

**TECHNICAL EDUCATION QUALITY  
IMPROVEMENT PROGRAMME (TEQIP) PHASE-II**

**CONCEPT PAPER FOR ESTABLISHMENT OF CENTRES OF EXCELLENCE**

## **Sub-component 1.2.1 : Establishing Centres of Excellence**

### **1. Objective:**

To support establishment of Centres of Excellence for collaborative and multi-disciplinary research within specific thematic areas of regional or national importance.

### **2. Scope:**

Establishment of about 30 Centres of Excellence (CoE) in Centrally Funded Institutions (CFIs), Government funded, Government aided and Private unaided Institutions for collaborative research will be supported in eligible institutions out of those selected under Sub-component 1.2 and having the potential for undertaking applicable and collaborative research. An additional fund will be given for the same.

The specific thematic areas could include the following: Manufacturing, Information & Communication Technology (ICT), Renewable Energy (Solar, Wind, Wave Energy, etc.), Hydrology and Water Resource Management, Traffic & Highway Safety, advanced transport systems (urban and rural), Intelligent Transportation System, Advanced Materials, Disaster Management, Nanotechnology, Security Technology, Semi Conductors, Logistics and Distribution systems, Bio-medical Instrumentation, Waste Management, Bio-Technology, Image Processing, Sensor Technology, Turbo machinery and Propulsive systems, Urban structures, Pollution and climate, robotics, Bio-medical technology (bone, joints, tissue technology), Forensic science, Archaeological science (epigraphy, radio carbon dating, heritage building, archaeo-metallurgy, etc). Fundamental research areas will be encouraged such as advanced mechanics, flow control and fluidics, etc.

This is an illustrative list. Centres within other thematic areas of demonstrated regional or national importance will be considered as well.

### **3. Salient Features of a CoE**

- The COE should be relevant to Indian technological needs and have a long-term vision of evolving technological requirements and changing natural/societal constraints
- A Centre of Excellence (CoE) is expected to be a collaborative activity between a team of high quality researchers in the institution and researchers or research users in several companies or organizations. In cases where the nature of research is partially related to production or improvement of public goods, collaboration may include appropriate public agencies. In all cases, however, CoEs will need to demonstrate that the majority of their collaborators are from private firms (if such exist within the thematic research areas).
- The CoE is expected to contribute significantly both to economic advancement and to building a robust research culture in institutions that is more applied and collaborative in nature. In particular, the CoE is expected to address emerging industry and societal needs in close collaboration with industries and users, within India and possibly abroad. The scientific merit of the research undertaken is as important as the relevance to economic growth and development.

- The CoE is expected to further scale-up Postgraduate Education through increased enrolments for Masters and Doctoral programmes in topics closely linked to the thematic areas of the CoE and therefore closely linked to economic and societal needs. Some of these students could also undertake their research within collaborating firms.
- The Centre should join faculty members from several departments around a common research programme, in which all the collaborating departments are expected to share their physical and intellectual resources with each other. Evaluation will give greater weight to CoEs that are multi-disciplinary in nature.
- The Centre is expected to trigger an R&D culture in the institutions as evidenced by significant increase in commercial applications and research outputs, collaborative and sponsored research, publications, in reputed national/international journals and conferences, patents, innovations, commercialized products and PhD enrolments.
- The Centre is expected to increase collaboration with National and International academic and research institutions/organizations. This will facilitate transfer of technology and knowledge to improve the quality of research and development, and aim to create a critical mass of researchers with potential for global research and development.

#### **4. Deliverables:**

The CoEs are expected to ensure the following deliverables:

- Increased collaborative and applied research as documented by:
  - Increase in external R&D funding, notably Industry sponsored R&D projects and Industry Chairs
  - Increase in patents filed and obtained or other manners of knowledge commercialization and transfer
- Increased production of advanced human capital as measured by:
  - Increase in enrolment of Masters and Doctoral students
  - Increase in number of MTech/PhD Graduates
  - Increase in placement of graduate students and research staff in short- and long-term positions within collaborating firms as well as with local industry
  - Updated and more relevant undergraduate and postgraduate engineering curricula
- Developing long term R& D capability as evidenced by:
  - Increase in publications in refereed Journals
  - Increase in joint publications in refereed Journals with international authors
  - Increase in joint programmes/projects/exchanges with international research organisations and institutions
  - External awards for research at the National and International levels.
  - Publications of books, and technical reports

## 5. Selection:

Institutions for establishing a CoE will be selected through a competitive process based on the merit of their proposal(s). One of the important attachments with the proposal is the MoU agreed with relevant industries/research institutions/organisations within India/abroad [see Annex-IV (B).c]. A committee of subject experts from the pool of National Evaluation Committee (NEC) members will evaluate the proposals and recommend meritorious proposals for selection. Some institutions may be required to undertake improvements in their proposal before commencement of funding. A maximum of two Centres of Excellence can be supported in an institution under this Sub-component. It is expected that only a very few number of institutions will receive award of two CoEs, if any at all. Institutions are encouraged to focus efforts on only one CoE proposal.

## 6. Funding Pattern:

The additional funding to the institution for carrying out the activities of a Centre of Excellence is expected to be around Rs. 5.00 crore over 2-½ years (this would be in addition to allocation under Sub-component 1.2). The bulk of the funding is to be spent on research within India. <sup>1</sup>This funding is towards research equipment, research material, books and learning resources, consultant services, research studies, training, 10 to 15 additional teaching/research assistantships, study tours; workshops, seminars, etc. in thematic areas and commercialisation costs, such as business-plan development, prototyping and patenting [see Table-19(a) of Project Implementation Plan (PIP) on permissible and non-permissible expenditures].

Continuation of funding beyond the Second Year of award of COE will be subject to review of progress towards the agreed deliverables, and fund utilisation rate.

## 7. The following activities are envisaged under this Sub-component:

### (i) Improvement in research and development facilities:

*Procurement of Goods [equipment; furniture; books & LRs, softwares] and minor civil works may be required under the Project for improvement in research and development facilities. A maximum of 55% of total project allocation (estimated Rs. 2.75 crore) can to be made for procurement by each project institution (Centrally funded, Government funded and Government aided Institutions) for this activity.*

The various sub-activities are as follows:

#### a) *Establishment of new laboratories for:*

- Starting new Masters and Doctoral programmes relevant to thematic areas,
- Establishment of incubation centres,
- Establishment of Technology transfer cell, and
- Increased research ambiance by providing state-of-art research facilities in thematic areas.

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<sup>1</sup> Exceptions could include study programmes abroad, attending overseas conferences etc.

- b) *Establishment of a knowledge resource centre (library) in the thematic area:* A knowledge resource centre (library) may be setup for each CoE provided with a comprehensive collection of books, journals and reference materials (in print and electronic form), proceedings of conferences and seminars, published and unpublished reports, research studies, thesis, links to databases and other resource centres, links to experts in thematic areas, etc. The knowledge resource centre may also be provided with relevant equipment.
- c) *Procurement of Furniture:* Furniture may be required for establishment of new laboratories and knowledge resource centre. Provision would need to be made for such procurement in the Institutional Development Proposal for CoE.
- d) *Minor civil works:* The minor civil works to be undertaken, if any, by the institution under this category are to be confined to laboratories only such as changing of the existing functions of an old structure/space to a new proposed function.

The expenditure on civil works should not exceed 3% of the total allocation for the CoE.

**(ii) Providing Teaching and Research Assistantships for enrolment in Masters and Doctoral programmes in topics linked to economic or societal needs in the thematic areas:**

The aim is to attract students to Masters and Doctoral programmes started under CoE and provide Assistantships. It is envisaged that the programmes under CoE will necessarily be linked to economic and social needs in the thematic areas. Institutions may give emphasis to start Masters (by research) programmes. Institutions also need to ensure availability of qualified faculty, Post-doctoral fellows, visiting experts and essential technical staff.

It is expected that each institution participating in this Sub-component will provide at least 10 to 15 additional Teaching/Research Assistantships per CoE to the students that do not receive GATE scholarships (scholarships are already available to the GATE qualified students and those doing PhD under QIP) as per the prevalent UGC/AICTE norms. Candidates sponsored by Industry will be allowed to enroll in all PG programmes

Those receiving assistantships will be required to devote 8-10 hours per week for research. Outstanding candidates enrolled for PhD, in select cases, could be supported to attend International workshops, Internship at renowned institutions/laboratories/industry (Indian or global)

Starting of new AICTE approved PG/Doctoral programmes in thematic area of a CoE will be supported under the Project provided that these are started latest by December 2012.

**(iii) Collaboration with Industry for applicable research and product development:**

This can be achieved through a combination of the following as well as other activities:

- a) *Industry collaborations for applicable thematic research:* The CoEs are expected to have potential for interaction with Industry to create research ambience in the institutions and to provide state-of-art research facilities in specific areas of Engineering and Technology. Industry-academia linkages are to be encouraged by associating students with Industry-sponsored projects under the guidance of senior faculty members. CoEs are to motivate Industry to sponsor R&D projects for indigenous developments and for continuous updation of technology to keep pace with the latest developments globally and to have cost effective, Industry relevant research and development that can make institutions with CoEs as Centres of Innovation.

CoEs are to be proactive in increasing Industry involvement in all the relevant areas in the institution and create a pool of “Industry Patrons”. It will help to create an environment of innovation in the institutions and enable absorption of the advanced technologies in niche areas and to develop future-ready indigenous technologies.

- b) *Converting innovative ideas into projects/products in close collaboration with both private and public sector Industries:* CoEs need to address emerging technologies to realize their full potential for creating stronger links between Academia and Industry, which stimulate development of innovative ideas and solutions. The evaluation of innovative ideas and products with regard to their potential in terms of successful market penetration and the degree of innovation is a special challenge for research and development.

**(iv) Collaboration with Industry in Education and Research:**

CoEs are also required to collaborate in the area of education and training of Postgraduate students. The Industry-academia linkages are to be encouraged by associating students with Industry-sponsored projects under the guidance of senior faculty members and private sector researchers. This collaboration could take the form of:

- a) *Attracting top-class talent through Masters and Doctoral programmes in topics linked to economic or societal needs in the Centre’s thematic areas:* A key aim is to attract students to Masters and Doctoral programmes started under CoE and provide Assistantships. The CoEs are expected to contribute to the training of R&D manpower for industry. The increased industry collaboration should raise the profile, quality and relevance of the post-graduates and thereby be able to attract top-class talent to the PG programmes. Further, some of these graduates are expected to be spun out to local industry eventually. Institutions may give emphasis to start Masters (by research) programmes. CoE proposals should be explicit about the areas of PG education to be improved/offered, how it relates to the core research mandates, and, where applicable, how it will draw on resources outside the CoE and/or the host institution. Starting of new AICTE approved PG/Doctoral programmes in thematic area of a CoE can be supported under the project provided that these programs can be started by the end of calendar year 2012.

b) *Introduce a “PhD in Industry” Programme:* CoEs are encouraged to introduce a “PhD in Industry” programme. Such programmes aim to provide an opportunity for PhD students in the CoEs to pursue research in a corporate setting with the participating company. Each PhD will have an academic advisor from the institution and an industry advisor from the sponsoring company. The student’s research project will be part and parcel of the company’s research agenda. Thereby, postgraduate students will be exposed to real-life industry practices, and have first-hand experience and understanding of the engineering and business skills required to succeed in this profession. Host company could pay in-cash to the student on a regular basis to increase the value of their scholarship/assistantship. The company would also offer office space and an industry mentors’ time. Host companies may also provide other non-cash support such as the provision of travel expenses and additional training opportunities, etc.

**(v) National/International collaboration for Research and Development activities with Academic Institutions and R&D organizations:**

The institutions with CoE need to collaborate with laboratories, professional bodies and Societies, R&D organizations within India and abroad, through Memorandum of Understanding for acquisition of the latest knowledge and technical know-how (Guidelines for International travel are given in Annex-VII).

The CoEs through collaboration are expected to contribute to the development and elevation in the position of Engineering Education and Engineering professionals in society, and act as a link between its members, societies and International bodies. CoEs are further expected to foster excellence and innovation in Engineering by excelling in research, public service and practice; and providing quality products in their regions and around the world through International linkages and cooperative partnerships.

**(vi) Enhancing research competence of faculty and knowledge sharing in thematic areas, both within India and abroad:**

The faculty training should be closely linked to the objectives of CoE and coordinated with the proposed investment in equipment, learning resources and facilities. Institutions should plan to spend at least 10% of the outlay for CoE on faculty training.

The faculty training can be carried out through the following activities.

- a) *Subject knowledge and research competence upgradation:* Subject knowledge upgradation is to make the faculty aware of the advances in knowledge, technologies and research methodologies for improving their performance and for achieving the objectives of CoE. Faculty should be on the lookout for appropriate opportunities.
- b) *Participation in seminars, conferences and workshops:* Faculty is to be encouraged to participate in seminars, conferences and workshops, both National and International. Short-term research/post-doctoral visits to laboratories/institutions; short-leave for carrying out collaborative research at institutes of repute will be permitted. The faculty participating in such activities need to be encouraged and supported to visit close-by institutions and laboratories of his/her interest. Besides, accrual of benefits to students and in their own researches, such participation is expected to bring about further collaborations with academic institutions and R&D organizations within and outside the country. The institutions are required to establish collaborations through MoUs.

- c) *Seed grant* : Small seed grant to researchers to venture into new directions within the specified theme . This will give independence to the individual researcher.
- d) *Accountability*: The faculty after undergoing training are expected to :
- Prepare a report on the training undertaken and the experience gained.
  - Share their experience with students and other faculty/staff through seminars.
  - Host the report on the institution's web site which is to be linked to the NPIU's web site.

## **8. Important Notes:**

*Note 1* : The activities like establishment of a new institution, large scale civil works, introducing new UG programmes will not be eligible for funding.

*Note 2* : Procurement of consultant services, if required for the activities listed in Table No. 19 (a) of PIP from Sr. No. 3-5 are permitted. The expenditure on Procurement of consultant services is to be booked against that particular activity. The services of consultants are to be procured by following the World Bank norms and through the PMSS.

*Note 3* : The project institutions should note that, "the procurement of goods is to be done strictly amongst the activities which are detailed-out in Section-2, 3, 6 and 7 of PIP under the "Improvement in Research and Development facilities", as required and justified by institutions to fulfil the project objectives.

**Selection of Institutions under Sub-component 1.2.1  
(Establishing Centres of Excellence)**

Only the Institutions, which have already been selected under Sub-component 1.2, can on invitation submit proposals for establishing a Centre of Excellence (CoE).

**Eligibility Criteria for Sub-component 1.2.1:**

Institutions to be eligible under the Sub-component 1.2.1 must meet the following benchmarks:

| S. No. | Eligibility Parameters  | Benchmark values |
|--------|---|------------------|
| 1      | Autonomous Institution Status by UGC  | Yes              |
| 2      | Percentage of eligible UG programmes in the institution accredited or applied for   | 75%              |
| 3      | Percentage of eligible PG programmes in the institution accredited or applied for   | 60%              |
| 4      | Percentage of regular faculty with PhD in Engineering as percentage of total faculty available in Engineering in the institution  | 20*              |
| 5      | Number of sponsored research projects completed in the institution in the last three academic years (2009-10, 2010-11, 2011-12)   | 07               |
| 6      | Cumulative number of PhDs produced in the last three academic years (2009-10, 2010-11, 2011-12) in the Departments participating for establishing CoEs  | 12**             |
| 7      | Faculty positions filled on regular full time basis as percentage of total faculty positions sanctioned in accordance with the AICTE prescribed student-to-faculty ratio in the Departments participating for establishing CoEs | 70%              |

\* Institutions having 50% of regular faculty with PhD in Engineering of the total regular faculty in Engineering; out of which 75% in the proposed theme area will be given weightage.

\*\* Institutions having produced 25 Nos. of PhDs in last three academic year will be given weightage.

Note 1 : The benchmarks prescribed for Sub-component 1.2 are deemed to have been met by the applicant Institutions.

Note 2 : Minimum number of participating faculty in the centre – 4.

Note 3 : In respect of accreditation benchmarks for Undergraduate and Postgraduate programmes in Universities, Deemed Universities, University Constituent Colleges/Faculties/Departments, NAAC accreditation is acceptable at the entry point. However, all such project entities will have to essentially achieve the Undergraduate and Postgraduate programme targets of **NBA accreditation** as given in Table-35 of PIP for Sub-component 1.2.

**Evaluation of Institutional Development Proposals under Sub-component 1.2.1:** The steps for evaluation of these proposals are:

**Invitation and Screening of Institutions by NPIU:**

- (a) Invitation by e-mail to the Institutions selected under Sub-component 1.2 to submit proposals to the NPIU for establishing Centres of Excellence in the prescribed format [Format given in Annex-IV-(B).c].
- (b) NPIU screens the received proposals for completeness and for eligibility criteria.
- (c) Incomplete proposals and/or proposals that do not meet the criteria will be returned to the Institutions.

**Evaluation of Proposals based on Implementation Feasibility and Action Plans:**

- (a) Evaluation and ranking of proposals by a National Evaluation Committee (NEC) (evaluation scheme is presented in Table given below), taking into account the suggestions from the local and international domains experts.
- (b) The proposals ranked “Good” [scoring 60 marks and more] may be asked to make a presentation before the National Evaluation Committee (NEC).
- (c) NPIU will send comments and recommendations (including the comments of the local and international domain experts) from the National Evaluation Committee (NEC) to the National Steering Committee (NSC).
- (d) Selection of Institutions by the National Steering Committee (NSC) along with fund allocation.
- (e) Declaration of selected Institutions.
- (f) Selection of certain institutions may be subject to a few mandatory improvements being made in their proposal.

**Evaluation Scheme for Institutional Development Proposals under Sub-Component 1.2.1**

| S. No.   | CATEGORIES  | MARKS            |
|----------|---|------------------|
| <b>1</b> | <b>Implementation Feasibility</b>   |                  |
|          | • Overall proposal implementation feasibility                                     | 10               |
|          | • Institutional preparedness  | 35               |
|          | • Reasonability of proposed budget  | 5                |
|          | <b>Sub-total (a)</b>  | <b>50</b>        |
| <b>2</b> | <b>Clarity and Quality of Action Plans for :</b>                                  |                  |
|          | • establishment of CoE in terms of physical arrangements and working arrangements | 10               |
|          | • conducting research and obtaining results in the identified thematic areas      | 10               |
|          | • communication of research findings to policy makers and potential users         | 5                |
|          | • commercialization of research results   | 5                |
|          | • scaling-up PhD and Masters enrolment in thematic areas                          | 10               |
|          | • insuring sustenance of CoE after the end of the project                         | 10               |
|          | <b>Sub-total (b)</b>  | <b>50</b>        |
|          | <b>Total</b>  | <b>100 Marks</b> |

**Detailed Scheme for Evaluation of Institutional Development Proposal (IDP) under  
Sub-component 1.2.1**

| <b>S. No</b>          | <b>Evaluation Parameters</b>      | <b>Marks</b>   |           |
|-----------------------|-----------------------------------|--|-----------|
| <b>I</b>              | <b>Implementation Feasibility</b> |  |           |
|                       | <b>A</b>                          | Overall proposal implementation feasibility  |           |
|                       | 1                                 | Appropriateness of choice of the thematic and specific areas of CoE with respect to strengths and opportunities identified in SWOT analysis  | 5         |
|                       | 2                                 | Appropriateness of the specific objectives identified for CoE  | 5         |
|                       | <b>B</b>                          | Institutional preparedness   |           |
|                       | 1                                 | Adequacy of involvement of various departments for CoE activities  | 5         |
|                       | 2                                 | Faculty Qualification and PhDs produced:   |           |
|                       |                                   | <ul style="list-style-type: none"> <li>• 50% of regular faculty with PhD in Engineering of the total regular faculty in Engineering; out of which 75% in the proposed theme area</li> <li>• 25 number of PhDs (Cumulative) produced in the last three academic years (2009-10, 2010-11, 2011-12) in the Departments participating for establishing CoEs</li> </ul> | 5         |
|                       | 3                                 | Quality of faculty in terms of credentials and achievements to be associated with CoE  | 10        |
|                       | 4                                 | Adequacy and quality of collaborative arrangements and clarity of responsibilities as given in MoUs with Industries / research institutions / organizations within India and abroad  | 10        |
|                       | <b>C</b>                          | Reasonability of proposed budget   | 5         |
|                       | <b>Sub-total (I)</b>              |  | <b>50</b> |
|                       | <b>II</b>                         | <b>Clarity and Quality of Action Plans for :</b>   |           |
| <b>D</b>              |                                   | establishment of CoE in terms of physical arrangements and working arrangements  | 10        |
| <b>E</b>              |                                   | conducting research and obtaining results in the identified thematic areas   | 10        |
| <b>F</b>              |                                   | communication of research findings to policy makers and potential users  | 5         |
| <b>G</b>              |                                   | commercialization of research results  | 5         |
| <b>H</b>              |                                   | scaling-up PhD and Masters enrolment in thematic areas   | 10        |
| <b>I</b>              |                                   | insuring sustenance of CoE after the end of the project  | 10        |
| <b>Sub-total (II)</b> |                                   | <b>50</b>  |           |
| <b>TOTAL ( I+II)</b>  |                                   | <b>100</b>   |           |

**Indicative Category-wise Funding for Key Activities per Centre of Excellence  
from Centrally Funded, Government funded and Government aided Institution selected  
under Sub-component 1.2.1 : (Establishing Centres of Excellence)**

| <b>S. No.</b> | <b>Activities</b>  | <b>Category of Expenditure (Head of expenditure)</b> | <b>Percentage (%)</b> | <b>Cost (Rs. in crore)</b> |
|---------------|--|--|-----------------------|----------------------------|
| 1             | Procurement of Goods (equipment, furniture, books LRs, software and minor items) and civil works for improvement in Research and Development facilities              | Procurement  | 55                    | 2.75                       |
| 2             | Providing Teaching and Research Assistantships for enrolment in Masters and Doctoral programmes in topics linked to economic or societal needs in the thematic areas | Assistantships                                       | 10                    | 0.50                       |
| 3             | Collaboration with Industry for applicable research and product development  | I-I-I Cells  | 5                     | 0.25                       |
| 4             | National/International collaboration for Research and Development activities with academic institutions and R&D organizations  | R&D  | 10                    | 0.50                       |
| 5             | Enhancing research competence of faculty and knowledge sharing in thematic areas, both within India and abroad*  | FSD  | 10                    | 0.50                       |
| 6             | Incremental Operating Cost   | Incremental Operating Cost                           | 10                    | 0.50                       |
| <b>TOTAL</b>  |  |  | <b>100</b>            | <b>5.00</b>                |

*\*Visit to abroad is permissible only for the faculty of the institutions.*

**Note:**

- Salary expenditure of faculty and staff appointed on contract against the existing vacancies can not be charged to the Project. However, the salary expenditure of contractual faculty/staff appointed against new posts created for the CoE can be charged to the Project.
- The Incremental Operating Cost means the costs of operation and maintenance of equipment, office expenses, hiring of vehicles, consumables, salaries and allowances of contract faculty and staff against posts created in the project. It will also include travel costs incurred for the Project Management activities i.e. visit to the NPIU, the SPFU and Universities etc.
- Procurement of consultant services, if required, for the activities listed from Sr. No. 2-5 are permitted. The expenditure on procurement of consultant services is to be booked against the head of expenditure of that particular activity. The services of consultant are to be procured by following the World Bank norms and procedures through the PMSS.

**Indicative Category-wise Funding for Key Activities per Centre of Excellence  
from Private unaided Institution selected under Sub-component 1.2.1 : (Establishing  
Centres of Excellence)**

| <b>S. No</b> | <b>Activities</b>  | <b>Category of Expenditure (Head of expenditure)</b> | <b>Percent age (%)</b> | <b>Cost (Rs. in crore)</b> |
|--------------|--|--|------------------------|----------------------------|
| 1            | Providing Teaching and Research Assistantships for enrolment in Masters and Doctoral programmes in topics linked to economic or societal needs in the thematic areas | Assistantships                                       | 30                     | 1.50                       |
| 2            | Collaboration with Industry for applicable research and product development  | I-I-I Cells  | 10                     | 0.50                       |
| 3            | National/International collaboration for Research and Development activities with academic institutions and R&D organizations  | R&D  | 20                     | 1.00                       |
| 4            | Enhancing research competence of faculty and knowledge sharing in thematic areas, both within India and abroad*  | FSD  | 30                     | 1.50                       |
| 5            | Incremental Operating Cost   | Incremental Operating Cost                           | 10                     | 0.50                       |
| <b>TOTAL</b> |  |  | <b>100</b>             | <b>5.00</b>                |

*\*Visit to abroad is permissible only for the faculty of the institutions.*

**Note:**

- Salary expenditure of faculty and staff appointed on contract against the existing vacancies can not be charged to the Project. However, the salary expenditure of contractual faculty/staff appointed against new posts created for the CoE for new PG programmes relevant to thematic areas can be charged to the Project.
- The Incremental Operating Cost means consumables, salaries and allowances of contract faculty and staff against posts created for CoE for new PG programmes relevant to thematic areas. It will also include travel costs incurred for the Project Management activities i.e. visit to the NPIU, the SPFU and Universities etc.
- Procurement of consultant services, if required, for the activities listed from Sr. No. 1-4 are permitted. The expenditure on procurement of consultant services is to be booked against the head of expenditure of that particular activity. The services of consultant are to be procured by following the World Bank norms and procedures through the PMSS.

**TECHNICAL EDUCATION QUALITY IMPROVEMENT PROGRAMME (TEQIP)**

**(PHASE-II)**

**FORMAT FOR  
DEVELOPMENT PROPOSAL FOR  
Sub-component 1.2.1 : Establishing Centres of Excellence (CoE)  
[Applicable for Institutions (CFIs, Govt. funded, Govt. aided and Private unaided) selected  
under sub-component 1.2]**

Name of the Institution : \_\_\_\_\_

Name of the Centre of Excellence to be established : \_\_\_\_\_

Specific Area(s) of excellence : \_\_\_\_\_

**Note:** Institutions desirous for establishing more than one Centre of Excellence should submit the separate proposals accordingly.

## PROPOSAL FOR ESTABLISHING A CENTRE OF EXCELLENCE

### 1. Institutional Identity:

- 1.1 Name of the Institution : \_\_\_\_\_
- 1.2 Type of Institution : CFI/Govt.funded/Govt. aided/Private unaided/Other
- 1.3 Status of Institution : Autonomous Institute as declared by University/  
Non-autonomous/Deemed University/Constituent  
College /University Technical Department or faculty  
or University Constituent College

- 1.4 Does the Institution have any CoE?: Yes/No

If Yes, write the name of the  
Department and specific areas  
of excellence

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- 1.1 Name of the CoE to be established : \_\_\_\_\_
- 1.2 Specific Area of excellence : \_\_\_\_\_

- 1.7 Names of Heads of Institutions and CoE Coordinators:

| Head and Coordinator                          | Name | Phone Number | Mobile Number | Fax Number | Email Address |
|---|------|--------------|---------------|------------|---------------|
| Head of the Institution (Full time appointee) |      |              |               |            |               |
| CoE Coordinator                               |      |              |               |            |               |

### 2. Eligibility Criteria:

Institutions to be eligible under the Sub-component 1.2.1 must fulfil the following benchmarks:

**Table-38**  
**Benchmarks for Institutions to qualify for Sub-component : 1.2.1**

| S. No | Eligibility Parameters  | Benchmark values |
|-------|---|------------------|
| 1     | Autonomous Institution Status by UGC  | Yes              |
| 2     | Percentage of eligible UG programmes in the institution accredited or applied for   | 75%              |
| 3     | Percentage of eligible PG programmes in the institution accredited or applied for   | 60%              |
| 4     | Percentage of regular faculty with PhD in Engineering as percentage of total faculty available in Engineering in the institution  | 20*              |
| 5     | Number of sponsored research projects completed in the institution in the last three academic years (2009-10, 2010-11, 2011-12)   | 07               |
| 6     | Cumulative number of PhDs produced in the last three academic years (2009-10, 2010-11, 2011-12) in the Departments participating for establishing CoEs  | 12**             |
| 7     | Faculty positions filled on regular full time basis as percentage of total faculty positions sanctioned in accordance with the AICTE prescribed student-to-faculty ratio in the Departments participating for establishing CoEs | 70%              |

\* Institutions having 50% of regular faculty with PhD in Engineering of the total regular faculty in Engineering; out of which 75% in the proposed theme area will be given weightage.

\*\* Institutions having produced 25 Nos. of PhDs in last three academic year will be given weightage.

Note 1 : The benchmarks prescribed for Sub-component 1.2 are deemed to have been met by the applicant Institutions.

Note 2 : Minimum number of participating faculty in the centre – 4.

Note 3 : In respect of accreditation benchmarks for Undergraduate and Postgraduate programmes in Universities, Deemed Universities, University Constituent Colleges/Faculties/Departments, NAAC accreditation is acceptable at the entry point. However, all such project entities will have to essentially achieve the Undergraduate and Postgraduate programme targets of **NBA accreditation** as given in Table-35 of PIP for Sub-component 1.2.

### 3. Institutional plan for establishing CoE:

- 3.1 Give an Executive Summary of the proposal for establishing CoE.
- 3.2 Provide the details (in terms of methodology used, analysis carried out of the data and information collected and inferences derived with respect to strengths, weaknesses, opportunities and threats) of SWOT analysis carried out.
- 3.3 Provide proof of existing expertise in the area, proof of focused activity towards the desired goals of the CoE (publications, Masters and PhD thesis), and names of

participating faculty with level of engagement (in terms of percentage of time to be given to the CoE activity).

Provide specific evidence to the potential economic and social impact that this particular CoE proposal and its partners can bring.

- 3.4 State the specific objectives of the Center of Excellence.
- 3.5 Give a detailed administrative/management and implementation structure to be followed with the hierarchy and the fund-flow chart (reduced administrative hurdles in execution, independence of action to participating faculty in the COE with respect to project related decisions, structure for disbursement of funds to participating faculty for equipment purchase/quality enhancement etc.)
- 3.6 Give the details on engagement of various departments in the institution for CoE activities.
- 3.7 Provide the CV, including the publication list of: (i) the two most important Principal Investigators from the institutions to participate in the CoE; (ii) the three most important researcher from the private sector/knowledge user partners; and (iii) provide the CV of up to 5 other institutional faculty/researchers that will participate in the CoE.
- 3.8 Give an action plan for the proposed research areas and the results to be achieved along with a brief review of literature. These objectives should be linked to the SWOT analysis.
- 3.9 Indicate the collaborative arrangements made/under discussion with industries and research institutions / organizations within India and abroad. **Attach letter of commitment from the collaborating companies/institutions with the list of detailed commitments, including in-cash contributions to the CoE and the rupee value of each major in-kind support.**
- 3.10 Give an action plan for communication to policy makers and potential users of research findings and use of CoE facilities for solving real life problems.
- 3.11 Give an action plan for technology transfer, commercialization of research, or other ways of using the R&D results for economic and social benefit.
- 3.12 Give an action plan for scaling-up PhD & Masters enrolment in the thematic area, and describe other plans for how this CoE will improve quality of education in the institutions, including UG education.
- 3.13 Give a procurement plan for Goods and Consultant Services as per Tables-36 and 37.
- 3.14 Provide budget for establishing Centre of Excellence in Table-39.
- 3.15 Provide the incremental institutional project targets against the deliverables indicated in Table-40 in addition to the targets under Sub-component 1.2 with plan for achieving the same.
- 3.16 Give an action plan on how the institution will ensure that the CoE research activities would be sustained after the end of the Project.

**Table-39****Project Budget for Sub-component 1.2.1**

*Note: For details of permissible and non-permissible expenditures, please see Table-19 (a)*

| S<br>N<br>o | Activities   | Project<br>Life<br>Allocat<br>ion | Financial<br>year(Rs.in Crore) |         |         |
|-------------|--|-----------------------------------|--------------------------------|---------|---------|
|             |  |                                   | 2012-13                        | 2013-14 | 2014-15 |
| 1           | Improvement in research and development facilities through:  |                                   |                                |         |         |
|             | (i) Establishment of new laboratories for applicable thematic research   |                                   |                                |         |         |
|             | (ii) Establishment of knowledge resource center (Library) in the thematic area   |                                   |                                |         |         |
|             | (iii) Procurement of furniture   |                                   |                                |         |         |
|             | (iv) Minor Civil Works   |                                   |                                |         |         |
| 2           | Providing Teaching and Research Assistantships for enrolment in Masters and Doctoral programmes in topics linked to economic or societal needs in the thematic areas |                                   |                                |         |         |
| 3           | Collaboration with Industry for applicable research and product development  |                                   |                                |         |         |
| 4           | National/International collaboration for Research and Development activities with academic institutions and R&D organizations  |                                   |                                |         |         |
| 5           | Enhancing research competence of faculty and knowledge sharing in thematic areas, both within India and abroad   |                                   |                                |         |         |
| 6           | Incremental Operating Cost   |                                   |                                |         |         |
|             | <b>TOTAL</b>   |                                   |                                |         |         |

**Table-40**  
**Incremental Project Targets for Centre of Excellence**

*Note: These targets are specific to CoE and are thus over and above those for Sub-component 1.2 of the Project.*

| S. No. | Deliverables   | Baseline (2010-11) | Targets to be achieved |                    |
|--------|--|--------------------|------------------------|--------------------|
|        |  |                    | At the end of 2 years  | By Project closing |
| 1      | Number of International Exchange programmes  |                    |                        |                    |
| 2      | Number of individual publications in peer-reviewed journals:<br>(a) National<br>(b) International                        |                    |                        |                    |
| 3      | Number of co-authored publications in peer-reviewed journals with names of authors:<br>(a) National<br>(b) International |                    |                        |                    |
| 4      | Number of exchange of research students with collaborating institutions:<br>(a) National<br>(b) International            |                    |                        |                    |
| 5      | Number of exchange of research faculty with collaborating institutions:<br>(a) National<br>(b) International             |                    |                        |                    |
| 6      | Number of patents obtained   |                    |                        |                    |
| 7      | Number of patents filed  |                    |                        |                    |
| 8      | Number of external R&D projects  |                    |                        |                    |
| 9      | Number of Industry Chairs secured  |                    |                        |                    |
| 10     | Number of MoUs with academia:<br>(a) National<br>(b) International   |                    |                        |                    |
| 11     | Number of MoUs with industry:<br>(a) National<br>(b) International   |                    |                        |                    |
| 12     | Number of products, research and services commercialized   |                    |                        |                    |
| 13     | Any other (maximum three)  |                    |                        |                    |
| (i)    |  |                    |                        |                    |
| (ii)   |  |                    |                        |                    |
| (iii)  |  |                    |                        |                    |

**Table-36**

**Procurement Plan for Works and Goods\* for Sub-component 1.2.1**

Name of the institution with location: \_\_\_\_\_

| Package No. | Sl No | Activities | Description of Works/ Goods | Estimated Cost (Rs) | Method of Procurement | Design/ Investigation Completion/ Specification Finalization (Date) | Estimate Sanctioned (Date and Value) | Preparation of Bid Document (Date) | Receipt of Bank's No Objection to Bidding Document (Date)** | Bids              |                | Contract Award (Date/ Value) | Date of Completion of Contract |
|-------------|-------|------------|-----------------------------|---------------------|-----------------------|---|--------------------------------------|------------------------------------|---|-------------------|----------------|------------------------------|--------------------------------|
|             |       |            |                             |                     |                       |   |                                      |                                    |   | Invitation (Date) | Opening (Date) |                              |                                |
| (1)         | (2)   | (3)        | (4)                         | (5)                 | (6)                   | (7)   | (8)                                  | (9)                                | (10)  | (11)              | (12)           | (13)                         | (14)                           |
|             |       |            |                             |                     |                       |   |                                      |                                    |   |                   |                |                              |                                |
|             |       |            |                             |                     |                       |   |                                      |                                    |   |                   |                |                              |                                |
|             |       |            |                             |                     |                       |   |                                      |                                    |   |                   |                |                              |                                |

\* Goods cover Equipment, Furniture and Books and Learning Resources

\*\* Applicable in case of 'Prior Review' by the World Bank.

Note: (i) For Column 6, state ICB/NCB/Direct Contracting/Shopping method as appropriate.

(ii) Procurement Plan for Goods Not Applicable for private unaided institutions

**Table-37**  
**Procurement Plan for Consultant Services for Sub-component 1.2.1**

Name of the institution with location: \_\_\_\_\_

| Sl. No. | Activities | Description of Services | Estimated Cost (Rs) | Methods of Selection @ | TOR Finalization (Date) | Advertisement (Date) | ◆ RFP Final Draft to be Forwarded to the Bank (Date)** | Objection from the Bank for RFP | RFP Issued (Date) | Proposals Received (Date) | Evaluation (Date) | No Objection by the Bank (Date)** | Contract Value and Date of Award | Contract Completion (Date) |
|---------|------------|-------------------------|---------------------|------------------------|-------------------------|----------------------|--|---------------------------------|-------------------|---------------------------|-------------------|-----------------------------------|----------------------------------|----------------------------|
| (1)     | (2)        | (3)                     | (4)                 | (5)                    | (6)                     | (7)                  | (8)  | (9)                             | (10)              | (11)                      | (12)              | (13)                              | (14)                             | (15)                       |
|         |            |                         |                     |                        |                         |                      |  |                                 |                   |                           |                   |                                   |                                  |                            |
|         |            |                         |                     |                        |                         |                      |  |                                 |                   |                           |                   |                                   |                                  |                            |
|         |            |                         |                     |                        |                         |                      |  |                                 |                   |                           |                   |                                   |                                  |                            |

@ State whether (i) Single firm or individual; or (ii) Competitive procedure. If Competitive, then state whether Quality & Cost Based Selection (QCBS) or Quality Based Selection (QBS) procedure.

◆ RFP (Request for Proposal): Same as 'Bid Document' #Technical and Financial

\*\* Applicable in case of 'Prior Review' by the World Bank

