

**Standard Operating Procedure (SOP)**  
**For Implementing**  
**Technology Development Fund (TDF) Scheme**



**Defence Research & Development Organisation**  
**Ministry Of Defence, Government of India**

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## **Introduction: Technology Development Fund Scheme**

1. Defence Production Policy, promulgated in 2011 by the Ministry of Defence considers self-reliance in defence manufacturing as a vital strategic and an economic imperative; and places emphasis on utilizing the emerging dynamism of the Indian industry by leveraging domestic capabilities for the growth of the Indian defence industry. In pursuance of this Policy, the Government of India has announced the setting up of a 'Technology Development Fund (TDF)' in the Union Budget 2014-15, which aims at funding the development of defence and dual use technologies that are currently not available with the Indian defence industry, or have not been developed so far. Thus creating an Eco-system for enhancing cutting edge technology capability for Defence application.
2. The funding will be through provision of grants to public and private sector industry especially MSMEs that may work in collaboration with the academia or research institutions to carry out innovation, research and development; such chosen entities will be referred to as Development Agencies (DAs). In cases where academia or research institutions are involved, their work involvement cannot exceed 40% of the total efforts required.
3. The focus will be on funding development of technologies that will form the kernel of components/Assemblies, which will in turn be used to develop defence equipment/systems/sub-systems/platforms.
4. Only Indian vendors including association of persons (AoP) as detailed in Appendix 'A' are eligible for participation.
5. Successful development under this scheme would result in the DAs jointly owning the IPR along with DRDO (Appendix B).

## **Type of Projects for Funding Support**

6. Under the TDF scheme, the following nature of products/technologies will be covered:
  - 6.1 Significant up-gradation/improvements/ further developments in the existing products/process/application/upgrades, in terms of reduced material consumption, improved functioning, improved quality, reduced energy consumption resulting in overall cost reduction.

- 6.2 Technology readiness level up-gradation from TRL3 onwards to realization of products as per Services requirements.
- 6.3 Development of futuristic technologies/innovative products which can be useful for the Defence applications in the future.
- 6.4 Import substitution of components whose technologies does not exist with the Indian industry.
- 6.5 The scheme will be limited to development of technologies or prototype of product having potential use for the Services.
- 6.6 The financial criteria for inclusion of projects under the TDF scheme will be that the cost of development spread across all the required technology development phases will not exceed INR 10 crore.
- 6.7 Typically the projects under the TDF scheme will not exceed a development period of two years.

### Empowered Committee

7. **Composition:** The Empowered Committee, under the chairmanship of Secretary (DRDO) will be the apex governing and principal decision making body, for matters pertaining to the TDF scheme. The Empowered Committee reports to the RakshaMantri (RM), who has the powers to overrule its decision. The composition of the Empowered Committee shall be as follows:

Secretary DDR&D	Chairperson
Secretary (DP)	Member
Add FA& JS (DRDO)	Member
CISC	Member
VCOAS	Member
VCAS	Member
VCNS	Member

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AS/JS(SME)	Member
CC R&D (TM) DRDO	Member Secretary
Representative of an External Agency (on a need basis)	Special Invitee
Executive Director/ Secretary TDF (DRDO)	Permanent Invitee

8. Roles and Functions of Empowered Committee are as follows:

8.1 According 'Acceptance of Necessity (AoN)' to the projects evaluated and recommended by the Technical Committee.

8.2 Approval of time overruns beyond the approved project duration.

8.3 Approval of cost overruns beyond the approved project budget.

8.4 Approval of closure/ foreclosure of the projects based on the recommendation of the Technical Committee including funds write-off to the DAs.

8.5 Approval of the goal/ objective revisions on the recommendation of Technical Committee.

8.6 Brief the RM on a timely basis regarding developments and project progress under the TDF scheme.

8.7 Obtain RM's approval for granting cost and time overruns beyond the powers of the Empowered Committee.

8.8 Empowered Committee will meet once in four months or as and when required.

**Technical Committee**

9. **Composition:** The Technical Committee constituted under the chairmanship of CC R&D (TM), DRDO will be the key operating body for matters pertaining to the TDF scheme. The Committee will report to the Empowered Committee. The Technical Committee composition will be as follows:

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CC R&D (TM), DRDO	Chairperson
Representative from Army HQ	Member
Representative from Air HQ	Member
Representative from Naval HQ	Member
Representative from Integrated Defence Services (IDS)	Member
Representative of DDP	Member
IFA(R&D)	Member
Representatives of Concerned Industry Associations (2 Nos)	Member
DRDO Experts	Member
Representative of an External Agency (on a need basis)	Special Invitee
Executive Director/ Secretary TDF (DRDO)	Member Secretary

10. Roles and Functions of Technical Committee are as follows:

- 10.1 Identify technologies that need to be developed through funding under the TDF scheme. This includes taking inputs from a mix of appropriate sources, including the SHQs, the LTTTP, and the technology grid.
- 10.2 Conduct feasibility studies.
- 10.3 Classify the identified technologies as sensitive and non-sensitive, etc.
- 10.4 Prioritize technologies/ products in a phased manner.
- 10.5 Recommend suitable technology/ product with proposal to Empowered Committee and seek the accord of AoN.
- 10.6 Constitute the Project Monitoring & Mentoring Group for each TDF project.
- 10.7 Approve release of funds for the various phases of development.
- 10.8 Oversee and monitor the overall implementation of the project.

10.9 Technical Committee will meet once in three month or as and when required.

### **Technology Development Fund Directorate**

11. DRDO will establish a Technology Development Fund Directorate (herein referred to as Directorate), headed by Scientist G or equivalent and staffed appropriately with professionals of various ranks and specializations. Officers of the Directorate, shall be members/ member secretaries of the Project Monitoring and Mentoring Group (PMMG) which will function under the overall control and directions of the Directorate, who shall be responsible for ownership of the projects under the TDF. The Directorate will be responsible for the following:

11.1 Monitoring of all projects under the TDF scheme.

11.2 Ensure development as per schedule.

11.3 Assign responsibilities and hold task owners accountable for delivery.

11.4 Identify potential issues and resolve them through the committees concerned.

11.5 Roll out each TDF project for which AoN has been accorded by the Empowered Committee.

11.6 Maintain the database of all projects under TDF.

12. The Directorate has to carry out outreach programs and empanel suitable experts from the fields of finance, legal and technology from both the private and public sectors; the Directorate may solicit services of external agencies to roll out outreach programs, empanelment of experts and for providing technical and administrative support.

### **Methodology for Technology Development under the Technology Development Fund Scheme**

13. The development process under the TDF scheme would consist of the following functions:

13.1 Advance planning and consultations

- 13.2 Feasibility studies
- 13.3 Technology Parameter Requirements (TPR)
- 13.4 Accord of AoN by the Empowered Committee
- 13.5 Constitution of the Project Monitoring and Mentoring Group
- 13.6 Issue of EoI and soliciting response
- 13.7 Selection of Development Agencies
- 13.8 Approval of CFA and funding

#### **Advance planning and consultations**

14. On the basis of the Long Term Technology Perspective Plan (LTPPP) and inputs from SHQs, Department of Defence Production (DDP), DRDO, etc., DRDO will identify potential projects to be undertaken under the Technology Development Fund scheme. Besides, DRDO will also initiate collegiate discussions on such potential projects with various stakeholders such as DRDO, DDP, SHQs, Indian Industry etc., in early stages; this will enable potential R&D institutions and other DAs to take necessary steps to undertake requisite R&D efforts and/or investments for infrastructure up-gradation. The advance timing of these collegiate discussions shall take into account the complexity of the technology required to be developed for defence equipment/system/sub-system/platform or upgrades thereof, as the case may be; all relevant factors not limited to technology availability need to be detailed.
15. Based on the collegiate discussion detailed in paragraph 14 above, or in other cases as may be appropriate, the Technical Committee shall draft an indicative list of potential projects under the TDF scheme, together with draft Technology Parameter Requirements (TPR).

#### **Feasibility studies**

16. The Technical Committee will be responsible for undertaking feasibility studies of all projects under the list of potential projects under the TDF scheme. The aim of this study



is to identify the projects which the Indian industry has the capability to design and develop, within the required parameters.

17. The feasibility study for each TDF project shall be carried out with the involvement of all important stakeholders such as HQ-IDS, Services, DDP, and DPSUs, as required. Industry associations including MSME Associations, OFB and DPSUs may be consulted if considered necessary. DRDO may engage external agencies possessing the expertise in preparation of the feasibility study report.
18. The Technical Committee will get a Technology Grid developed through a suitable external agency, which will have a comprehensive list map of all the MSMEs in the Indian Defence Sector and exhaustive details of their research capabilities, technical competencies, infrastructure, manpower details, turnover etc. The Technology Grid will enable the Technical Committee to ascertain the suitability of organizations to be chosen as DAs. The Technology Grid is an evolving document warranting constant up-gradation on a real time basis. It needs to be noted that the Technical Grid will have to be developed from scratch, to begin with.
19. The feasibility study shall include the following aspects:
  - 19.1 Long term interests of MoD for indigenous development of technology capability and its applicability in equipment/ system/ sub-system/ platform/ components or their upgrades, as required or will be required by the SHQs.
  - 19.2 A preliminary assessment of capability of the industry to undertake design and development of components/ assembly, etc. bearing the technology.
  - 19.3 Estimated time for development.
  - 19.4 Estimated cost of development.
  - 19.5 Estimated cost of the component bearing the technology.
  - 19.6 Number of DAs to be selected based on the cost of the prototype development complexity and any other considerations.
  - 19.7 Exit criteria.
  - 19.8 Any other aspects considered important.

### **Technology Parameter Requirement**

20. Based on the feasibility study, the technical committee would formulate the Technology Parameter Requirement (TPR) specifying in detail the key parameters of the required technology. The TPR will be a part of the Statement of Case, while seeking the AoN.

### **Accord of the Acceptance of Necessity (AoN) by the empowered committee**

21. The Technical Committee will place relevant information on the TDF and DRDO website and seek the required inputs from the industry. The Technical Committee will prepare the Statement of Case (SOC) justifying the need for investing in the development of the particular technology, and submit the same to the Empowered Committee, which would examine aspects of inter operatability and commonality of technology for the Services. Feasibility study report, along with a list of prospective DA(s), and the TPR will be enclosed with the SoC.
22. The following would be highlighted by the Technical Committee in the SoC seeking the AoN from the Empowered Committee:
  - 22.1 A brief on the need to invest in and develop the technology.
  - 22.2 Estimated time for development.
  - 22.3 Estimated cost of development.
  - 22.4 Likely production cost
  - 22.5 If any vendor has suo-moto taken up development
  - 22.6 Likely Development Agencies
23. AoN for TDF projects will be valid for one year. In cases where the expression of Interest (Eol) is not issued within one year from accord of AoN, the Technical Committee would have to move a case for revalidation of AoN with due justification for not processing the case within one year. For cases where the original Eol has been issued within one year from accord of AoN, and later retracted for any reason, the AoN would continue to remain valid, as long as the original decision remain unchanged, and the subsequent Eol is issued within six months from the date of retraction of the original Eol.

### **Constitution of Project Monitoring and Mentoring Group**

24. Once AoN is accorded for a TDF project, the Technical Committee will constitute a Project Monitoring and Mentoring Group, headed by the Director of the Directorate or a suitable nominated Expert. PMMG will consist of representative from SHQs, HQ-IDS, DRDO, DDP, DGQA, Advisor-Cost, AFA/ IFA and other experts as required. The PMMG would submit 6 monthly reports to the Technical Committee; in cases of development of critical technologies, the Technical Committee will keep the Empowered Committee updated about the developments.

### **Issuing of EoI and soliciting response**

25. For every TDF project for which AoN has been accorded by the Empowered Committee, the PMMG will carry out the following functions:

26. Preparation of Project Definition Document (PDD): The PMMG under the guidance of Directorate and Technical Committee will prepare a Project Definition Document (PDD) as per the sample format given at Appendix –‘C’. The PDD shall be approved by the technical committee, and shall serve as the principal guidance document for preparation of DPR.

27. Short listing of likely Indian companies/organizations for issuing EoI: Short listing of Indian vendors for issue of EOI shall be done by the PMMG based on the TDF Technology Grid, and additional companies/organizations if any, as per response to DRDO’s request for proposal from Indian entities hosted on the website of TDF and DRDO.

28. The details of the vendors shortlisted for participation in a TDF project would be maintained by the Directorate, and the same would be placed in the DRDO web site. To the shortlisted vendors, relevant extracts of TPR would be circulated as part of an EoI. The EoI shall be approved by the Technical Committee and shall contain all information as per sample format at Appendix-‘D’.

29. All evaluation criteria, sub-criteria etc., including respective weightages accorded to each of them, for assessing responses from EoI recipients (Individual as well as for AoP), shall be finalized and sought as part of the response to EoI.

30. Indian vendors who are issued an EoI, shall have the choice to respond either in their individual capacity as EoI recipients, or as an AoP (i.e. consortium) of Indian

companies/organizations, through an AoP Agreement led by an EOI recipient, as enumerated at Annexure-I of Appendix- 'A'.

### **Selection of Development Agency (ies)**

31. The Directorate through PMMG would undertake an assessment of EOI responses based on approved criteria. An illustrative list of evaluation criteria is contained in sample format at Appendix-'E'. It shall be ensured that the evaluation criteria relate only to the research, design and development capabilities in India, including past experience, other relevant parameters and performance of EOI recipients as may be required. Inspection of vendors premises should be avoided and selection should, to the extent possible, be based on self-certification.
32. In the case of EOI recipient forming AoP i.e. consortium, the assessment shall be carried out with specific reference only to the roles and responsibilities of individual members under their AoP Agreement.
33. The list of Indian vendors or consortium as stated above, ranked as per the evaluation criteria and recommendation shall be forwarded by the Directorate to the Technical Committee, for selection of vendor as per AON. The selected vendor shall be referred to as Development Agency (DA).
34. The DAs, shall then be required to submit a DPR, including cost estimates, as per sample format at Appendix-'F' to the Directorate. For this purpose, TPR and relevant extracts from the PDD will be shared by the Directorate, with the short-listed DAs. The DPRs shall be prepared by DAs and examined by the Directorate with specific reference to project milestones as described in the PDD. Based on the examination, the DAs will be shortlisted. Generally, two DAs will be selected per TDF project. DAs selected post the examination of their DPRs will be issued a Project Sanction Order.
35. Prior to CFA approval, the Directorate will engage with the selected DA(s) for any modifications/refinements/amendments to DPR, if considered necessary. DA(s) may collaborate with academic and/or research institutions and/or foreign companies/foreign research and academic institutions having required technologies for the development of project. DA(s) would be required to disclose the details of such collaborations in DPR. Directorate will submit the finalized DPR to the Empowered Committee, through the Technical Committee, for approval.

### **CFA Approval and Funding**

36. The financial sanction for project development under the TDF scheme, taking all related costs into account, would be obtained by the Directorate as per the delegation of financial powers in Appendix 'G'.
37. Funding for development projects approved under this procedure shall be borne under the Account Head 'Technology Development Fund Account', operated by the DRDO.
38. The projects up to INR 10 Crores will be considered for funding subject to a maximum of 90% of the total project cost in general; however, up to 100% funding may be considered under the scheme, on a case-to-case basis.
39. The percentage distribution of assistance under the TDF scheme will be as follows:
40. Indian companies - up to 90% of the project cost in general however this may be enhanced up to 100% of project cost on case to case basis.
41. In case of collaboration between R&D /Academic institution and the company, the respective share of R&D /Academic institution shall be funded to the extent of 100%.

### **Release of Funds: 1st Instalment & Subsequent Instalments**

42. Funding Mechanism: TDF requires various a flexible funding approach, for applicants to feel encouraged and apply. Hence two types of funding options are therefore proposed to implement the scheme:

#### **Funding Option- I**

- 42.1 Upon signing the Development Contract with DRDO, post issue of the project sanction order, the successful applicant will be issued a grant letter and will be entitled to receive 20% of the total grant amount approved.
- 42.2 The remainder of the grant amount will be paid in a maximum of five (05) installments in the form of reimbursement upon successful achievement of milestones as agreed between the DA and Directorate based on the plan presented in the DPR.

#### Funding Option-II

- 42.3 Upon signing the Development Contract with TDF, the successful applicant will be issued a grant letter and will be entitled to receive 20% of the total grant amount approved.
- 42.4 A staggered approach towards project funding in this technology development project will be provided in the form of advance funding available for the remainder of 80% of the sanctioned amount. Subject to a maximum of five (05) "Milestones" of the project, applicants can seek an advance upon producing a Bank Guarantee of the same amount as collateral.
43. The release of initial and subsequent installment as reimbursement of Project expenditure incurred under the TDF Scheme, for the on-going supported projects will be based on the PMMG Review Reports and completion of milestones and deliverables as mutually agreed between the DA and DRDO, and outlined in the Development Contract.
44. In some cases milestone-based advance may be given to the DA and R&D/Academic institutions. However, DAs and 'Other than Government owned' R&D/Academic institutions shall be given advance only against bank guarantee of equal outstanding amount. Government-owned\* academic/R&D institutions need not submit any bank guarantee for seeking advance.
45. For release of subsequent installments, the DAs shall be required to submit the following documents:
- 45.1 Detailed Project Update Report
  - 45.2 Utilization Certificate & Statement of Expenses (UC & SE)
  - 45.3 Certificate from Chartered Accountant
  - 45.4 Based on the review reports/meetings and documents submitted by Project Applicant/Partners, the Directorate will recommend for disbursement of subsequent funding installment to the project applicants.

Periodic monitoring and review of the projects will be carried out by the Technical Committee through PMMG. Fund installment would, subsequently, be released as per the approved milestones and on the basis of review of progress report by Technical Committee through PMMG.

**\* Government of India or State Government under the Federal Union of India**

### **Access to Books of Accounts**

46. The DAs shall maintain separate books of accounts with an independent bank account, for the project sanctioned under TDF scheme; DRDO or its authorized representative(s) shall have unfettered rights to access these books of account of DAs.

### **Cost overrun**

47. In case of cost overruns, the DA will have to make a formal request explaining the reasons for cost overruns and reasons why they were not foreseen at the time of presenting the DPR. The Directorate will process the request and forward the same to the Technical Committee, which would take a decision on the request and seek approval of the Empowered Committee.
48. Cases where the development cost exceeds the Rs. 10 crore limit, after initially sanctioning the project for a cost less than Rs. 10 crore, the cost escalation will be reviewed by the Technical Committee and forwarded with its comments to the Empowered Committee. Based on merits of the case, the Empowered Committee may approve a cost overrun of upto Rs. 5 crore with mandatory information to RM. In cases warranting an approval for a total development cost exceeding Rs. 15 crores, due to cost overruns, the Empowered Committee should take the approval of the RM.

### **Time overrun**

49. The extension of timelines for the TDF projects will be granted by the Empowered Committee, based on recommendation of the Technical Committee.

### **Foreclosure**

50. In cases where the project does not proceed according to the predetermined milestones as agreed in the DPR, and/or if there are undue time and cost overruns, or failure of the prototype(s) on staff evaluation or on account of any other reasons, the TDF project may be foreclosed in respect of the concerned DA(s) and proposal for foreclosure will be approved by the Empowered Committee.

51. In such cases, the total expenditure made by the DA(s) on the technology/prototype development till foreclosure would be assessed and if excess funds have been paid to the DA(s), the same shall be recovered and if the expenditure is in excess of the amount paid, the balance shall be paid to the DA(s). The total amount paid to the DA(s) shall be written off with the approval of the competent authority.

### **Disposal of tangible assets created in TDF projects**

52. The ownership of all tangible assets and the developed prototypes under the TDF schemes shall vest with DRDO. These may be passed on to the DA at depreciated value as per the extant guidelines of the Government of India.
53. In case of foreclosed TDF projects, the tangible assets thus created may be disposed of as per the extant Government guidelines. Expenditure incurred on intangible assets as defined in the relevant Indian Accounting Standards will be written off with the approval of competent authority.

### **Monitoring post completion of the project to ascertain the impact and create a database of the technologies and its providers**

#### 54. Project Success Report (PSR)

- 54.1 In case of successful projects, the DA(s) would be requested to submit Project Success Report (PSR) at the time of payment of the full and final installment. This report will be reviewed by PMMG for the purpose of disseminating information on such success stories for wider impact and greater reach among potential applicants. The information will be disseminated through its publications, websites and other means targeting the user Service, industry and DRDO, etc., taking into account the aspects pertaining to confidentiality and intellectual property rights.

#### 55. Project Failure Report (PFR)

- 55.1 If project fails at any stage, the implementing DA(s) would be requested to submit Project Failure Report (PFR) before settling of accounts. This report will be reviewed by respective PMMG, for the purpose of compiling case studies and lessons learned. Key learning's from such case studies may be disseminated through publications, websites and other means, taking into account the confidentiality aspects.