Sector Technology Road Map

## Tangible Outputs

- **R&D Programs on Materials Technology**
- **Improved Productivity of Foundries**
- **Expanded MIRDC Testing Services**
- **Marketing Plan**
- **HR Development Plan**
- **R&D Programs**
- **IEC Campaign Plan**
- **ISO Certified Cos.**

- **Increased Number of Trained Foundry Personnel**
- **R&D Programs on Manufacturing Technology**
- **ISO Certified Foundries**
- **Locally-fabricated MPEPs**

- **R&D Programs of Environmental Technology**
- **ISO Certified Foundries**
- **New Foundries**
- **New Markets Developed**

- **Globally Competitive Foundry**
- **New Products, Materials and**
- **Partnership with Foreign**

- **Continuing R&D and Tech Transfer Activities**
- **Foreign Trade**

2011

- **Continuing Technology Needs**
- **Conduct Market Research**

2012

- **Continuing ISO Certification of**
- **Acquisition of design**
- **Development of Training Programs and Trade**

2013

- **Conduct of R&D on Materials Technology – e.g. low cost composite material, lighter**
- **Establishment of Mobile Testing**
- **Conduct Energy Audit to**
- **Review of Incentives for Localization of MPEPs**
- **Industry Campaign on Clustering**
- **Provision of skills**

2014

- **Conduct R&D on Manufacturing Technology, e.g. Squeeze Casting, Lost Foam**
- **Midterm assessment of industry**
- **Expand TBI facility & aftercare**
- **Continuing Tech Transfer and Commercialization**
- **Review and Advocate incentives for**

2015

- **Conduct R&D on Environmental Technology**
- **Industry FGD**

2016

## Activities