

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

**Study on Utilization of Institutional Resources  
created under TEQIP in programme institutions**

**National Report**

**2009**  
(Revised, April 2010)

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## Executive Summary

The Report is prepared to provide an insight into the *utilization of the institutional resources* created by the State-level and Centrally-funded technical institutions supported under the Technical Education Quality Improvement Programme (TEQIP) of the Government of India, implemented as a World Bank assisted project. In all, 109 Institutions from thirteen States and 18 Centrally Funded Institutions (CFIs) totaling 127, were identified to receive financial support under this project in its Phase-I (designated as TEQIP-I), which was launched in the year 2003-04. As TEQIP-I was to complete its period in March 2009, its *National Project Implementation Unit (NPIU)* with the assistance of the *State Project Facilitation Units (SPFUs)* in the respective States had initiated an assessment and review of performance of all the 127 institutions supported under this project. The broad objective of this assessment and review taken up in the latter half of 2009, was to determine the level and extent of utilization of the resources created at each institution under TEQIP-I, with a view to maximize their usage and minimize wastage. As Phase-II of TEQIP (Designated TEQIP-II) was proposed to be launched in the year 2010-11, it was felt that this assessment and review would be helpful to also indicate the achievements of the institutions in respect of institutional development and system management capacity improvement, which were the major aims of TEQIP. Hence, the following procedure was followed for conducting the study in this connection:

- Guidelines for the study finalized by *NPIU*, after discussion at different levels;
- State/CFI-level & National- level Auditors appointed by *NPIU* to undertake the work;
- Data formats for seeking institutional information standardized by *NPIU*;
- Institutions concerned given data formats by *NPIU/SPFUs* to fill and return;
- Guidelines & filled formats provided to State/CFI-level Auditors by *NPIU/SPFUs*;
- Identification by *NPIU* of sample institution(s) for visit by State/CFI-level Auditors;
- *NPIU/SPFUs* facilitating on-site visit by State/CFI-level Auditors concerned;
- State/CFI-level Auditors preparing 14 Reports, based on their study/assessment;
- The Reports covered 124 (State:108, CFI:16) institutions, as against a total of 127;
- *NPIU* providing Guidelines and 124 Reports to the National-level Auditor;

- Study/analysis of the Reports by National-level Auditor, to prepare a draft Report;
- Draft Report sent to *NPIU*; Comments/suggestions received from *NPIU/World Bank*;
- The 3 Reports (State:1, CFI:2) received late given by *NPIU* to National level Auditor;
- Revised National Report finalized by the National level Auditor using these inputs;

Thus, the National Report is a consolidation of the thirteen State-level Reports covering 109 institutions and one CFI-level Report including 18 institutions. As the institutions included herein cover National Institutes of Technology, Technological Universities including Deemed to be Universities, Engineering Colleges of different types, like Government, Government-Aided, Private Self-financing, Autonomous and Constituent, as well as Polytechnics of the Government or the Government-Aided categories, the technical education sector covered under TEQIP-I has been fairly wide spread and having ramifications on the future of technological, industrial and economic progress of the country. Hence, the assessment taken up by the State/CFI-level and National Auditors included a study covering different aspects of equipment/facilities and books/learning resources obtained by the institutions under TEQIP-I, covering:

- (i) Commissioning, operation and maintenance and record keeping;
- (ii) Training imparted to faculty/staff in operation/maintenance/use;
- (iii) Availability of consumables/spares. service and operating manuals;
- (iv) Status and extent of utilization, for both formal/non-formal activities;;
- (v) Strategy/action plan for enhancing their utilization and sustenance

The study conducted on these aspects for all the 127 institutions forms a significant part of this Report. It has included a number of activities like, modernization of laboratories /workshops, up-gradation of library, networking between institutions, curricula improvement, R&D, industrial interaction and related activities. Here, the Reports as prepared by the State/CFI-level Auditors based on their visits to identified sample institutions for on-the spot study, followed by desk study of data formats submitted by the institutions, have formed the basis for the National Report. With wide variations/gaps and mostly qualitative information in many cases as observed in the data formats at the institutional level, considerable variations have crept in the presentation of State/CFI-level Reports. Besides, a few State/CFI-level Auditors have not followed the *NPIU* guidelines strictly, while preparing their Reports on the study conducted. As the National Report is mainly based on the Reports of the State/CFI-level Auditors, some of these variations/gaps/inconsistencies have

naturally entered into the National Report. Hence, no meaningful comparison of performance of either the *programme institutions* or the States *in the utilization of institutional resources under TEQIP-I* could be undertaken to provide the results in the National Report. However, it is believed that the National Report will be able to give a broad indication of the post -TEQIP-I status of *utilization of institutional resources created by the programme institutions* since the inception of TEQIP and it can be helpful in assisting the planners and implementers of TEQIP-II to introduce suitable corrective steps in the future.

The National Report is divided into six Sections. In the first Section devoted to *Preamble*, the present status of TEQIP, its broad aims and the need and means of the study on “*Utilization of institutional resources*” created under TEQIP in *programme institutions* is briefly covered. This is followed by a brief outline of the *Objectives of the Study*, presented in the next Section. The *Scope and Methodology of the Study* are then presented in detail in the third Section. The *State/CFI-level Reports* are then presented in Section 4 of the National Report, based on the study, analysis and compilation of the Reports of the State/CFI-level Auditors covering 124 *programme institutions* provided by NPIU and 3 additional Reports from the *programme institutions* received late by NPIU and directly forwarded to the National-level Auditor. Here, all the thirteen States (=109 institutions) are covered first followed by the 18 CFIs, all in the alphabetical order, by forming Sub-Sections 1-14. In each case, a *Summary of Observations* is given to begin with, followed by *Specific Observations* on each institution, *Assessment of Discrepancies*, *Assessment of Un-Commissioned/Under-Utilized Equipment & LR*s, *Short Overall Review* and *Some Suggestions for Enhanced Utilization* at the end. Where ever possible, data/information has been provided in tabular form in this Section and the presentation has been made easy to read. *Some General Suggestions for Enhanced Utilization* are then given in Section 5, which supplement the suggestions included in each of the Sub-Sections 1-14 of Section 4. Section 6 of the Report deals with the *Concluding Remarks*, which summarize the major findings of the study conducted for the National Report, as briefly given below:

- Satisfactory installation, commissioning and utilization of equipment/facilities at most of the *programme institutions*; Utilization level of Category A, B items found to be much higher than that of Category C, D types;
- Some faculty/staff trained for operating the equipment of Category C, D at most *programme institutions*; Operating manuals also prepared in many cases, to improve the equipment use; But, record keeping(e.g., log books) not strictly followed;

- Limited provision made to meet the maintenance needs (e.g., Spares, Consumables, AMC) of equipment/facilities at most *programme institutions*; Likely to affect their trouble-free operation for long intervals, as many of them crossed warranty periods;
- Computers, campus-wide LAN, internet access, licensed software procured, installed, used well at most *programme institutions*; But, the same care/attention not shown in getting other costly equipment, leading to their poor use; Not a good practice;
- Library collections, both in print and e-format, greatly expanded at most *programme institutions*; But, lack of trained staff, poor ambience and limited working hours, not conducive to attract more number of students and faculty to the Library;
- In a few cases, equipment/facilities not working properly or grossly under-utilized (e.g., Jharkhand, Kerala, Maharashtra, Uttarakhand & in the CFI at Ranchi), as pointed out in Section 4; Not a good reflection of TEQIP achievements;

Some suggestions have been given in the Report to handle the different issues pointed out as above. Administrators and Planners at *NPIU/SPFUs* and learned faculty members at the *programme institutions* concerned, may give due consideration to these suggestions at the earliest. .

## 1.0 Preamble

Technical Education Quality Improvement Programme of the Government of India (TEQIP) has been implemented as a World Bank assisted Project to improve the quality and standard of technical education system in the country. The TEQIP has aimed at Institutional Development covering:

- a) Promotion of Academic Excellence;
- b) Networking of Institutions for Quality Enhancement and Resource Sharing;
- c) Enhancing Quality and Reach of Services to Community and Economy; and,
- d) System Management Capacity Improvement.

The Programme was initiated in March 2003. Under this Programme, 109 Colleges/Institutions in 13 States and 18 Centrally Funded Institutions (CFIs) located all over the country had been identified for financial support, at an estimated total project cost of Rs. 15,500 Million. The various institutions were included in phase-I of the TEQIP project (termed TEQIP-I) in two cycles of national selection, conducted by the Government of India in the years 2003-04 and 2004-05. These institutions, termed as *programme institutions*, included National Institutes of Technology, Technological Universities including Deemed to be Universities, Engineering Colleges of different types, like Government, Government-Aided, Private Self-financing, Autonomous and Constituent, as well as Polytechnics of the Government or the Government-Aided categories. Of these institutions, a few capable ones were supported under TEQIP-I, as *lead institutions* and the others were categorized for support as *network institutions*, consistent with the hub and spoke structure for them as envisaged under the TEQIP project.

Looking at the magnitude of the funding provided to the *programme institutions* and their expected outcomes/outputs in the stipulated time frame, the Government of India had established a *National Project Implementation Unit (NPIU)* for centrally coordinating, facilitating, overseeing, monitoring and reviewing their progress and also of the implementation of the project as a whole. Similarly, each State concerned had set up a *State Project Facilitation Unit (SPFU)*, to enable the smooth functioning of the project at the State-level *programme institutions* in its jurisdiction. Both the *NPIU* and the *SPFUs* have made significant contribution to the implementation of TEQIP-I.

Under TEQIP-I, each *programme institution* was required to create and establish a wide range of resources, including equipment and learning resources (LRs) and fulfill the project aims as outlined earlier. As the project period was to reach its end on March 31<sup>st</sup> 2009, it was decided by *NPIU* that this is perhaps the right time to evaluate the impact of TEQIP-I on the technical education system in the country. Hence, a study was initiated by *NPIU* on the utilization of resources created and established under TEQIP-I at the *programme institutions*. This study is expected to determine the level and extent of utilization of all such resources, maximize their usage and reduce their wastage. It is hoped that the study will also enable the assessment of benefits of these resources to all the stakeholders and making recommendations on strategies for sustaining them in the future.

## **2.0 Objectives of the Study**

Considering the broad outline of the study as conceptualized above, the title of the study was fixed by *NPIU* as “*Utilization of institutional resources created under TEQIP in programme institutions*”. And, the purpose of the study was to assess the extent of availability and utilization with respect to equipment, books and LR’s and to suggest a strategy for their optimum utilization and sustenance. With these basics being fixed, the *NPIU* recommended the following detailed objectives for the study:

1. Evaluate the commissioning and operation of equipment purchased under TEQIP-I;
2. Determine the status and extent of their utilization;
3. Assess the availability of their consumables, spares, service and operating manuals;
4. Assess the availability of support staff/faculty for operating and maintaining them;
5. Identify the training needs to prepare the support staff/faculty as required;
6. Assess the utilization of books and learning resources; and,
7. Suggest a comprehensive strategy/action plan for enhancing their utilization;

## **3.0 Scope and Methodology of the Study**

### **A. Scope:**

The scope of the study as suggested by *NPIU* included the following:

1. The study to cover:
  - All the 127 *programme institutions*, both at the State and the Central levels;



- Period to be from the start of the programme till January 2009;
- 2 Specially designed Reporting formats to be filled in by each *programme institution* with greater accuracy and accountability;
  - 3 The filled in formats to be submitted by each *programme institution* to *SPFUs* in the case of State-level and to *NPIU* in the case of Centrally Funded Institutions(CFIs);
  - 4 *SPFUs* to compile the information provided by the *programme institutions* in their respective States and forward the same to *NPIU*;
  - 5 *NPIU* to appoint State- and CFI-level Auditors and launch visits to identified sample institutions with their help, to check the ground reality;
  - 6 13 State level and 1 CFI-level Reports to be prepared by the State/CFI-level Auditors; Similarly, *NPIU*-appointed National-level Auditor to prepare a National Report;
  - 7 Each Report to highlight the achievements of TEQIP-I in terms of initiatives taken in the last five years on the utilization of various resources. Both the National and the State level Reports to contain the following sections:
    - a) An executive summary of not more than 4 pages;
    - b) An overall assessment of commissioning and utilization of equipment and LRs obtained under TEQIP-I, based on independently verified and objective information; To be particularly based on the use of the equipment and LRs for regular scheduled teaching-learning; Assessment to respond to all the stated objectives of the study; Further, the assessment to be supported by numerical analysis together with a few examples;
    - c) An assessment of the discrepancies between what the institution reported and what the Auditors found; Institutions with major or repeated discrepancies to be noted in a separate annex, with a short description of the discrepancy;
    - d) A reasonable and executive list of un-commissioned or substantially under-utilized equipment and LRs to be produced for future follow-up by the State Government;
    - e) Short overall review of each aspect of commissioned and utilization asked for in the reporting format for equipment in the following page (Table 6.1) i.e. : Existence of log book, No. of hours used in the last month according to the log book, use of equipment per activity, cross-departmental use of equipment;
    - f) Suggestions for enhanced utilization and actions to increase sustainability of equipment and LRs; To include also suggestions for future studies/

- methodologies to ensure a higher utilization of these equipment; and,
- g) The Report to be delivered together with separate file(s), with all information;

### **B. Methodology:**

Taking into account the suggestions of *NPIU* for the above study, the following methodology was adopted to conduct the *Study on Utilization of Institutional Resources created under TEQIP* in the programme institutions:

- 1) State- and CFI-level and National- level Auditors appointed by *NPIU*, as per the list given in Appendix- A;
- 2) *NPIU* provided State/CFI-level Auditors with the data/information formats filled by 124 (State: 108, CFI:16) out of 127 institutions, together with *Guidelines* prepared;
- 3) *NPIU* also identified the sample institution(s) to be visited by each State/CFI-level Auditor and facilitated the visit;
- 4) State/CFI-level Auditors studied the institutional Reports, conducted the visits as planned, followed by preparing the State/CFI-level Reports for submission to *NPIU*;
- 5) *NPIU* provided the 108 State-level and 16 CFI-level Reports so prepared, to the National-level Auditor, along with *Guidelines* for his study, analysis and compiling;
- 6) Draft National Report covering 124 programme institutions prepared by the National-level Auditor (Dec. 2009) and submitted to *NPIU* in both soft and hard copy formats;
- 7) *NPIU* provided 3 Reports received late (Mar. 2010) from programme institutions (State:1, CFI:2) directly to the National-level Auditor, for use in the revised Report;
- 8) Further, *NPIU* provided its comments on the draft Report and also those from the World Bank (Mar. 2010), to the National-level Auditor for use in the revised version;
- 9) A revised National Report prepared by the National-level Auditor based on these additional inputs, for submission to *NPIU* (Apr. 2010);
- 10) The revised National Report to provide relevant data/information on the *Utilization of Institutional Resources created in all the programme institutions* under TEQIP-I;

## **4.0 State/CFI-Level Reports**

### **1) Introduction:**

The Study Reports on the utilization of institutional resources created under TEQIP I covering all the programme institutions from 13 States (109) and the CFIs (18) have been

made use of in preparing the National Report. Here, the 14 Reports (States:13, CFIs:1) covering 124 (State level: 108, CFI level:16) *programme institutions* as prepared by the State/CFI-level Auditors, after their desk study followed by visits to the 16 identified sample institutions (State level:14, CFI level:2) for on-site verification have been compiled, reviewed and presented to form the National Report. Besides, the Reports received late by *NPIU* from 3 *programme institutions*(State level:1, CFI level:2) and made available directly to the National-level Auditor have also been included in the National Report. Thus, the National Report is a compilation of the Study Reports covering all the 127 *programme institutions* included under TEQIP-I. As a result, a few features relating to them are worth mentioning here, because they may have some influence on the utility of the Report:

- Prescribed formats not filled in properly by a few *programme institutions*;
- Some providing quantitative data/information; Some others giving only qualitative;
- Proper categorization of equipment/LRs not done by the institutions in some cases;
- Lack of uniformity in the Study Reports prepared by the State/CFI-level Auditors;
- Wide differences in the data/information presented and gaps in their Study Reports;

These limitations have naturally crept in the National Report as well, making it difficult to conduct a meaningful comparative study of performance of the States and/or the CFIs on *the utilization of institutional resources created under TEQIP I in programme institutions* in their respective jurisdictions. However, it is believed that the National Report will provide broadly the post -TEQIP-I status of *utilization of institutional resources created in the programme institutions* since the inception of TEQIP and assist the planners and implementers of TEQIP-II for introducing suitable corrective steps in the future. As the features listed above are mainly due to differences in the perception of formats prescribed and the interpretation of data/ information sought by *NPIU* at the *programme institutions*, as well as the multiple authorship of the Study Reports at the State/CFI-levels, *NPIU* may like to introduce suitable improvements to take care of these issues in the future.

## **2) *Distribution of Programme Institutions:***

The State-wise distribution of Colleges/Institutions and the list of CFIs included under TEQIP-I, both arranged in the alphabetical order, can be seen below in Tables 1 and 2. The lists of *programme institutions* from each of the 13 States and from among the CFIs, also arranged alphabetically. are then given in Tables 3-16. Of the Colleges/Institutions at the

State-level listed herein, the starred (\*) ones received TEQIP-I support as *lead institutions* and the others as *network institutions* consistent with the hub and spoke structure for them as envisaged under TEQIP-I. Major observations of the National Auditor on each *programme institution* are then summarized State-wise/CFI-wise, along with specific observations on them followed by some suggestions for enhanced utilization of the resources created in each case. Here, the following order is generally followed in the presentation of the State-level (13) and the CFI-level (1) Reports:

- A. Summary of Observations
- B. Specific Observations
- C. Assessment of Discrepancies
- D. Assessment of Un-Commissioned/Under-Utilized Equipment & LR's
- E. Short Overall Review
- F. Some suggestion for enhanced utilization

**Table 1: Distribution of Colleges/Institutions in the States covered under TEQIP-I**

S. No.	State	No. of Colleges/Institutions
01	Andhra Pradesh	12
02	Gujarat	6
03	Haryana	5
04	Himachal Pradesh	3
05	Jharkhand	4
06	Karnataka	14
07	Kerala	5
08	Madhya Pradesh	7
09	Maharashtra	17
10	Tamil Nadu	11
11	Uttarakhand	4
12	Uttar Pradesh	10
13	West Bengal	11
Total	13 States	109

**Table 2 : List of Centrally Funded Institutions covered under TEQIP-I**

<b>S. No.</b>	<b>Institution</b>
01	Dr. B. R. Ambedkar National Institute of Technology, Jalandhar
02	Malviya National Institute of Technology, Jaipur
03	Maulana Azad National Institute of Technology, Bhopal
04	Motilal Nehru National Institute of Technology, Allahabad
05	National Institute of Foundry & Forge Technology, Ranchi
06	National Institute of Technology, Calicut
07	National Institute of Technology, Durgapur
08	National Institute of Technology, Hamirpur
09	National Institute of Technology, Jamshedpur
10	National Institute of Technology, Kurukshetra
11	National Institute of Technology, Rourkela
12	National Institute of Technology, Silchar
13	National Institute of Technology, Srinagar
14	National Institute of Technology, Surathkal
15	National Institute of Technology, Tituchirapalli
16	National Institute of Technology, Warangal
17	Sardar Vallabhbhai National Institute of Technology, Surat
18	Visvesvaraya National Institute of Technology, Nagpur
Total	18 FIs

### **3) Reports**

Each State/CFI-wise Report is now given below in Sub-Sections 1-14, as per the Alphabetical order followed in Tables 1-2:

#### **1. Andhra Pradesh:**

##### **A. Summary of Observations:**

The State of Andhra Pradesh was included under TEQIP-I in its second cycle beginning from April 1, 2004, along with six other States. The Colleges/Institutions in the

State supported under TEQIP-I from this time until March 31, 2009 are listed in Table 3 in the alphabetical order. Of the twelve Colleges/Institutions listed herein, the starred (\*) ones received TEQIP-I support as *lead institutions* and the others as *network institutions*. Major observations as a result of the study and analysis of the State -level Report of the Auditor are as follows:

- Most of the items procured under TEQIP-I utilized for routine UG and PG laboratory work and in some cases for students' projects;
- Research work using these equipment/facilities yet low; However, research papers published in journals and/or presented at conferences in some cases;
- No major differences noticed in the activities/outcomes/outputs of *lead or network institutions*;
- Reporting errors and inconsistencies often noticed in the Reports prepared by some Colleges/Institutions;
- The level of training provided by the manufacturer/supplier quite low and inadequate, particularly for costly (C&D category) equipment;
- Only a minor discrepancy noticed in the sample institution visited during the course of the study; but, this seems to have been resolved;
- S&T consultancy using the facilities established at these Colleges/Institutions, yet at an insignificant level;

**Table 3: Colleges/Institutions in Andhra Pradesh supported under TEQIP-I**

S. No.	College/Institution
1.01	Andhra University College of Engineering, Vishakhapatnam*
1.02	Bapatla Engineering College, Bapatla
1.03	Government Institute of Electronics, Secunderabad
1.04	Institute of Science and Technology, JNTU, Hyderabad
1/05	JNTU College of Engineering, Anantapur
1.06	JNTU College of Engineering, Kakinada
1.07	JNTU College of Engineering, Kukatapally, Hyderabad* (#)
1.08	Rajiv Gandhi Memorial College of Engineering & Technology, Nandyal
1.09	Sreenidhi Institute of Science & Technology, Ghatkesar
1.10	Sri Venkateswara University College of Engineering, Tirupati*

1.11	University College of Engineering, Osmania University, Hyderabad*
1.12	University College of Technology, Osmania University, Hyderabad

(\*) Lead Institutions; (#) On-site visit conducted;

The broad categorization of equipment procured by the Colleges/Institutions in Andhra Pradesh under TEQIP-I is as follows:

- Category A - > 500 items costing between Rs. 1-5 Lakhs;
- Category B - > 170 items costing between Rs. 5-10 Lakhs;
- Category C - > 100 items costing between Rs. 10-20 Lakhs;
- Category D - > 30 items costing more than Rs. 20 Lakhs;

Besides, all the Colleges/Institutions have made substantial investment in the up-gradation of their library and information centres, e-resources of books, journals and stand alone video courses (e.g., from NPTEL). In addition, they have paid special attention to installing computer networks across their campuses for providing the students and faculty access to on-line journals and other e-content from national/international sources. These measures have enabled many significant improvements in the quality of laboratory experience of the students and in the attitudinal profile of faculty members, particularly at the middle level. Most of the equipment and learning resources procured by the Colleges/Institutions under TEQIP-I have been installed and commissioned in time and are being used by them reasonably well in the pursuit of excellence in the respective subject areas. Thus, TEQIP-I has been a major stimulant to technical institutions in the State in their efforts to enhance the quality and standard of their academic and research activities for the benefit of their stake holders.

***B. Specific Observations:***

Specific College/Institution-wise data/information on the utilization of resources procured under TEQIP-I are given below in Sub-Sections 1.01-1.12, in the same order of their listing in Table 3:

***1.01 Andhra University College of Engineering, Vishakhapatnam***

- (i) The data/information on equipment mostly incomplete, relating to commissioning & log book maintenance, number of hours/month used and cross departmental uses;
- (ii) Besides, data/information not provided in the format given, leading to inconsistencies in many cases;
- (iii); Nodal Officer urged by the State-level Auditor to send the full data as per Tables 6.1A, B soon; But, not received in time for inclusion in his Report;
- (iv) Hence, making any review/comments on the *installation and commissioning of equipment and LRs* specifically at the institution not proper/useful;

### ***1.02 Bapatla Engineering College, Bapatla***

- (i) The data/information given on the 107 items in Table 6.1A of doubtful reliability, as in most case the concerned Departments the dates of commissioning;
- (ii) Utilization of 6 costly equipment for teaching and laboratory instruction reasonable,
- (iii) although data in hrs/mth. not given; But, hrs in Jan. 2009 satisfactory at 40-120,
- (iv) Cross-Departmental usage of equipment not reported by the institution; College to look into this and take steps to encourage this activity for better utilization;
- (v) Use of expensive equipment yet low; College to emphasize the use of such equipment/ facilities for students' project work also;

### ***1.03 Government Institute of Electronics, Secunderabad***

- (i) Commissioning time for 50 items of equipment in the range 1-3 weeks; Reasonable' However, in 4-5 cases, reported time in the range 2-6 months raising doubts;
- (ii) Equipment utilization mostly for teaching, laboratory instruction & for preparing learning material for other institutions; Utilization hrs satisfactory;
- (iii) Hours of use of expensive equipment at the institution yet low; College to emphasize use of such equipment/facilities for students' project work and training;

### ***1.04 Institute of Science and Technology, JNTU, Hyderabad***

- (i) Log books maintained for all equipment of Category C, D numbering 23 out of a total of 82 items listed in Table ^1A; Commissioning reasonably satisfactory;



- (ii) Utilization of equipment/software mostly for teaching, laboratory & research; No. of hrs used in Jan.2009: Satisfactory; Costly items; 15-20; Others: 200-400;
- (iii) Cross-Departmental utilization not in practice at the institution as yet; Serious attention to be given to broaden the utilization base across Departments;
- (iv) Use of expensive equipment at the institution, yet at a low level; The institution to take up sponsored research and industrial consultancy to enhance this activity;

***1.05 JNTU College of Engineering, Anantapur***

- (i) Log books maintained only for 9 items of equipment listed in Table 6.1B; Their commissioning reasonably satisfactory;
- (ii) No. of hours used in Jan. 2009 typically 10-20 for research facilities and 400 for campus-wide LAN and other items; Satisfactory;
- (iii) Utilization of most of the equipment/facilities for teaching, laboratory and research work; No. of hours per month data activity wise, not provided;
- (iv) Serious attention to be given to expand the use of all equipment on the campus, particularly for the benefit of faculty and students alike;

***1.06 JNTU College of Engineering, Kakinada***

- (i) Commissioning of 124 items of equipment listed in Table 6.1A reported done in a short time, like a couple of days; Satisfactory;
- (ii) Maintenance of log books, particularly for 18 items of equipment of Category C, D well done as per the guidelines; Reasonably satisfactory;
- (iii) No evidence seen of cross-departmental usage of equipment/facilities set up; College to pay urgent attention to take care of this and correct the situation;
- (iv) No. of hours used in Jan '09 as per log book: Rather low; ~6 for specialized items and ~200 for others; However, MATLAB software only 25;
- (v) Most of the items used for teaching, laboratory and research work; Serious attention to be given to expand their use for students' training, research and others;

***1.07 JNTU College of Engineering, Kukatapally, Hyderabad***

- (i) Satisfactory; Commissioning of equipment in a short time in most cases, except one; Log books maintained for only Category C & D items;
- (ii) No. of hours of equipment use in Jan. '09: Reasonable; 2-3 for specialized facilities and 25-30 in most other cases, except for the UTM in Civil Engg. Department;
- (iii) Utilization of equipment generally acceptable, being mostly for teaching, laboratory and research work; However, good case for enlarging the user base;
- (iv) Cross-Departmental of mostly expensive items based on software and hosted on the campus-wide LAN and not for any other items; To cover all costly items;
- (v) Use of Category C, D equipment and software yet low; To be given due attention in the short term by encouraging faculty/students in project work & other activities;

***1.08 Rajiv Gandhi Memorial College of Engineering & Technology, Nandyal***

- (i) Commissioning of most equipment in a short time, as per report given; No mention of maintaining Log books, as no items procured under category C&D;
- (ii) No. of hrs of equipment usage in Jan.'09: Satisfactory, although no data provided; But, most of the items of Category A,B, useful in UG/PG teaching;
- (iii) Utilization of equipment generally satisfactory for teaching, laboratory and project work; Surprisingly, getting library books or increasing library hours reported;
- (iv) Regarding cross-Departmental usage of equipment, no evidence provided, mostly indicating a nil statement;
- (v) Good efforts being made to strengthen UG/PG programmes using the new equipment/facilities; New initiatives now required to expand their use;;

***1.09 Sreenidhi Institute of Science & Technology, Ghatkesar***

- (i) Satisfactory commissioning of equipment in a short time in most cases; Log books maintained for only two items procured under category C,D;
- (ii) No. of hours of equipment usage in Jan. '09: Satisfactory in most cases; Standby Generator and MATLAB software also well used;
- (iii) Utilization of all items of equipment generally satisfactory; Mostly for class room teaching, laboratory work and some research work;
- (iv) Cross-Departmental usage of equipment yet limited; However, Standby Generator and Campus-wide LAN only items used across Departments;

- (v) The institution to make more serious efforts to strengthen UG/PG programmes; by encouraging the use of these equipment for better laboratory/project work;

***1.10 Sri Venkateswara University College of Engineering, Tirupati***

- (i) Satisfactory commissioning of equipment in a short time in most cases; Log books maintained for all the 13 items procured under Category C,D;
- (ii) No. of hours of equipment usage in Jan.'09: Satisfactory in most cases; Cumulatively 500 -1500 of usage reported;
- (iii) Utilization of equipment mostly for teaching in the class room, laboratory instruction and research work; Generally satisfactory;
- (iv) Negligible cross-departmental utilization of equipment/facilities; to be looked into urgently and corrected so as to benefit all the Departments at the College;
- (v) More serious efforts required to strengthen UG/PG/Research programmes using the new facilities set up under TEQIP;

***1.11 University College of Engineering, Osmania University, Hyderabad***

- (i) Satisfactory commissioning of equipment in a short time in most cases; Log books maintained for all the 29 items procured under category C, D;
- (ii) No. of hours of equipment usage: Satisfactory at 15-20, for specialized items; ~ 200 for others; Generally acceptable;
- (iii) Utilization of equipment mostly for teaching, laboratory and research work; Good case to expand these by encouraging faculty and students alike for wider use;
- (iv) Cross-Departmental usage observed only in the case of software, like MATLAB and ANSYS loaded on campus- wide LAN and not for equipment items;
- (v) ; More serious efforts required to expand the user base of all facilities added and strengthen academic/research activities at the institution;

***1.12 University College of Technology, Osmania University, Hyderabad***

- (i) Commissioning of most equipment items satisfactory; Log books maintained for all the 9 items procured under Category C, D;

- (ii) No. of hours of equipment usage satisfactory; 20-60 hrs for specialized items of equipment procured;
- (iii) Utilization of equipment items mostly for class room teaching, laboratory instruction and research work; Generally satisfactory;
- (iv) Cross-Departmental usage of equipment/facilities not reported by the institution; Hence, no comments/suggestions being given;
- (v) More serious efforts required to expand the user base of all the major equipment/facilities added, for deriving good benefits from TEQIP support;

**Observations on learning resources and software:**

Most of the *programme institutions* have reported as follows: in relation to the procurement and utilization of library additions and LRs:

- Addition of large number of text books and digital content, of wide use on shared basis by faculty and students;
- Procurement of licensed software and e-resources thereby reducing the use of pirated software/resources and enhance their compliance with IPRs;
- Providing increased access to library, e-resources and software going up to 24/7 hrs, e.g., JNTU Colleges of Engineering Hyderabad and Anantapur;
- State of the art, reliable campus-wide computer networks, leading to wider utilization of library using online OPAC system;

These steps would not have been possible, but for their inclusion under TEQIP-I

**C. Assessment of Discrepancies:**

The assessment of discrepancies between what the institution reported and what the State-level Auditor has found in respect of one institution visited and reported by him is summarized below:

Institution	Discrepancy Noticed	Remarks
JNTU College of Engineering, Kukatapally, Hyderabad	1.Dept. of Metallurgical Engg.: ‘Sintering furnace’, vaguely stated in Table 6.1B: “Equipment procured to provide state of Art facility for students to explore and conduct research in the	Later learnt that the item not commissioned properly; The Principal promised to look into this and get it corrected;

	field”. Equipment not in regular use and no specific details available;	
	2.Dept. of Mechanical Engg.: Combustion laboratory Oil burner reported “working well and being used by students to explore and conduct research in the field”. But, specific column-wise details not given in the Table.	Required description of each high value equipment indicating its utilization for production /Research projects, major experiments/publications not mentioned in the data provided, causing confusion; College to be advised on this;

***D. Assessment of Un-Commissioned/Under-Utilized Equipment & LRs:***

There has been no evidence of any major item of equipment remaining un-commissioned and/or un-utilized at any of the 12 State-level *programme- institutions* in Andhra Pradesh, included in the Report of the State-level Auditor, except in the following two cases, at *the JNTU College of Engineering, Kukatapally, Hyderabad:*

- *Sintering Furnace at the Department of Metallurgical Engineering:-* Long delay in installation and commissioning; Present status not clear;
- *Combustion laboratory Oil burner at the Department. of Mechanical Engineering.:* The details of commissioning and use not available; Present status not clear;

No report received from any *programme- institution* on un-utilized LRs. All the LRs procured by each institution seem to be adequately utilized.

***E. Short Overall Review:***

A short overall review of each aspect of commissioning and utilization of equipment and LRs obtained under TEQIP-I, as extracted from the reporting format used by the State-level Auditor is given below:

- Most of the equipment procured by the *programme institutions* well used;
- Log-books are generally maintained, especially for equipment of Categories C and D;
- Cross Departmental use of equipment not being attempted in most cases;
- Utilization of equipment for networking and service to community, also at low level;
- Utilization of LRs progressing well; Of considerable benefit to the stake holders;
- Institutional level over viewing/monitoring of equipment/facilities set up, yet low;

### ***F. Some suggestion for enhanced utilization:***

Indeed TEQIP-I has been responsible for substantially upgrading of the laboratories, libraries, computers and the IT Infrastructures at all the *programme institutions* in the State of Andhra Pradesh. The following few suggestions are now being made to extend these facilities for better and wider use among the stake holders at each *programme institution*:

- Constitute a *Faculty Committee* at each College/Institution to oversee and monitor the utilization of resources and also plan for the future;
- Take early steps to introduce *Best Practices* for the utilization of equipment/facilities at each College/Institution, as followed at leading institutions;
- Obtain *a priori* commitment from equipment/resource suppliers regarding the possible experimental work using the facilities set up and the availability of spares;

## ***2. Gujarat:***

### ***A. Summary of Observations:***

The State of Gujarat was included under TEQIP-I in its second cycle beginning from April 1, 2004, along with six other States. The Colleges/Institutions in the State supported under TEQIP-I from this time until March 31, 2009 are listed in Table 4 in the alphabetical order. These included two polytechnics, each one identified by a (+) symbol as well. Of the six Colleges/Institutions listed herein, the starred (\*) one received TEQIP-I support as *lead institution* and the others as *network institutions*. Major observations as a result of the study and analysis of the State -level Report of the Auditor include:

- 100% utilization of grants by all the *programme institutions*;
- Generally satisfactory installation and commissioning of equipment/LRs;
- Utilization of items mostly for routine UG and PG instruction/studies;
- Limited research, consultancy and related activities taken up;
- *Lead and network institutions* performing similarly, with no visible differences;
- Need analysis not conducted properly before planning the procurement of items;
- Reporting of data/information often incomplete for making detailed review;

**Table 4: Colleges/Institutions in Gujarat supported under TEQIP-I**

S.No.	College/Institution
2.01	DD Institute of Technology, Nadiad
2.92	Dr. S & SS Ghandy College of Engineering & Technology, Surat (+)
2.03	Government College of Engineering, Modasa
2.04	Government Polytechnic, Ahmedabad (+) (#)
2.95	LD College of Engineering, Ahmedabad*
2.06	Vishwakarma Government Engineering College, Gandhinagar

(\*) Lead Institution; (+) Polytechnics; (#) On-site visit conducted;

***B. Specific Observations:***

Specific College/Institution-wise data/information on the utilization of resources procured under TEQIP-I are given below in the same order of their listing in Table 4:

***2.01 DD Institute of Technology, Nadiad***

- (i) Equipment items procured under the following categories, mostly for UG/PG teaching and laboratory instruction and including a Diesel Generator and EPABX;:  
Category A: 41 items;  
Category B : 8 items;  
Category C 9 items  
Category D : 4 items: :
- (ii) All items procured installed and commissioned in a short time; Log books maintained for expensive items only, i.e., Category C and D items;
- (iii) While most of the equipment used for regular UG/PG classes, some used by only a few faculty members since inception. Ways to be found to expand their utilization;
- (iv) Need analysis not made before procuring even expensive items, such as those in categories C and D, resulting in their low level of utilization;
- (v) Software packages and LRs being used by students extensively; The Micro Tutor Learning Resources covering a range of topics found highly useful;

- (vi) No plans evident to generate revenue by making use of TEQIP-I equipment/resources for S&T consultancy and other activities; To be given top priority;

**2.02 Dr. S & SS Ghandy College of Engineering & Technology, Surat**

- (i) Equipment items procured under the following categories, mostly for teaching and laboratory instruction:  
Category 1 A: 6 items;  
Category B: (1 item, i.e., Total Survey Station for student training)  
All the items installed and commissioned for use at the institution;
- (ii) :A few software/CA packages also procured and found to be useful to students;  
Satisfactory performance;
- (iii) Negligible R&D & consultancy taken up; Training programmes conducted and some revenue generated; Reasonable level of industrial interaction also observed ;
- (iv) With no major activity of resource generation utilizing the TEQIP-I equipment, their sustainability likely to be affected in the long term; To be given priority attention;

**2.03 Government College of Engineering, Modasa**

- (i) The College has procured equipment in the following categories:  
Category A: 31 items;  
Category B: 11 items;  
Category C: 2 items  
Category D: 1 item (i.e., campus wide LAN)  
All the items installed and commissioned for use at the College;
- (ii) Large number of students using these equipment for laboratory classes; Computer software obtained (e.g., Lab view, Multi Sim) and MCDS found widely useful;
- (iii) No proper planning done for optimum utilization of the new equipment; Also . no sponsored research or consultancy; To be given priority attention;

**2.04 Government Polytechnic, Ahmedabad**

- (i) The items procured include those for campus- wide networking & 2 items of category A; Also, a number of small items & LRs procured; All items installed;



- (ii) The computerized Wheel Alignment equipment for the Auto shop being unique, found widely utilized for student training & for testing jobs for auto garages;
- (iii) The LRs procured for student instruction being used regularly for class room teaching purposes;
- (iv) Negligible R&D work; Hence, revenue generation possibility through sponsored research/consultancy limited; Institution to take up teacher training programmes ;

**2.05 LD College of Engineering, Ahmedabad**

- (i) Equipment items procured under the following categories, mostly for UG/PG teaching, laboratory instruction and research work:

Category A: 125 items;  
 Category B : 36 items;  
 Category C 21 items  
 Category D : 11 items:

All the items installed, commissioned and being used regularly;

- (ii) Equipment of Categories A and B extensively used by UG/ PG students; But, items of categories C & D only by limited number of users (<5); Log sheets maintained;
- (iii) Surprisingly, the expensive equipment not successful in attracting sponsored research or consultancy projects;
- (iv) Procurement of equipment not need based (i.e., no need analysis conducted); But rather on ease of availability in most cases, leading to their limited utilization;
- (v) No clear planning for optimum use of equipment of categories C, D; Urgent need to explore options for revenue generation for unique item: Altium Designer set up;
- (vi) The LRs and software packages procured being extensively used by UG/PG students;
- (vii) .With no possibility of resource generation using items of equipment at the College, their sustenance/ maintenance to be given priority consideration;

**2.06 Vishwakarma Government Engineering College, Gandhinagar**

- (i) The category-wise breakdown of equipment/resources procured under TEQIP-I:

Category A: 106 items;  
 Category B: 18 items;  
 Category C: 17 items;  
 Category D: 4 items;

- (ii) Equipment of categories A and B largely used by UG/PG students; But, category C and D items useful for students' project work and for R&D;
- (iii) College not done any need analysis for equipment procurement, resulting in their sub-optimal use, particularly for categories C and D items;
- (iv) Only one software package MATLAB of category D procured and found useful by UG/PG students.
- (v) No effort seen on the part of faculty to earn revenue by using the TEQIP-I equipment items;
- (vi) Taking up of R&D projects and sponsored research culture to be stepped up at the institution in the short term to gain advantage of TEQIP-I facilities;

***C. Assessment of Discrepancies:***

The assessment of discrepancies between what the institution reported and what the State -level Auditor has found in respect of one institution visited and reported by him is summarized below:

Institution	Discrepancy Noticed	Remarks
Government Polytechnic, Ahmedabad	None, either in the equipment items or in the LRs procured by the institution;	Satisfactory performance;;

***D. Assessment of Un-Commissioned/Under-Utilized Equipment & LRs:***

There has been no evidence of any major item of equipment remaining un-commissioned and/or un-utilized at any of the 6 State-level *programme- institutions* in Gujarat, included in the Report of the State-level Auditor. Also, none of the *programme-institutions* have reported on un-utilized LRs. All the LRs procured by each institution seem to be adequately utilized.

***E. Short Overall Review:***

A short overall review of each aspect of commissioning and utilization of equipment and LRs obtained under TEQIP-I, as extracted from the reporting format used by the State-level Auditor for Gujarat is given below:

- All the equipment procured by the *programme institutions* generally used well;
- Log-books are maintained, mainly for equipment of Categories C and D;
- Cross Departmental use of equipment, yet negligible;
- Utilization of equipment for networking and service to community, also at low level;
- LRs being used reasonably well; However, good scope for further improvement;
- Institutional level over viewing/monitoring of equipment not yet functioning;

***F. Some suggestion for enhanced utilization:***

TEQIP-I has been primarily responsible for substantially upgrading of the laboratories, libraries, computers and the IT Infrastructures at all the *programme institutions* in the State of Gujarat. The few suggestions given below are now being made to extend these facilities for wider use among the stake holders at each *programme institution*:

- Serious attention to be paid to promote the use of equipment/resources on a war footing, by encouraging sponsored R&D, consultancy and continuing education;
- In the future, need analysis and planning for optimal utilization to precede any procurement of equipment/resources;
- Encouragement to be given for 24/7 hrs usage of software packages, e-resources, digital content and the like, by making use of campus LAN at each institution;

***3. Haryana:***

***A. Summary of Observations:***

The State of Haryana was included under TEQIP-I in its first cycle beginning in the year 2003-04, along with five other States and CFIs. The Colleges/Institutions in the State supported under TEQIP-I from this time until March 31, 2009 are listed in Table 5 in the alphabetical order. These included five *programme institutions* in all, covering three University level institutions, one College and a Polytechnic identified by a (+) symbol.

Major observations as a result of the study and analysis of the State -level Report of the Auditor include:

- Reporting of data/information mostly qualitative and incomplete;
- Level of utilization of grants by all the *programme institutions* reasonable;
- Installation and commissioning of equipment/LRs, generally satisfactory;
- Utilization of low-cost items mostly for routine UG and PG instruction/studies;
- Utilization of expensive items (Categories C/D), generally limited;
- Working hours of central facilities/libraries not extended to enable increased use;
- Limited level of sponsored research, consultancy and related activities

;

**Table 5: Colleges/Institutions in Haryana supported under TEQIP-I**

S. No.	College/Institution
3.01	Deen Bandhu Chottu Ram University of Science & Technology, Murthal
3.02	Government Polytechnic, Nilokheri, Karnal (+)
3.03	Guru Jambheshwar University of Science & Technology, Hissar (#)
3.04	Kurukshetra University, Kurukshetra
3.05	YMCA Institute of Engineering, Faridabad

(+) Polytechnic; (#) On-site visit conducted;

### ***B. Specific Observations:***

Specific College/Institution-wise data/information on the utilization of resources procured under TEQIP-I are given below in the same order of their listing in Table 5:

#### ***3.01 Deen Bandhu Chottu Ram University of Science & Technology, Murthal***

(i) Category wise breakdown of equipment procured by the institution under TEQIP-I:

- Category A: Most of the items;
- Category B: 7 items;
- Category C: None listed;
- Category D: None listed;

- (ii) All items installed and commissioned in a short time; But, low level of utilization reported for most of the items, including Robot Trainer; However, for campus wide LAN ~225 hrs of usage reported;
- (iii) Category A and B items being used by students and faculty in the class rooms and the laboratories, benefitting the institution in upgrading the academic programmes and resulting in improved outcomes of the stake holders;
- (iv) Library acquisitions mostly for Reference Books and e-resources, with limited usage; However, text books procured (~7200) widely used by the students; But, library working hours not extended to meet the demand;
- (v) Low level of R&D, sponsored research, consultancy and related activities at present, leading to doubts on the future sustenance of facilities established; To be given serious consideration in the near future;

### **3.02 Government Polytechnic, Nilokheri, Karnal**

- (i) Most of the items of equipment planned for TEQIP-I received, installed and commissioned for use in a short time; Main use in class rooms and laboratories;
- (ii) Some items, although expensive like storage CRO and HMT lathe used by large number of students over extended periods, like 200-300 hrs;
- (iii) However, another expensive item, viz., HP server used sparingly by only 4 persons, apparently in the administrative section;
- (iv) Large number of text books (~4,200) obtained for use in the library; Other learning resources also obtained; Well used by students and faculty members alike;
- (v) Surprisingly no reference books or journals obtained for the library; As a result, support to R&D and related activities negligible;
- (vi) At present, no log books maintained for recording the usage of various facilities; To be given urgent attention and corrected in the short term;
- (vii) Negligible revenue generation activities so far; Institution to consider working closely with industry and engaging itself in training activities for industry;

### **3.03 Guru Jambheshwar University of Science & Technology, Hissar**

- (i) All the items of equipment/facilities proposed have been received, installed, commissioned and being used regularly at the institution;

- (ii) Bulk of items in Categories A and B; However, some items also in Categories C & D: e.g., Absorption Meter, PCR m/c and Multi colour web fed offset m/c;
- (iii) Low cost items finding wide use in class rooms and laboratories, whereas expensive items being used sparingly for research work and two Ph. D students training;
- (iv) Some items usable for low volume production, like Multi colour web fed offset m/c, CNC m/c; Worth exploring new applications to ensure their wider use;
- (v) Library books (mostly texts), e-resources, journals considerably expanded under TEQIP-I; But, utilization yet low;
- (vi) Campus wide LAN functioning well, with large numbers of students/faculty benefitting from the intranet and internet access;
- (vii) Improved facilities to be used in launching new courses and new continuing education programmes; To be given urgent attention;
- (viii) Revenue generation using sponsored research, consultancy and related activities also to be stepped up in the short term;

#### **3.04 Kurukshetra University, Kurukshetra**

- (i) Format filled in by the institution incomplete and as such reflected also in the Report of the State level Auditor;
- (ii) Justification provided for Category C and D items also misplaced and inconsistent, leading to no conclusions being drawn;
- (iii) Similar case also with the library acquisitions and LRs;

Hence, the institution to be asked to provide the required information strictly in accordance with the NPIU format for any meaningful understanding/appreciation of its achievements under TEQIP-I.

#### **3.05 YMCA Institute of Engineering, Faridabad**

- (i) In many case, data/information provided incomplete, making it difficult to understand on the installation, commissioning and utilization of equipment/facilities;
- (ii) However, some notable software obtained include: Pro Engineer, VLSI Design Tool Kits and Open Inventor Software; Used by limited number of students/faculty;
- (iii) Expensive (Category C & D) equipment obtained include: TIG/MIG Welding m/c, CNC Turning m/c, surface grinder, Precision lathe, etc., being widely used;

- (iv) On the other hand, other expensive items like Storage CRO found to be used rather sparingly by UG/PG students; However, desktop PCs well used for project work;
- (v) Notebook PCs obtained in large numbers and given to faculty members; User profile and hours of usage data not available from the institution;
- (vi) Text/Reference books added to the library in wide use; Library timings also extended by some time to enhance usage; Overall performance acceptable;

**C. Assessment of Discrepancies:**

The assessment of discrepancies between what the institution reported and what the State -level Auditor has found in respect of one institution visited and reported by him is summarized below:

Institution	Discrepancy Noticed	Remarks
Guru Jambeshwar University of Science & Technology, Hissar	Mostly relating to reporting of Category C, D equipment, as formats given not interpreted properly; Many columns left blank in the formats;	Errors noticed in the number of hours utilized for many items; Needs to be looked into and corrected;

**D. Assessment of Un-Commissioned/Under-Utilized Equipment & LRs:**

All major items of equipment installed and commissioned in a reasonable time, although some avoidable delays observed at *Guru Jambeshwar University of Science & Technology, Hissar*. No items reported un-utilized at any of the 5 State-level *programme-institutions* in Haryana, included in the Report of the State-level Auditor. However, the level of their utilization, particularly in respect of costly items yet low. Also, none of the *programme-institutions* have reported on un-utilized LRs, although they could increase their utilization further by extending the working hours of the Library at each institution and by improving the Library service.

**E. Short Overall Review:**

A short overall review of each aspect of commissioning and utilization of equipment and LRs obtained under TEQIP-I, as extracted from the reporting format used by the State-level Auditor for Haryana is given below:

- All the equipment procured by the *programme institutions* generally used well;
- Log-books are not maintained at many institutions, even for Category C, D items;
- Cross Departmental use of equipment, generally non-existent;
- Utilization of equipment for networking and service to community, also at low level;
- LRs being used well; But, good scope for improving this further;
- Institutional level over-viewing/monitoring of equipment not yet functioning;

***F. Some suggestion for enhanced utilization:***

It is clear from this Report that TEQIP-I has enabled strengthening and upgrading of the teaching facilities, laboratories, libraries, computers and the IT Infrastructures at all the 5 *programme institutions* in Haryana. However, it is noticed that some institutions have not taken care to present the data/information sought in the *NPIU* prescribed format, thereby limiting the scope of observations to be recorded by the National-level Auditor. The following few suggestions are now being made to make the equipment/facilities created under TEQIP-I of wider use among the stake holders at each *programme institution*:

- Serious attention to be paid to promote better use of equipment/resources by expanding access to more students (2<sup>nd</sup> shift?, Part-time students?);
- Encouraging R&D work, particularly sponsored projects, industrial coordination, consultancy, continuing education and related activities;
- Project work of final year B.E./M.E. students to play a distinctive role in UG/PG programmes and innovative practices to be rewarded;
- Associate merited faculty members with competent administrative staff in planning and implementing future requirements of equipment/facilities;
- In the future, need analysis and planning for optimal utilization to precede any procurement of equipment/resources;
- Encouragement to be given for 24/7 hrs usage of software packages, e-resources, digital content and the like by making use of the campus LAN at each institution;



#### 4. Himachal Pradesh:

##### A. Summary of Observations:

Himachal Pradesh was included under TEQIP-I in its first cycle beginning in the year 2003-04, along with five other States and CFIs. The Colleges/Institutions in the State supported under TEQIP-I from this time until March 31, 2009 are listed in Table 6 in the alphabetical order. These included three *programme institutions*, all being polytechnics with each one marked with a (+) symbol. Major observations as a result of the study and analysis of the State -level Report of the Auditor include:

- Most of the equipment/facilities planned to enhance the quality of education imparted;
- Wide range of good equipment added and many facilities created;
- Grants allocated generally well utilized by the *programme institutions*;
- Installation and commissioning of equipment/LRs generally satisfactory;
- Utilization of low-cost items mostly for class room/laboratory instruction;
- Some expensive equipment/items procured, mostly without planning for their use;
- Negligible R&D work being done; Limited revenue generation;

**Table 6 : Colleges/Institutions in Himachal Pradesh supported under TEQIP-I**

S. No.	College/Institution
4.01	Government Polytechnic, Hamirpur(+) (#)
4.02	Government Polytechnic for Women, Kandaghat (+)
4.03	Government Polytechnic, Sundarnagar (+)

(+) Polytechnics; (#) On-site visit conducted;

##### B. Specific Observations:

Specific College/Institution-wise data/information on the utilization of resources procured under TEQIP-I are given below in the same order of their listing in Table 6:

##### 4.01 Government Polytechnic, Hamirpur

- (i) Most of the equipment/software obtained here in Category A; Installed, commissioned in a short time; Items generally useful for students in class rooms

and laboratories for instruction and experimentation; But, quantitative data not available in the Reports in all the cases;

- (ii) Most items installed in respective laboratories utilized regularly by students; e.g. ,Electric Machine Tutor, CAD/CAM software, Static converter, PCB software, all of Category A and Automatic Compression Testing machine and Total Station, both of Category B; All items working well;
- (iii) Campus wide computer network installed at the institution and functional since 2007, providing excellent opportunity of intranet to students and faculty; Satisfaction to all the users; Overall utilization moderate at present;
- (iv) Although about 1500 books are procured in the library under TEQIP-I, their utilization by students yet low, largely because of their general reluctance to borrow them for their use rather than purchase them on their own;
- (v) Faculty to play a crucial role in encouraging the students to use the Library in a better manner; Besides, Library working hours to be extended substantially and students' facilities to be improved to enable more number of students to use the Library more effectively;
- (vi) Negligible research activity at the institution, leading to limitations in the internal revenue generation through industrial consultancy and related activities; Hence, R&D work to be stepped up, based on the availability of TEQIP-I facilities;

#### **4.02 Government Polytechnic for Women, Kandaghat**

- (i) Most of the equipment/resources procured found useful for the academic pursuits of the students and the faculty at the Polytechnic; Reasonably satisfactory usage;
- (ii) Most of the equipment installed in time, commissioned without much delay and being used regularly by large numbers of students and faculty.
- (iii) However, the utilization of one item (Category C), viz., CISCO Academy found to be yet limited, although set up in 2007; None used this in January 2009;
- (iv) Perhaps, CISCO Academy to be used for intensive training in networking, of students/faculty of the *programme institution*, and other institutions as well;
- (v) Although the library facilities considerably upgraded, its utilization yet low; Steps to be taken to popularize the Library among the students and increase its utilization;
- (vi) The Principal and senior faculty to deliberate on ways and means to enhance the utilization of all facilities set up and also to earn revenue;

#### 4.03 Government Polytechnic, Sundarnagar

- (i) Almost all the equipment/software received under TEQIP-I found useful for the class-room/laboratory instruction of students; Reasonably satisfactory utilization;
- (ii) Most of the items installed in time, commissioned without much delay and put to use for the benefit of students in large numbers;
- (iii) However, one major item procured in 2007, viz., Router, found non-functional at present; Steps to be taken urgently to get it working and network in order;
- (iv) Library added with ~15,000 new books; but utilization yet low; Serious steps to be taken to improve students' facilities and extend working hours;
- (v) Principal and senior faculty to work out methodology to enhance revenue generation using TEQIP-I facilities and also step up extension activities;

#### C. Assessment of Discrepancies:

The assessment of discrepancies between what the institution reported and what the State -level Auditor has found in respect of one institution visited and reported by him is summarized below:

Institution	Discrepancy Noticed	Remarks
Government Polytechnic, Hamirpur	None, either in the equipment items or in the LRs procured by the institution;	Satisfactory performance

#### D. Assessment of Un-Commissioned/Under-Utilized Equipment & LRs:

All major items of equipment installed and commissioned in a reasonable time; No undue delays reported in the installation/commissioning of equipment items at any *programme institution*. However, the level of utilization of major equipment reported to be low at present, presumably due to all the 3 *programme institutions* in Himachal Pradesh being polytechnics. The level of utilization of LRs at each institution also low at present. Here, the utilization could be increased by extending the working hours of the Library at each institution and by improving the Library service.

#### E. Short Overall Review:

A short overall review of each aspect of commissioning and utilization of equipment and LRs obtained under TEQIP-I, as extracted from the reporting format of the State-level Auditor for Himachal Pradesh is given below:

- Most of the equipment procured by the *programme institutions* well used;
- Majority of the items being of Categories A and B, log-books not being maintained;
- However, equipment widely used for laboratory classes and project work of students;
- Cross Departmental use of equipment, generally not being practiced;
- LRs being used only to a limited extent; Good scope for improving this further;
- Institutional level over viewing/monitoring of equipment not yet functioning;

***F. Some suggestion for enhanced utilization:***

This Report has shown that TEQIP-I has been of much help to provide strength to the *programme institutions* for upgrading their academic/training facilities including class rooms, laboratories, workshops, libraries, computers and the IT Infrastructures in the State of Himachal Pradesh. However, the institutions have yet to get better benefit from the utilization of these facilities and become self reliant and self sustaining. The following few suggestions are now being made in this connection.

- Project work to be assigned to final year/senior students making use of the new facilities established, so as to encourage innovation in their activities;
- Students and faculty to be motivated to use the Library and e-Learning facilities now upgraded, by improving the service and extending the working hours;
- Serious discussions to be conducted at various levels to initiate steps for industrial interaction/consultancy and continuing education to stimulate resource generation;
- Each institution to identify non-functional equipment/software items, to take speedy steps to get them in working order for ensuring the smooth operation of all facilities;
- Associate merited faculty members with competent administrative staff in planning and implementing future requirements of equipment/facilities;

***5. Jharkhand:***

***A. Summary of Observations:***

The State of Jharkhand was included under TEQIP-I in its second cycle beginning from the year 2004-05 along with six other States. The Colleges/Institutions in the State

supported under TEQIP-I since this time until March 31, 2009 are listed in Table 7, in the alphabetical order. These included two polytechnics, each one identified by a (+) symbol along with two Colleges/Institutions. Of these Colleges/Institutions listed herein, the starred (\*) one received TEQIP-I support as *lead institution* and the others as *network institutions*. While the performance of the two Colleges/ Institutions under TEQIP-I was well above the average, the polytechnics were found to be rather low in their performance and achievements. Major observations as a result of the study and analysis of the State -level Report of the Auditor include:

- Good utilization of grants by the *programme institutions*;
- Reasonably satisfactory installation and commissioning of equipment/LRs;
- Equipment items being used mostly for routine teaching/laboratory instruction;
- Majority of items obtained belonging to Categories A and B only;
- Category C&D items mostly at Colleges/Institutions, to take up research work;
- Need analysis not conducted properly before planning the procurement;
- Revenue generation at Colleges/Institutions yet at low level;
- Reporting of data/information mostly not in conformity to *NPIU* requirements;

**Table 7 : Colleges/Institutions in Jharkhand supported under TEQIP-I**

S. No.	College/Institution
5.01	Birla Institute of Technology, Mesra, Ranchi*
5.02	Birla Institute of Technology, Sindri (#)
5.03	Government Polytechnic, Dumka (+)
5.04	Government Polytechnic, Ranchi (+)

(\*) Lead Institution; (+) Polytechnics; (#) On-site visit conducted;

### ***B. Specific Observations:***

Specific College/Institution-wise data/information on the utilization of resources procured under TEQIP-I are given below in the same order of their listing in Table 7:

#### ***5.01 Birla Institute of Technology, Mesra, Ranchi***

- (i) Equipment/facilities obtained found to include items from all the Categories; A and B types (in large numbers), as well as C and D types (only few);
- (ii) Satisfactory installation, commissioning and utilization of Category A and B items; Extensively used for UG and PG education, including laboratories/project work;
- (iii) Utilization of Category C and D items largely confined to R & D work, PG students' projects, sponsored projects and consultancy activities;
- (iv) Library acquisitions (Books, e-resources, journals) being used well by students and faculty alike; Well organized library/reading room facility;
- (v) Campus-wide intranet and internet fully functioning and being used extensively on 24/7 hrs basis, contributing significantly to academic work;
- (vi) R&D work by faculty/students given considerable importance. leading to research culture at the institution; Research papers published in journals/conferences;
- (vii) Consultancy activities also going on, contributing to generation of financial resources for the institution;
- (viii) Being an autonomous institution, performance under TEQIP-I found to be of a high order; However good scope for further improvement;

### ***5.02 Birla Institute of Technology, Sindri***

- (i) Installation, commissioning and utilization of Category A and B items reasonably satisfactory; UG & PG students making use of these items for their studies;
- (ii) Data/information on installation and commissioning of Category C and D items not provided, leading to inability in making comments on this;
- (iii) Category C and D items actually installed include: HSD fired Steam boiler, and Atomic Absorption Spectro Photometer; Both, yet used in a limited way;
- (iv) Two other expensive items, viz., Electrochemical Machining set and CNC m/c already installed; But, not functioning well; To be brought to working order soon;
- (v) Library facilities including books, e-resources, journals added in large number, better reading room provided and working hours extended; User numbers increased;
- (vi) Good encouragement given to R&D and consultancy, leading to a good culture of sponsored projects and revenue generation at the institution;
- (vii) Emphasis to be laid on need analysis while planning future requirements under TEQIP, so as to derive increased benefits for the stake holders;

### 5.03 Government Polytechnic, Dumka

- (i) Installation and commissioning of equipment/LRs reasonable; Most of the items of Category A and B only; But, all required information not provided in the formats;
- (ii) Utilization of equipment/facilities mostly for routine class room/laboratory instruction; No effort made for using these items for industrial interaction/training;
- (iii) Library facilities considerably improved under TEQIP-I; But, students yet to be motivated to make better use of these;
- (iv) Utilization of computers, software, networking for instruction/training of students being given importance;
- (v) Serious efforts to be made for extending the use of facilities set up and take up R&D, extension and related activities;

### 5.04 Government Polytechnic, Ranchi

- (i) Most of the observations made for *Government Polytechnic, Dumka* also hold good in this case;
- (ii) Information required from the institution in the *NPIU* format not provided properly, to enable meaningful comments;

#### C. Assessment of Discrepancies:

The assessment of discrepancies between what the institution reported and what the State -level Auditor has found in respect of one institution visited and reported by him is summarized below:

Institution	Discrepancy Noticed	Remarks
Birla Institute of Technology, Sindri	1. Mostly relating to Category C, D equipment installed; Only two items functioning, viz., <i>Experimental HSD-fired Steam Boiler &amp; AAS Photometer</i> ; But, the quality of installation of boiler rather poor; Also, fuel being expensive used only to a limited extent for students'	Speedy steps to be taken to ensure that all the expensive equipment are used regularly;

	demo and not regularly;	
	2.Two other Category C,D items, viz., <i>Electrochemical Machining Set CNC Wire Cutting m/c</i> not in use for a long time, for want of repair/maintenance; No budgetary provisions made for this purpose;	Special attention to be given to maintain all the expensive equipment in working order at all times;

***D. Assessment of Un-Commissioned/Under-Utilized Equipment & LRs:***

All major items of equipment installed and commissioned at the *programme institutions* in Jharkhand. But, the actual dates of installation not given by the institutions in the format, although this information was required in the format filled by them. One item under-utilized and two items under repair for a long time at *Birla Institute of Technology, Sindri* as given in the Report of the State-level Auditor for Jharkhand.. However, the level of their utilization, particularly in respect of costly items yet low. Also, none of the four *programme- institutions* have reported on un-utilized LRs, although they could increase their utilization further by improving their Library service.

***E. Short Overall Review:***

A short overall review of each aspect of commissioning and utilization of equipment and LRs obtained under TEQIP-I, as extracted from the reporting format used by the State-level Auditor for Jharkhand is given below:

- Major items of equipment at the *programme institutions* generally used well;
- Log-books not maintained well at many institutions, even for Category C, D items;
- Cross Departmental use of equipment, generally at a low level;
- Utilization of equipment for networking and service to community, also at low level;
- LRs being used well; But, good scope for improving this further;
- *SPFU* could have done well in ensuring fault-free reporting by the institutions;

***F. Some suggestion for enhanced utilization:***



This Report has shown that TEQIP-I provided much help in strengthening and upgrading the *programme institutions* through new facilities like, better class rooms, laboratories, workshops, libraries, computers and the IT Infrastructures in Jharkhand. While the two Colleges/Institutions appear to have grown in an admirable way to benefit their stake holders, the polytechnics do not seem to have reached any higher level in the post TEQIP-I period. However, there is much scope for all the four *programme institutions* to become self reliant and self sustaining in the near future. The following few suggestions are now being made in this connection.

- Project work to be assigned to final year UG/PG/senior students of these institutions to encourage creativity/ innovation and also enhance the utilization of resources;
- Urgent steps to be initiated at various levels to enhance R&D, industrial interaction/consultancy and continuing education for resource generation;
- Each institution to identify non-functional equipment/software items, take speedy steps to get them in working order for ensuring the smooth operation of all facilities;
- Associate merited faculty members with competent administrative staff in planning and implementing future requirements of equipment/facilities;
- Need analysis to be given due attention in the planning and implementation of similar funded programmes at these institutions;

## **6. Karnataka:**

### **A. Summary of Observations:**

The State of Karnataka found place under TEQIP-I in its second cycle beginning from April 1, 2004, along with six other States. The Colleges/Institutions in the State supported under TEQIP-I from this time until March 31, 2009 are listed in Table 8 in the alphabetical order. Of the fourteen Colleges/Institutions listed herein, the starred (\*) ones received TEQIP-I support as *lead institutions* and the others as *network institutions*.. Major observations as a result of the study and analysis of the State -level Report of the Auditor include:

- Most of the items procured installed, commissioned and utilized in the *programme institutions*; However, in some cases, commissioning considerably delayed;

- Equipment under Category A and B mostly for routine UG and PG laboratory work and also for students' project work;
- Category C and D equipment obtained by most of the *programme institutions* for specialized training/research work
- Research work using these equipment/facilities yet to pick up speed; However, research papers published in journals and/or presented at conferences in some cases;
- Most institutions invested well on computer centre, library facilities including computerization & automation and campus wide LAN; Already widely used;
- No major differences noticed in the activities/outcomes/outputs of *lead or network institutions*;
- Reporting errors and inconsistencies often noticed in the Reports prepared by some Colleges/Institutions;
- The level of training provided by manufacturer/supplier quite low and inadequate, even in the case of costly (C&D category) equipment;
- Extension activities taken up in a commendable way in some cases, using the new equipment/facilities;
- Serious efforts yet to be made for resource generation at the institutions using these facilities for sponsored R&D, consultancy and continuing education activities;;

**Table 8 : Colleges/Institutions in Karnataka supported under TEQIP-I**

S. No.	College/Institution
6.01	Basaveshwara Engineering College, Bagalkot*
6.02	BMS College of Engineering, Bangalore
6.03	Dr. Ambedkar Institute of Technology, Bangalore
6.04	Malnad College of Engineering, Hassan
6.05	MS Ramaiah Institute of Technology, Bangalore
6.06	National Institute of Engineering, Mysore
6.07	NMAM Institute of Technology, Nitte*
6.08	PDA college of Engineering, Gulbarga
6.09	SDM College of Engineering & Technology, Dharwad
6.10	Siddaganga Institute of Technology, Tumkur
6.11	SJ College of Engineering, Mysore*
6.12	Sri Siddartha Institute of Technology, Tumkur

6.13	University BDT College of Engineering, Davanagere
6.14	University Visvesvaraya College of Engineering, Bangalore* (#)

(\*) Lead Institution; (#) On-site visit conducted;

### **B. Specific Observations:**

Specific College/Institution-wise data/information on the utilization of resources procured under TEQIP-I are given below in the same order of their listing in Table 8:

#### **6.01 Basaveshwara Engineering College, Bagalkot**

- (i) Installation and commissioning all equipment/facilities done in a satisfactory manner; Most of the items for UG/PG teaching and research;
- (ii) Utilization of equipment/facilities by students and faculty for laboratory work and undertaking projects of a high order and large numbers benefitting;
- (iii) Research work including paper presentation in journals and conferences encouraged and Category C and D items well used;
- (iv) Data/Information provided by Department of Electrical Engineering largely incomplete, making it difficult to draw inferences on utilization of items;
- (v) Although an expensive *Wind Energy Generator* obtained for experimental studies, its use in project work or research activities yet limited;
- (vi) CNC m/c found good use in students' training and also for training of technicians from outside; Considerable revenue generation achieved through this measure;
- (vii) Library facilities including text/reference books, journals, e-resources well upgraded, computerized, automated and services improved; User base expanded;
- (viii) New academic/research programmes launched, R&D work strengthened, extension services expanded and consultancy initiated in a commendable way;

#### **6.02 BMS College of Engineering, Bangalore**

- (i) Majority of equipment procured of good use to UG/PG/Research students and faculty members for academic work; Hence, their level of utilization fairly high;

- (ii) Installation and commissioning of equipment/facilities at the College generally satisfactory; Maintenance of records and log books of equipment acceptable;
- (iii) Details of Category C and D equipment and of Library acquisitions (Books, Journals, LR) being not available in the formats, inability to make inferences;
- (iv) Library facilities upgraded to a large extent, leading to overall satisfaction among the students;
- (v) UG/PG programmes and Ph. D research considerably strengthened at the College through TEQIP-I, greatly improving students' performance and capabilities;
- (vi) Good encouragement given to R&D and consultancy, leading to a good culture of sponsored projects and revenue generation at the institution;
- (vii) Emphasis to be laid on need analysis while planning future requirements under TEQIP to derive increased benefits for the stake holders;

#### **6.03 Dr. Ambedkar Institute of Technology, Bangalore**

- (i) Installation and commissioning of equipment/facilities reasonably satisfactory; Most items of use in class room/laboratory instruction of UG/PG students;
- (ii) Much of the data/information called for in the format being not provided by the College, drawing any specific inferences not appropriate;
- (iii). However, equipment/facilities including those at the College Library widely used by students and faculty alike;
- (iv) Further strengthening of the academic/research programmes using the equipment/facilities set up being urgently necessary, priority attention to be given;
- (v) Serious attention to be paid to need based analysis of equipment/facilities required, while planning future requirements under TEQIP to derive increased benefits;

#### **6.04 Malnad College of Engineering, Hassan**

- (i) Installation and commissioning of equipment/facilities in a reasonable time frame; Utilization by students and faculty generally satisfactory;
- (ii) Most equipment(Category A & B) useful for UG/PG teaching/laboratory training and of Category C & D particularly for research work; Large number of students using;
- (iii) Library upgraded with books, journals and e-resources and useful software packages; Students/faculty utilizing this increasingly;

- (iv) Library working hours extended to 12 hrs daily and also the number books loaned to students increased, resulting in it becoming more attractive to the students;
- (v) But as yet, revenue generation using TEQIP-I facilities at a low level; Need for introspection at the College level to explore new avenues for this;

#### **6.05 MS Ramaiah Institute of Technology, Bangalore**

- (i) Installation and commissioning of equipment/facilities in a short time frame; Users generally satisfied; Items of all the Categories, A-D obtained;
- (ii) Category A & B items found use for routine class room/laboratory work of UG/PG students; But items of Category C&D for R&D, consultancy and related activities;
- (iii) Utilization of Category A & B items generally of a high order, whereas that of Category C & D items on a limited scale; But, all equipment of good use to students;
- (iv) Some items sparingly utilized: Fatigue Testing m/c, Stress Corrosion Test Set and Multi Cylinder Petrol Engine; However, all found useful for research work;
- (v) Similarly, HPLC Column Sample Kit PDA Detector (Category D), so essential for initiating biotechnology research at the College, also found highly useful;
- (vi) Library upgraded in an admirable way through books, journals and e-resources and with extended working hours (15/day); Highly popular among the stake holders;
- (vii) But, data on the level of utilization of software not being provided on the formats by the College, any inference on its utilization not proper;
- (viii) College yet to bestow good attention to expand its sponsored R&D and consultancy activities using the new equipment/facilities established;

#### **6.06 National Institute of Engineering, Mysore**

- (i) Most of the equipment procured under TEQIP-I found useful for the regular classes and training of UG/PG students at the institution; Hence, good utilization;
- (ii) However, utilization of many equipment reported to be at low level in the Department of Electrical Engineering; Institution to look into this and improve the situation;
- (iii) Also, in the Department of Mechanical Engineering, mostly Category C/D items, like Five Axes Robot with M/C Vision Friction and Wear Test Rig found under-utilized;
- (iv) While installation and commissioning of equipment/facilities well done, institution to give special attention to enhance their utilization for academic/training purposes soon;

- (v) Library upgraded reasonably well with books, journals and e-resources; Per-day working hours (=16) highly satisfactory; More students to be encouraged to use this;
- (vi) R&D activities to be stepped up, sponsored projects taken up in larger numbers and more of consultancy to be initiated to generate well needed financial resources;

#### **6.07 NMAM Institute of Technology, Nitte**

- (i) Most of the equipment obtained found useful for UG/PG students for their academic needs; Hence, widely utilized by the students in the laboratories;
- (ii) However, some items (Category C/D) like Water Jacket Incubator and Gas Chromatograph found sparsely used; College to look into this to correct the situation;
- (iii) Training provided by item suppliers too low for proper utilization; e.g., Total Station, Signal Tracking Resistivity Meter, Integrated Embedded System Development Tool;
- (iv) Speedy steps to be taken to get the staff concerned well trained by the suppliers for using all the sophisticated equipment and enhance their utilization;
- (v) Library facilities upgraded well by adding books, journals and e-resources; Collections computerized & digital library functioning; Facilities extensively utilized;
- (vi) Campus-wide LAN and internet facilities functioning well, enabling students/faculty to access e-resources easily; Widely used by students and faculty;

#### **6.08 PDA college of Engineering, Gulbarga**

- (i) Installing and commissioning of equipment well done in a short time; Most items of Category A and found highly useful to UG/PG students for their academic needs
- (ii) Equipment/facilities' utilization generally of a high order and satisfactory in most cases; Being used for laboratory work, training programmes and project work;
- (iii) R&D activities taken deep roots at the College during and after TEQIP-I; Likely to benefit the College in guiding Ph. D scholars and take up sponsored projects;
- (iv) College Library considerably improved and expanded; More number of books, journals and e-resources now available; Also working hours extended; Use expanded;

#### **6.09 SDM College of Engineering & Technology, Dharwad**

- (i) Installation, commissioning and utilization of equipment obtained under TEQIP-I done well, with most of them being extensively used by students and faculty alike;
- (ii) However, few specialized items like Digital Compression Testing m/c(Civil Engg.) Engine Test Set-up (Mech. Engg.) and p-CAD software found sparingly used;
- (iii) College to introspect to determine future strategy to enhance the utilization of all items for the benefit of its stake holders;
- (iv) College Library well organized and sufficiently upgraded with new books, journals and e-resources; Working hours also enhanced; User numbers found to increase now;

#### **6.10 Siddaganga Institute of Technology, Tumkur**

- (i) Installation, commissioning and utilization of common laboratory equipment/facilities not done properly and efficiently, as expected from a good institution;
- (ii) Some Category B items found utilized only sparingly, after delayed commissioning by about 2 years: RF/DC Planar Sputtering Unit, D.C Magnetron/RF Power supplies;
- (iii) Besides, some items found utilized too infrequently, like, Engine Test Set, AAS and Helium Mass Spectrograph.;
- (iv) Senior faculty members to introspect and work out suitable methodology to make increased use of such items and avoid the above situations at the Institute;
- (v) Other facilities like Library, campus wide LAN, computers in various laboratories found well used by students and faculty alike;
- (vi) R&D culture yet to take deep roots at this institution; Only then possibility of innovation and resource generation expected to come up

#### **6.11 SJ College of Engineering, Mysore**

- (i) Most of the equipment obtained by the institution highly necessary for the academic activities of students and faculty; Hence, found well utilized for this purpose;
- (ii) Installation, commissioning and utilization of equipment/facilities given serious attention by the College authorities; Hence, good progress achieved in a short time;
- (iii) R&D work, publication of papers in journals and attending conferences given due attention; Likely to be helpful in taking up more sponsored projects;
- (iv) Library facilities upgraded in a commendable way; But, daily working hours yet low and reading rooms not yet improved; Urgent attention needed to attract more students;

- (v) By and large, College invested well in appropriate equipment/facilities to meet the needs and expectations of the stake holders;

#### **6.12 Sri Siddartha Institute of Technology, Tumku**

- (i) Most of the equipment/facilities procured being of Category A type, found useful to the students for their routine academic activities; Hence, good utilization noticed;
- (ii) Installation and commissioning of most equipment/facilities also found to be in good order and generally satisfactory;
- (iii) However, some items (Category C/D) found to be sparsely used; e.g., Electronic theodolite, Portable vibration m/c and synchronous analyzer rig;
- (iv) Institution to look into this aspect and work out suitable methodology to enhance the utilization of such items;
- (v) Nearly 13000 books & many e-resources added to the Library and organized in an impressive manner; Daily working hours increased substantially; High level of usage;
- (vi) Institution paying good attention to strengthening R&D; To be continued further to increase sponsored projects and consultancy; Good scope for these activities;

#### **6.13 University BDT College of Engineering, Davanagere**

- (i) Most of the equipment of good use to the UG/PG students for their academic work in the class rooms/laboratories; Hence, their utilization found to be generally high;.
- (ii) Surprisingly, no equipment under Category C or D procured here; Hence, support to R&D and sponsored projects likely to be low;
- (iii) Efforts made to add many books and other resources to the Library; Also daily working hours increased to 12; Facility now attracting more students;
- (iv) More emphasis now required to upgrade educational and research opportunities and take up revenue generation assignments in a big way;
- (v) Serious attention to be paid to need based analysis of equipment/facilities required, while planning future requirements under TEQIP to derive increased benefits;

#### **6.14 University Visvesvaraya College of Engineering, Bangalore**



- (i) Most of the equipment required by the UG/PG students for their academic work in the class rooms/laboratories; Hence, their utilization found to be generally high;.
- (ii) Equipment/facilities installed and commissioned in a short time to make them available for the use of stake holders;
- (iii) A range of sophisticated equipment procured under Category C, D for encouraging UG/PG/Research students in their innovative projects; Utilization commendable;
- (iv) Library facilities upgraded well by new books, journals and e-resources; Students rather unhappy because of delays in book issue/return, due to staff shortages;
- (v) Log books and records to be maintained in a better manner than at present to enable getting quantitative measures of equipment/facilities utilization;
- (vi) Good potential of some Departments of long standing for sponsored R&D, consultancy and revenue generation to be exploited in the shortest time;

**C. Assessment of Discrepancies:**

The assessment of discrepancies between what the institution reported and what the State -level Auditor has found in respect of one institution visited and reported by him, viz. *University Visvesvaraya College of Engineering, Bangalore* is summarized below. The State-level Auditor has also given the discrepancies noticed by him in the reporting of data/information sought by *NPIU* at many other *programme institutions* in Karnataka. But, these have been included in the Specific Observations given in Sub-Section B above.

Institution	Discrepancy Noticed	Remarks
University Visvesvaraya College of Engineering, Bangalore	Library timings indicated in the format: 8 A.M. to 8 P.M; These timings not notified and made known to the students;	Such situations to be avoided;

**D. Assessment of Un-Commissioned/Under-Utilized Equipment & LRs:**

All major items of equipment installed and commissioned in a reasonable time; No undue delays reported in the installation/commissioning of equipment items at most of the *programme institutions*. However, the level of utilization of major equipment reported to be low at present, presumably due to all the fourteen *programme institutions* in Karnataka,

being yet in the early stages of development of research and consultancy activities. The level of utilization of LRs at each institution generally satisfactory. But, their utilization could be increased further by improving the Library service.

***E. Short Overall Review:***

A short overall review of each aspect of commissioning and utilization of equipment and LRs obtained under TEQIP-I, as extracted from the reporting format of the State-level Auditor for Karnataka is given below:

- Equipment of Categories A & B procured by the *programme institutions* well used;
- Log-books being maintained mainly for equipment items of Categories C & D;
- Equipment of Categories C&D sparingly used at most institutions;
- Cross Departmental use of equipment being practiced only to a limited extent;
- Reporting inconsistencies noticed in a few cases of institutional Reports;
- LRs being used well; However, good scope for improving this further;
- Institutional level over viewing/monitoring of equipment not yet functioning;

***F. Some suggestion for enhanced utilization:***

TEQIP-I has truly enabled the upgrading of class room ambience, laboratories, libraries, computers and the IT-enabled facilities at most of the *programme institutions* in the State of Karnataka. The institutions have also been generally proactive and dynamic in making the best use of the support received under TEQIP-I and develop into mature institutions in a short time.. The following few suggestions are now being made to make these facilities of wider use among the stake holders at each *programme institution*:

- Institutions having Category C/D items in general to consider providing training to their faculty/students on their utilization; To be a good strategy for R&D orientation;
- Keeping the expensive facilities open for the use of students/faculty from other institutions at a nominal fee, to be given serious consideration;
- Senior faculty at each College/Institution to oversee the utilization of resources on a regular basis and also evolve a plan of action to minimize their under utilization;
- Take early steps to introduce *Best Practices* for the utilization of equipment/facilities at each College/Institution, as followed at leading institutions;

- Taking up sponsored research, consultancy and continuing education programmes in new areas based on TEQIP-I created resources to be given top priority;
- All out efforts to be made to generate revenue from academic/training/research activities by using the new facilities set up to enable their future sustenance;

## 7. Kerala:

### A. Summary of Observations:

The State of Kerala was included under TEQIP-I in its first cycle beginning in the year 2003-04, along with five other States and CFIs. The Colleges/Institutions in the State supported under TEQIP-I from this time until March 31, 2009 are listed in Table 9 in the alphabetical order. These include five *programme institutions*, one of them which is starred (\*) being recognized as the *lead institution* and others being the *network institutions*. Major observations as a result of the study and analysis of the Report of the State -level Auditor include:

- Most of the institutions used the allocated funds judiciously for equipment/LRs;
- Good equipment/facilities procured, to enhance the quality of education imparted;
- Equipment/LRs added generally found to improve teaching-learning opportunities;
- Installation and commissioning of equipment/LRs generally satisfactory;
- Utilization of low-cost items generally far better than those of high-cost type;
- No major differences in the activities/outcomes of *lead or network institutions*;
- R&D activities and consultancy work, to pick up at most *programme institutions*;
- Revenue generation to be stepped up at all the institutions in post TEQIP-I period;

**Table 9 : Colleges/Institutions in Kerala supported under TEQIP-I**

S. No.	College/Institution
7.01	College of Engineering, Chengannur
7.02	College of Engineering, Thiruvananthapuram*(#)
7.93	LBS College of Engineering, Kasargod
7.04	Model Engineering College, Kochi

7.05	Sree Chitra Thirunal College of Engineering, Thiruvanthapuram
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(\*) Lead Institution; (#) On-site visit conducted;

### ***B. Specific Observations:***

Specific College/Institution-wise data/information on the utilization of resources procured under TEQIP-I are given below in the same order of their listing in Table 9:

#### ***7.01 College of Engineering, Chengannur***

- (i) Installation, commissioning and utilization of equipment/facilities steadily improved over a period of time during TEQIP-I and now reasonably satisfactory;
- (ii) Most items being of Category A, B types, good utilization for UG teaching-learning process; Now, PG & research programmes to be improved further;
- (iii) Library facilities upgraded well; But, daily working hours being small, utilization yet limited; Good scope for further improvements by extending library working hours;
- (iv) Computing facilities, e-resources and network well provided for; Considerable student/faculty interest in 24/7 utilization;
- (v) Sponsored projects, consultancy and revenue generation, yet at a low level; Serious steps urgently necessary to expand these activities;

#### ***7.02 College of Engineering, Thiruvananthapuram***

- (i) Provisioning and utilization of resources in the laboratories/workshops at core engineering departments of a high order, barring a few exceptions.
- (ii) Major items of Category C/D include HT laboratory and ATE facility at EEE Dept, CAM/CIM facility in ME Dept; But so far, being used only sparingly;
- (iii) Some items received in time, yet to be fully commissioned, like Computerized Diesel/Petrol Engine Test Rigs, CNC Milling m/c and 3D Visualization system;
- (iv) Such delays/under-utilization not conducive to high quality and standard of academic/research work; Steps to be taken to remedy the situation early;
- (v) Library books, e-resources and journals added in large numbers; But, utilization limited; Space inadequacy, reading room comforts and working hours yet low;

- (vi) Computing facilities, intranet and internet well provided; Large numbers already using them; But, maintenance of log books yet not satisfactory;
- (vii) Research culture already present; But, to be stepped up considerably so as to take up more sponsored projects and revenue generation;

### ***7.03 LBS College of Engineering, Kasargod***

- (i) Commissioning and utilization of equipment/facilities improved with time and now reasonably satisfactory in most of the cases;;
- (ii) Majority of items procured being for the use of UG students in class rooms and laboratories, utilization found acceptable;
- (iii) But, absence of PG/Research programmes at the institution, a limiting factor in their further increased utilization; To be looked into on a priority basis;
- (iv) Library collections including books and e-resources added well; But, utilization yet low, presumably due to limited daily working hours and reading room inadequacies;
- (v) Campus-wide intranet functioning well; Access on this for e-books and LRs for more frequent usage, yet to be facilitated to enable better utilization for academic work;

### ***7.04 Model Engineering College, Kochi***

- (i) Commissioning and utilization of equipment items and LRs improved progressively, leading to satisfaction among stake holders; Utilized well by UG students;
- (ii) But, absence of PG/Research programmes at the institution, a limiting factor in their further increased utilization; To be looked into on a priority basis;
- (iii) Library collections greatly improved and new books/journals/e-resources added; But, utilization yet limited; Extending working hours and improving reading rooms urgent;
- (iv) Campus-wide LAN functioning well; Many PCs and new software added; Well utilized so far; However, e-learning yet to be facilitated on a larger scale;
- (v) Very little emphasis on sponsored projects and consultancy so far; To be given good attention in the immediate future for enhancing utilization of facilities set up;

### ***7.05 Sree Chitra Thirunal College of Engineering, Thiruvanthapuram***

- (i) Installation and utilization of equipment/facilities facilitated in time; Large numbers of UG students found utilizing them for their laboratory/project work;
- (ii) But, laboratory technical staff found inadequate, both in numbers and training, leading to limitations in user satisfaction; To be corrected in the shortest time;
- (iii) The absence of PG/Research programmes at the institution also a limiting factor in the increased utilization of equipment/facilities; To be looked into on a priority basis;
- (iv) Library acquisitions improved considerably and large numbers of books/journals/e-resources added; But, utilization yet limited; College to give urgent attention to this;
- (v) Campus-wide LAN established and functioning; Many PCs and new software added; Well utilized so far; However, e-learning yet to be facilitated on a larger scale;

**C. Assessment of Discrepancies:**

The assessment of discrepancies between what the institution reported and what the State-level Auditor has found in respect of one institution visited and reported by him, viz. *College of Engineering, Thiruvananthapuram* is summarized below. The State-level Auditor has also given the discrepancies noticed by him in the reporting of data/ information sought by NPIU at many other *programme institutions* in Kerala. But, these have been included in the Specific Observations given in Sub-Section B above.

Institution	Discrepancy Noticed	Remarks
College of Engineering, Thiruvananthapuram	1.A few Category C/D items installed & commissioned; But, not in good working order: Computerized Diesel & Petrol Engine Test Rigs; CNC Production type Milling m/c;	Such situations to be avoided;
	2.Library facilities not in 100% use, mostly due to space problems; Central computing facility not yet fully functional	Such situations to be avoided;

**D. Assessment of Un-Commissioned/Under-Utilized Equipment & LRs:**

All major items of equipment installed and commissioned in a reasonable time; No undue delays reported in the installation/commissioning of equipment items at most of the *programme institutions*. However, the level of utilization of major equipment reported to be low at most *programme institutions*, presumably due to all the five *programme institutions* in Kerala, being yet in the early stages of development of research and consultancy activities. Besides, in some cases, like *College of Engineering, Thiruvananthapuram*, two costly items, viz., 3-D Visualization System and Embedded Systems Lab. Grossly under-utilized. The level of utilization of LR's at each institution generally acceptable. But, their utilization could be increased further by improving the Library facilities and service.

***E. Short Overall Review:***

A short overall review of each aspect of commissioning and utilization of equipment and LR's obtained under TEQIP-I, as extracted from the reporting format of the State-level Auditor for Kerala is given below:

- Equipment of Categories A & B procured by the *programme institutions* well used;
- Log-books not properly maintained by most institutions even for costly equipment;
- Equipment of Categories C&D sparingly used at most institutions;
- Cross Departmental use of equipment being practiced only to a limited extent;
- LR's being used well; But many limitations in available space and comfort level;
- Institutional level over viewing/monitoring of equipment not yet functioning;

***F. Some suggestion for enhanced utilization:***

TEQIP-I has facilitated the upgrading of class room ambience, laboratories, libraries, computers and the IT-resources at most of the *programme institutions* in Kerala. The institutions have generally demonstrated dynamism in making the best use of TEQIP-I and develop into mature institutions in a short time.. The following few suggestions are now being made to make these facilities of wider use among the stake holders at each *programme institution*:

- Serious attempts to be made for total office automation for maximizing the faculty time availability for academic purposes and better laboratory work;

- Ensure the familiarity of at least every alternate faculty/staff member with all the resources available in their departments, besides those of the central facilities;
- Senior faculty at each College/Institution to oversee the utilization of resources on a regular basis and also evolve a plan of action to minimize their under- utilization;
- Take early steps to study and introduce *Best Practices* for the utilization of equipment/ facilities at each College/Institution, as followed at leading institutions;
- Facilitate inter-library access to the online facilities and computation based on remote log-in and/or grid computing . of reputed universities in India and abroad
- Taking up sponsored research, consultancy and continuing education programmes to in new areas based on TEQIP-I created resources be given top priority;
- All out efforts to be made to generate revenue from academic/training/research work and by opening access to institutional facilities to outside bodies;
- Encouraging non-formal networking among various academic/R&D institutions and industries to share the use of TEQIP-I created resources created for increased use;

## **8. Madhya Pradesh:**

### **A. Summary of Observations:**

Madhya Pradesh was included under TEQIP-I in its first cycle beginning in the year 2003-04, along with five other States and CFIs. The Colleges/Institutions in the State supported under TEQIP-I since this time until March 31, 2009 are listed in Table 10 in the alphabetical order. These included seven *programme institutions*, two of them which are starred (\*) being recognized as the *lead institutions* and others being the *network institutions*. Of the *network institutions*, two marked with (+) symbol were polytechnics. Major observations as a result of the study and analysis of the Report on Madhya Pradesh prepared by the State-level Auditor include:

- Most of the institutions, except one, utilized the allocated funds in the range 94-100%;
- The equipment/facilities procured mainly to strengthen and upgrade academic work;
- Installation and commissioning of equipment/LRs reasonably satisfactory;
- Category A, B items used for UG/PG programmes, and had higher utilization level;
- But, Category C, D items used mostly for R&D & special function; Low usage found;



- No major differences in the activities/outcomes of *lead or network institutions*;
- Performance of polytechnics found to be much lower than that of other institutions;
- R&D activities and consultancy work yet low at most *programme institutions*;

**Table 10 : Colleges/Institutions in Madhya Pradesh supported under TEQIP-I**

S. No.	College/Institution
8.01	Jabalpur Engineering College, Jabalpur*
8.02	Kalaniketan Polytechnic College, Jabalpur+
8.03	Rewa Engineering College, Rewa
8.04	Sardar Vallabh Bhai Polytechnic College, Bhopal+
8.05	Shri GS Institute of Technology & Science, Indore*
8,06	Ujjain Engineering College, Ujjain
8.07	University Institute of Technology, RGPV, Bhopal

(\* ) Lead Institutions      (+) Polytechnics

### ***B. Specific Observations:***

Specific College/Institution-wise data/information on the utilization of resources procured under TEQIP-I are given below in the same order of their listing in Table 10:

#### ***8.01 Jabalpur Engineering College, Jabalpur***

- Major procurement completed by early 2008 and funds utilization ~98%; All items obtained only of Category A,B types of use to UG/PG students;
- Installation, and commissioning of most of the items done in time; Large number of UG/PG students regularly using all the equipment for their studies/experimentation;
- Text/Reference books and subject LRs in large numbers obtained for the Library; Extensively being used by students and faculty alike;
- Wide variety of licensed software packages also obtained, e.g., Red Hat Linux, Proteus VSM and Micro Wind VLSI; Well used by UG/PG students;
- Language laboratory also established using modern technology; Being widely used by all the students for their language skills development;.

(vi) However, R&D culture at the institution yet low; Hence sponsored projects and consultancy not up to the level expected from a College of long standing:

### **8.02 Kalaniketan Polytechnic College, Jabalpur**

- (i) Utilization of funds allocated rather low, ~80%; Mostly equipment for administrative Office use obtained and very few items for laboratory up-gradation;
- (ii) Among items for laboratory use, a plotter ( Category B) for the CAD/CAM Lab. and Robotic Arm, and Gripper for the Robotics Lab. , only included; But, used sparingly;
- (iii) Library well upgraded with useful books; But, software/CAI packages not included; Library use by students found to be limited;
- (iv). The institution found to have very little or no interaction with the outside world, particularly industry; Hence, very limited scope for revenue generation;

### **8.03 Rewa Engineering College, Rewa**

- (i) Allocated grants well used (~97%) for procurement of equipment and LR's; Utilized mainly for modernizing UG laboratories, workshops and the library;
- (ii) A modern computer centre with 100 systems and a VLSI laboratory (Category C) set up; Campus-wide intranet established; Students using all the facilities extensively;
- (iii) A large variety. of Category A equipment also procured for UG laboratories; Now being used by the students extensively during practical/project work; .
- (iv) College Library provided with a large number of books, journals and LR's including licensed software; e.g., Visionet and Softech; Use of all these yet limited;
- (v) Being a UG College, R&D culture yet at low level and so also sponsored projects/consultancy; Due attention to be given to take up PG and Research work;

### **8.04 Sardar Vallabh Bhai Polytechnic College, Bhopal**

- (i) Utilization of funds allocated up to ~94%; Mostly used for obtaining trainer kits required for students' laboratories; Extensively utilized for practical classes;

- (ii) Only one item of Category B (Automatic Compression Testing Machine) obtained; Widely used for students' training; Good potential for earning revenue;
- (iii) Good number of books and CAI packages procured for the Library; But, no software packages; Library utilization by the students yet low;
- (iv) Being a Polytechnic, R&D activities minimal; Also, interaction with the outside world, particularly industry negligible; Both to be stepped up speedily;
- (v) Due attention to be given to exploit the TEQIP-I equipment obtained for the training of industry personnel and revenue generation;

#### ***8.05 Shri GS Institute of Technology & Science, Indore***

- (i) Almost 100% utilization of grants by the institution to strengthen laboratories and facilities; Procurement including mostly Category A items for UG/PG students;
- (ii) Other items include Category B(=5), C(=9) and D(=1) items; While Category B items used by UG/PG/Research students, Category C,D items not used by any one;
- (iii) Surprisingly, one each of Category C and D items obtained by the Dept of BME, not yet commissioned at all, although received quite some time back;
- (iv) The LRs (Software) procured found useful to UG / PG students; Hence, Library being widely utilized by them;
- (v) However, revenue generation using TEQIP-I items found virtually non-existent; Senior faculty of the institution to look into this and correct the situation soon;

#### ***8.06 Ujjain Engineering College, Ujjain***

- (i) The institution achieved almost 100% utilization of TEQIP-I grants allotted for procurement of equipment/LRs; Generally satisfactory commissioning and utilization;
- (ii) Equipment obtained largely include computers, computer peripherals and laptops, mostly for faculty use; Students hardly getting any benefit of this;
- (iii) Students' laboratories and instructional facilities not taken care of under TEQIP-I, making the acquisitions mainly faculty oriented;
- (iv) However, adequate books and subject CDs procured for students' use; Some useful software: AUTOCAD, EDSA, Power 2000 acquired; All being extensively used;
- (v) R&D culture and revenue generation capacity yet limited at the institution; Senior faculty to work out a suitable strategy to enhance this at an early date;

### **8.07 University Institute of Technology, RGPV, Bhopal**

- (i) Funds allotted for procurement of equipment/LRs fully utilized; Installation and commissioning of all items done in time; Extensively used by students and faculty;
- (ii) Most items being of Category A, B types, used primarily by UG/PG students; Only one item of Category C (Network analyzer) widely used by PG/Research students;
- (iii) Library upgraded very well by adding books and online journals. Surprisingly not a single LR (software) procured under TEQIP-I; Library being used extensively;
- (iv) R&D work at the institution being at a low level, industrial interaction also low, resulting in a virtual absence of sponsored projects or consultancy activities;
- (v) Revenue generation using TEQIP-I facilities to be given due attention; Senior faculty to work out an appropriate strategy for this purpose soon;

#### **A. Assessment of Discrepancies:**

The assessment of discrepancies between what the institution reported and what the State-level Auditor has found in respect of one institution visited and reported by him, viz., *Rewa Engineering College, Rewa* is summarized below. The State-level Auditor has also given a few minor discrepancies noticed by him in the reporting of data/ information sought by NPIU at many other *programme institutions* in Madhya Pradesh. But, these have been included in the Specific Observations given in Sub-Section B above.

Institution	Discrepancy Noticed	Remarks
Rewa Engineering College, Rewa	No discrepancies noticed; But, log books not kept in most cases; Hence, data for verification obtained only from time tables;	Such situations to be avoided;

#### **B. Assessment of Un-Commissioned/Under-Utilized Equipment & LRs:**

All major items of equipment installed and commissioned in a reasonable time; No undue delays reported in the installation/commissioning of equipment items at most of the *programme institutions*. However, the level of utilization of major equipment reported to be

low at present, presumably due to all the seven *programme institutions* in Madhya Pradesh, being not in research and consultancy activities. The level of utilization of LRs at each institution generally satisfactory. But, their utilization could be increased further by improving the Library facilities and service.

**C. Short Overall Review:**

A short overall review of each aspect of commissioning and utilization of equipment and LRs obtained under TEQIP-I, as extracted from the reporting format of the State-level Auditor for Madhya Pradesh is given below:

- Equipment of Categories A & B procured by the *programme institutions* well used;
- Log-books not maintained well by most of the *programme institutions*;
- Only few items of equipment of Categories C&D; Sparingly used at most cases;
- No evidence of cross Departmental use of equipment in most cases;
- No information available on facilities for maintaining costly equipment items;
- LRs being used well; However, good scope for improving this further;
- Institutional level over viewing/monitoring of equipment not yet functioning;

**D. Some suggestion for enhanced utilization:**

TEQIP-I has facilitated the upgrading of class room ambience, laboratories, libraries, computers and the IT-resources at most of the *programme institutions* in the State of Madhya Pradesh. The institutions have been reasonably dynamic in making the best use of TEQIP-I and develop into mature institutions in a short time..However, the polytechnics have been found to be lagging behind the other institutions in the State by a big margin. The following few suggestions are now being made to make these facilities of wider use among the stake holders at each *programme institution*:

- Serious attempts to be made by all the *programme institutions* for enhancing R&D and industrial interaction, with a view to take up sponsored projects & consultancy;
- Senior faculty at each College/Institution to oversee the utilization of all equipment/facilities regularly and evolve a plan to avoid their under utilization;

- Take early steps to study and introduce *Best Practices* for the utilization of equipment/ facilities at each College/Institution, as followed at leading institutions;
- Equipment procurement in the future to be only after proper need analysis by the user groups; To be of considerable help in enhancing their utilization;
- All out efforts to be made to provide training of faculty/staff concerned on the new equipment by their Suppliers to enable their proper functioning and increased benefit;

## **9. Maharashtra:**

### **A. Summary of Observations:**

The State of Maharashtra was included under TEQIP-I in its first cycle beginning from the year 2003-04, along with five other States and the CFIs. The Colleges/Institutions in the State supported under TEQIP-I since this period until March 31, 2009 are listed in Table 11, in the alphabetical order. Of the seventeen Colleges/Institutions listed herein, the three starred (\*) ones received TEQIP-I support as *lead institutions* and the others as *network institutions*. The list also includes three polytechnics, all of them being marked by a (+) symbol. Major observations as a result of the study and analysis of the State -level Report of the Auditor include the following:

- Most of the items procured under TEQIP-I utilized for routine UG and PG laboratory work and in some cases for students' projects;
- Research work using these equipment/facilities of a high order only a few institutions; However, research culture observed in most cases, although at a low level;
- Excellent research publications including journal papers, sponsored projects and consultancy activities observed at one institutions;
- Many *programme institutions* (except polytechnics) engaged in UG/PG courses and Ph. D work, with each one having large student groups; Hence, high user base;
- No major differences noticed in the activities/outcomes/outputs of *lead or network institutions*;
- Reporting errors and inconsistencies often noticed in the Reports prepared by some Colleges/Institutions;

- TEQIP-I, a major stimulant to technical institutions for enhancing the quality/standard of their academic and research activities for the benefit of stake holders;
- Specific College/Institution-wise data/information on the utilization of resources procured, given below in Sub-sections 9.01-9.17 by following Table 11;
- List of under-utilized items of equipment, as extracted from the log books of the *programme institutions* also given in Sub-section 9.18;;

**Table 11: Colleges/Institutions in Maharashtra supported under TEQIP-I**

S. No.	College/Institution
9.01	College of Engineering, Pune*
9.02	DKTE's Textile and Engineering Institute, Ichalkaranji
9.03	Dr. Babasaheb Ambedkar Technological University, Lonere
9.04	G.H. Rasoni College of Engineering, Nagpur
9.05	Government College of Engineering, Amaravati
9.06	Government College of Engineering, Aurangabad
9.07	Government Polytechnic, Mumbai (+)
9.08	Government Polytechnic, Nagpur (+)
9.09	Government Polytechnic, Pune (+)
9.10	Rajarambapu Institute of Technology, Rajaramnagar
9.11	Shri Guru Gobind Singhji Institute of Technology, Nanded
9.12	Shri Sant Gajanan Maharaj College of engineering, Shegaon
9.13	University Institute of Chemical Technology, Mumbai*
9.14	Veer mata Jijabai Technological Institute, Mumbai*
9.15	Vishwakarma Institute of Technology, Pune (#)
9.16	Walchand College of Engineering, Sangli
9.17	Yeshwantrao Chavan College of Engineering, Nagpur (#)

(\*) Lead Institutions ; (+) Polytechnics; (#) On-site visit conducted;

### ***B. Specific Observations:***

Specific College/Institution-wise data/information on the utilization of resources procured under TEQIP-I are given below in the same order of their listing in Table 11:

### **9.01 College of Engineering, Pune**

- (i) In all cases of Category C, D items of equipment/facilities log books reported to be maintained, except for power generation, WAN, Server and UTM;
- (ii) No. of hours of major equipment usage in Jan.'09 noted to be satisfactory, although data on this item not presented in the Report;
- (iii) Most items of equipment (also UTM) and LRs used well for class room teaching and lab. demo.; But, Laser & AAS used for research only; Software usage good;
- (iv) Cross-Departmental utilization of equipment items not being practiced at present; Good case for the College to correct this for enhancing their use to benefit all;
- (v) Data/Information provided on equipment items and their utilization being faulty in some cases, difficult to draw inferences on future course of action;

### **9.02 DKTE's Textile and Engineering Institute, Ichalkaranji**

- (i) Log books maintained in all the cases of equipment items at the institution; Of considerable use to College authorities to know the status of their working;
- (ii) No. of hours of usage of equipment items in Jan.'09 observed to be reasonable, although no data on this given in the filled in format;
- (iii) Most of the items of equipment and LRs used well for each activity, as planned; Beneficiaries being mostly class room teaching and laboratory instruction;
- (iv) Cross-Departmental usage of equipment not being followed; Besides, may not be possible because of the specialized programme; Acceptable in this case;
- (v) Use of expensive equipment yet low; College to initiate suitable strategy for this, like taking up more sponsored R&D and consultancy;

### **9.03 Dr. Babasaheb Ambedkar Technological University Lonere**

- (i) Log books maintained for all major items of equipment in all the cases in a satisfactory manner;
- (ii) No. of hours of usage of equipment items in Jan. '09 observed to be satisfactory, although data as required, not provided in the format;



- (iii) Equipment utilization mostly for Modeling, Analysis, Drafting & Optimization, Used in teaching, lab. demo and project/research work; Generally satisfactory;
- (iv) Many equipment items (Category A, B) and software used sparingly, even though of benefit to many Departments; To be looked into and corrective steps taken soon;
- (v) Use of expensive equipment yet low; University to initiate suitable strategy to rectify this, like taking up more sponsored R&D and consultancy activities;

**9.04 G.H. Raisoni College of Engineering, Nagpur**

- (i) Institution maintained Log books on most of the equipment items; Highly useful for keeping track of the status of their working condition;
- (ii) No. of hours of usage of equipment items in Jan. '09 found to be satisfactory; But, the data required by *NPIU*, not provided in the format;
- (iii) Most equipment items well utilized for class room teaching, being computers, power supplies and software, except for a Logic analyzer; Very little research activity;
- (iv) Cross- Departmental use of equipment/facilities generally satisfactory, being mostly computers and software packages and the availability Campus-LAN;
- (v) Use of expensive equipment at the institution yet low; College to initiate suitable strategy for this, like increasing sponsored R&D and consultancy activities;

**9.05 Government College of Engineering, Amaravati**

- (i) Log books maintained in all the cases of costly equipment obtained under TEQIP; a practice to ensure proper availability of the equipment to users;
- (ii) No. of hours of usage of equipment items in Jan. '09 reasonable; But, the data required by *NPIU*, not provided by the institution in the format;
- (iii) Most of the items useful for teaching, except four listed under Table 6.1B, like, WAN & power generator used for the entire campus as service;
- (iv) LRs also used reasonably well; But, the use of equipment & LRs for research only to a limited extent, as research culture not developed at the College so far;
- (v) Use of expensive equipment yet low; College to initiate proper strategy to correct this, like cross-Departmental usage and more consultancy activities;

**9.06 Government College of Engineering, Aurangabad**

- (i) The College maintaining log books in most cases of equipment procured under TEQIP; Of good use to the Departments and the users alike;
- (ii) No. of hours of usage of TEQIP equipment in Jan. '09 found to be satisfactory; But, the data required by *NPIU*, not generally provided in the format;
- (iii) Utilization of equipment obtained of a high order; Mostly used for teaching; However, not much use for research so far, this activity being low;
- (iv) Cross-Departmental usage confined to two items, viz., general-purpose systems with many Departments making use of them;
- (v) Use of costly equipment yet low at the institution; College to initiate proper strategy to take care of this, like sponsored R&D and consultancy activities;

**9.07 Government Polytechnic, Mumbai**

- (i) No separate log book maintained for one costly item, viz., campus-wide LAN (=WAN) used 24/7 on the Polytechnic campus;
- (ii) WAN well utilized for connecting the computers in all the Departments to facilitate class room teaching; Students, faculty and admin. Staff using regularly;
- (iii) Good cross-Departmental usage for the campus-wide LAN, because of the inherent nature of the facility;
- (iv) Further use of campus-wide LAN for continuing education and community service projects to be explored in the short term, to expand its utility;

**9.08 Government Polytechnic, Nagpur**

- (i) No separate log book maintained for one costly item, viz., campus-wide LAN (=WAN) used 24/7 on the Polytechnic campus;
- (ii) LRs obtained by the Polytechnic well utilized for the Communication lab; But, no log book kept for them;
- (iii) Most of the equipment being the network backbone, found highly useful for the entire campus for academic and administrative functions; Satisfactory usage;
- (iv) Further use of the facility established for taking up continuing education, networking with industry and community service to be explored;

### **9.09 Government Polytechnic, Pune**

- (i) Equipment and software being related to campus-wide network, log book maintained in the servers only; Generally acceptable;
- (ii) Campus-wide LAN used for networking computers at all Departments on the campus; Useful for academic and administrative functions; Limited use for research;
- (iii) Campus-wide LAN providing 24/7 service to all the Departments and its cross-Departmental usage of a high order;
- (iv) Extension of the campus-wide LAN for continuing education, networking with industry and community service to be explored for its better utility;

### **9.10 Rajarambapu Institute of Technology, Rajaramnagar**

- (i) Log books maintained by the institution only for costly equipment items; But, not for software packages; Generally acceptable;
- (ii) No. of hours of usage of equipment items in Jan. '09 reasonable; Use of software packages not reported; Also, data sought by *NPIU*, not provided in the format;
- (iii) Utilization of equipment satisfactory for class room teaching and laboratory instruction; Software utilization found to be rather at a low level;
- (iv) Cross-Departmental usage of equipment not observed at present; Institution to give urgent attention to rectify this in the short term;
- (v) Use of costly equipment items yet low; College to initiate suitable strategy to correct this, like taking up sponsored R&D and consultancy activities;

### **9.11 Shri Guru Gobind Singhji Institute of Technology, Nanded**

- (i) Log books maintained in most cases of equipment procured by the institution; Quite satisfactory, for enhancing their utilization;
- (ii) Utilization of most of the equipment items for teaching and laboratory work; Research work yet to pick up at the institution, although good equipment received;
- (iii) Of the three items listed in Table 6.1B, a Category D item: *yarn tester*; Very unique; But, its utility as yet at a low level; New application areas to be explored for this;
- (iv) Cross-Departmental usage of equipment negligible as yet; Worth exploring to enhance the equipment utilization by all the students and faculty members alike;

- (v) Use of expensive items of equipment yet low; Institution to initiate proper strategy to correct this, like increasing sponsored R&D and consultancy activities;

**9.12 Shri Sant Gajanan Maharaj College of Engineering, Shegaon**

- (i) Log book maintained at the institution only for equipment and not for software packages; Generally acceptable;
- (ii) Utilization of equipment/facilities set up mainly for teaching, laboratory instruction and consultancy activities; Highly satisfactory;
- (iii) However, utilization of software packages mainly for academic work at the institution; Large number of faculty and students already using them;
- (iv) Use of expensive equipment yet at a low level; College to initiate proper strategy for correcting this, like increasing sponsored R&D and expanding consultancy;

**9.13 University Institute of Chemical Technology, Mumbai**

- (i) Log books maintained well at the institution, both for equipment and software packages; Good culture existing of updating them regularly;
- (ii) Majority of equipment and software being regularly used for research work; Some also being used for sponsored projects; Only few used for UG/PG courses;
- (iii) Some equipment and software found to be not used at all, even once since so far; e.g., item Nos. 116-121 in Table 6.1A; to be looked into urgently;
- (iv) Cross-Departmental use of equipment and software at a low level; Little scope observed for inter-Departmental activities;
- (v) Overall impression presented: More research oriented activities than for strengthening UG/PG programmes as required for TEQIP; To be given serious thought;
- (vi) The institution to explore new ways and means to use all the equipment items and software packages to enhance UG/PG programmes;

**9.14 Veermata Jijabai Technological Institute, Mumbai**

- (i) Log books maintained reasonably well; Being regularly updated and put to use by the students and the faculty alike;; Satisfactory;

- (ii) Utilization of equipment and software generally satisfactory; Most of the items being used for teaching courses, research work, sponsored projects and consultancy;
- (iii) Networking activities using the new equipment/LRs at a low level; Good scope for enhancing this, especially with other nearby academic institutions;
- (iv) Cross-Departmental usage of equipment reasonably satisfactory; To be increased in the coming period to be of benefit to all students and faculty of the institution;
- (v) The institution to explore new ways and means to enhance the utilization of equipment further and also for revenue generation to meet their running costs;

**9.15 Vishwakarma Institute of Technology, Pune**

- (i) Log books maintained well in all the casea of major items of equipment; Good practice established of up dating them regularly;
- (ii) All major items reasonably well utilized in Jan. '09, except one item of expensive software package used very little; To be looked into and corrected;
- (iii) Equipment utilization generally satisfactory; Teaching, laboratory instruction, sponsored projects aand consultancy activities benefitted through these items;
- (iv) Cross-Departmental usage of equipment observed to be only between EEE and ECE Departments; To be looked into and expanded to cover other Departments as well;
- (v) Use of costly equipment like, ion chromatograph yet low; College to initiate steps s to enhance usage, by increasing sponsored projects and expanding consultancy;

**9.16 Walchand College of Engineering, Sangli**

- (i) Log books maintained for some equipment only and not for all; To be looked into at the institution and expanded to include all Category C, D items at the earliest;
- (ii) No. of hours of equipment usage in Jan. '09 reasonable for most of the equipment; But, some items not used so far; To be looked into and corrected;
- (iii) Equipment utilization mostly covering teaching, laboratory work and sponsored projects; Generally satisfactory, except in the case of unique/expensive itemsl
- (iv) Cross-Departmental usage of equipment not reported; Appears mostly of the nil category; To be looked into and corrected;
- (v) Use of Category C, D items like, sensor kit and computer compatible lab. test bench yet low; College to explore methods to enhance their usage;

- (vi) Good case for the institution to expand research work, sponsored projects and consultancy activities to increase revenue generation for better sustenance;

**9.17 Yeshwantrao Chavan College of Engineering, Nagpur**

- (i) Maintenance of log books at the institution reasonably satisfactory; All cases of major items covered; Regularly up dated;
- (ii) No. of hours of usage of equipment in Jan. '09 reasonable; But, all the modules of general purpose software not fully used; To be looked into and rectified;
- (iii) Utilization of equipment limited to largely teaching and also for research to some extent; However, CNC system is being used mostly for demonstration;
- (iv) Cross-Departmental usage of equipment on a limited scale, confined to only EEE, ECE and CSE Departments; Steps to be taken to expand this;
- (v) Use of costly equipment yet low; College to enhance their usage, by UG/PG student demo., taking up more sponsored R&D and consultancy projects;

**C. Assessment of Discrepancies:**

The assessment of discrepancies between what the institutions reported and what the State -level Auditor has found in respect of two institutions visited and reported by him, viz. *Vishwakarma Institute of Technology, Pune* and *Yeshwantrao Chavan College of Engineering, Nagpur* is summarized below. The State-level Auditor has also given the discrepancies noticed by him in the reporting of data/ information sought by *NPIU* at few other *programme institutions* in Maharashtra . But, these have been included in the Specific Observations given in Sub-Section B above.

Institution	Discrepancy Noticed	Remarks
1.Vishwakarma Institute of Technology, Pune	No major discrepancies noticed, other than some cases of faulty reporting in Tables 6.1A, B;	Reasons for this observed to be improper understanding of the formats to be filled; To be corrected in the future;
2,Yeshwantrao Chavan College of Engineering, Nagpur	No major discrepancies noticed;	Acceptable;

**D. Assessment of Un-Commissioned/Under-Utilized Equipment & LRs:**

All major items of equipment installed and commissioned in a reasonable time; at most of the institutions in Maharashtra. However, the level of utilization of major equipment reported to be low at present in some institutions as listed below, presumably because these *programme institutions* are yet in the early stages of development of research and consultancy activities or they have a wrong choice in acquiring the items;. The level of utilization of LRs at most of the *programme institutions* generally satisfactory.

S. No.	Name of the institution	Name of the Equipment	No. of hrs. used/ month
9.03	Dr. Babasaheb Ambedkar Technological University Lonere	• AutoCAD 2005 Software	2 persons in 4yrs
		• 3D Mod. Unigraphics Software	Nil
		• ANSYS Software	2 persons in 4 yrs
		• CATIA V Software	2 persons in 2 yrs
		• Gas Chromatograph	
		• Ion Chromatograph	2 persons in 3 yrs
		• Sieve Plate Distillation column	2 persons in 3 yrs
		• Packed Bed Distillation column	Nil in 3 yrs
		• UV Spectra Photometer	Nil in 3 yrs
		• Trace Metal analyzer	3 persons in 3 yrs
		• Preparative LC	2 persons in 3 yrs
		10	
9.04	G.H. Raisonni College of Engg., Nagpur	Stand alone Logic Analyzer	25
9.10	Rajarambapu Institute of Technology, Rajaramnagar	Rebarlocator	1 person in 4yrs
		STRAPP software	9 persons in 4 yrs
		MATLAB software	24
		MSC ADAMS software	25
9.13	University Institute of Chemical Technology	Gas Chromatograph	Nil
		SCI Fuel Workstation	Nil
		Schrodinger Suit Software	Nil

		Mastersizer Particle Size Analyzer	Nil
		Kalveka Multipurpose Attachment	Nil
		Size Exclusion Chromatograph	Nil
9.15	Vishwakarma Institute of Technology, Pune	Ion Chromatograph	08
9.16	Walchand College of Engineering, Sangli	Computer compatible Lab Test Bench	04
		Calibrator Fluke Make	Nil
9.17	Yeshwantrao Chavan College of Engineering, Nagpur	SIEMENS Automation package	10
		CNC system for milling m/c OIMC	10

***E. Short Overall Review:***

A short overall review of each aspect of commissioning and utilization of equipment and LRs obtained under TEQIP-I, as extracted from the reporting format of the State-level Auditor for Maharashtra is given below:

- Category A, B equipment obtained by the *programme institutions* used very well;
- Log-books being maintained mainly for equipment items of Categories C & D;
- Equipment of Category A, B mostly used for class room teaching ^ laboratory work;
- Equipment of Categories C&D sparingly used at most institutions;
- Cross Departmental use of equipment only at few institutions & to a limited extent;
- Surprisingly equipment utilization at University level institutions rather at low level;
- Reporting inconsistencies noticed in a few cases of institutional Reports;
- LRs being used well; However, good scope for improving this further;
- Institutional level over viewing/monitoring of equipment not yet functioning;

***F. Some suggestion for enhanced utilization:***

TEQIP-I has been generally responsible for substantially upgrading the laboratories, libraries, computers and the IT facilities at all the *programme institutions* in the State of Maharashtra. The following few suggestions are now being made to enhance the utilization of these equipment/facilities and providing better academic/research opportunities to the stake holders at each *programme institution*:



- Each *programme institution* to conduct periodic audit of the use of all major equipment (Category C,D), to evolve its own strategy to enhance their utilization;
- Institutions with academic autonomy to plan new courses in emerging areas for making the best use of the new items of equipment in academic work;
- Both UG/PG students to be encouraged to familiarize themselves with the new equipment, to enable their wider utilization during project work;
- Sharing of facilities among the Departments at an institution and facilitating other institutions also to use them for their students to be explored and encouraged;
- Efforts to be made to encourage e-learning by students of all TEQIP-I institutions in the State, now that the required equipment obtained by most of them;
- Due attention to be given to enhance R&D, sponsored projects & consultancy at the institutions, to enable revenue generation for future sustenance of TEQIP-I activities;
- Take early steps to introduce *Best Practices* for the utilization of equipment/facilities at each College/Institution, as followed at leading institutions;
- Obtain *a priori* commitment from equipment/resource suppliers regarding the possible experiments using the facilities set up and the availability of spares;

## 10 *Tamil Nadu:*

### *A. Summary of Observations:*

The State of Tamil Nadu was included under TEQIP-I in its second cycle beginning from the year 2004-05, along with six other States. The Colleges/Institutions in the State supported under TEQIP-I since this period until March 31, 2009 are listed in Table 12 in the alphabetical order. Of the eleven Colleges/Institutions listed herein, the three starred (\*) ones received TEQIP-I support as *lead institutions* and the other eight as *network institutions*. The list also includes three polytechnics, all of them being marked by a (+) symbol. One distinguishing feature noticed in the State-level Report on *programme institutions* of Tamil Nadu made available for review, has been the cumulative reporting of performance of all of them together rather than of each institution separately as in the case of other States. However, the Report includes data/information only on the sample institution visited by the State-level Auditor, viz., Government College of Engineering, Tirunelveli, which has been subjected to a detailed review here. In all other cases, a cumulative review

only could be possible. Both these reviews are presented in the following section. Major observations as a result of the study and analysis of the Report of the State -level Auditor include:

- All the eleven *programme institutions* utilized the TEQIP-I grants judiciously in acquiring new equipment/facilities and LRs for their academic/research work;
- Most of the items procured under TEQIP-I utilized for routine UG and PG laboratory work and in some cases also for students' project/research work;
- Many *programme institutions* (except polytechnics) engaged in UG/PG courses and Ph. D work, each with large student groups on rolls; Hence, user base very high;
- No major differences noticed in the activities/outcomes/outputs of *lead or network institutions*, as in the case of many other States;
- TEQIP-I, a major stimulant to technical institutions for enhancing the quality & standard of their academic & research activities for the benefit of their stake holders;

**Table 12 : Colleges/Institutions in Tamil Nadu supported under TEQIP-I**

S. No.	College/Institution
10.01	A.C. College of Technology, Chennai
10.02	Alagappa Chettiar College of Engineering and Technology, Karaikudi*
10.03	Central Polytechnic College, Chennai (+)
10.04	College of Engineering, Guindy, Chennai*
10.05	Dr. Dharmabai Government Polytechnic College for Women, Chennai (+)
10.06	Government College of Engineering, Salem
10.07	Government College of Engineering, Tirunelveli (#)
10.08	Government College of Technology, Coimbatore*
10.09	Madras Institute of Technology, Chennai
10.10	Tamil Nadu Polytechnic College, Madurai (+)
10.11	Thanthai Periyar Government Institute of Technology, Vellore

(\*) Lead Institutions; (+) Polytechnics; (#) On-site visit conducted;

### ***B. Specific Observations:***

Specific College/Institution-wise data/information on the utilization of resources procured under TEQIP-I are given below in respect of all the *programme institutions* listed in Table 12:

- (i) Broad categorization of equipment procured by the Tamil Nadu Colleges/ Institutions and their recorded use since inception of TEQIP-I given below:

Category A - ~390 items, with 69, 000 students and 1134 faculty, as used;  
Category B - ~109 items, with 19,190 students and 398 faculty, as users;  
Category C - ~ 74 items, with 9,555 individuals for 18,057 hrs usage in all;  
Category D - ~ 54 items, with 10,095 individuals for 27,391 hrs usage in all;

- (ii) These facilities of great use in enhancing the capabilities of *programme institutions* to embark on major initiatives to advance technical education at various levels;

- (iii) Created facilities at *programme institutions* covering:

- Central Libraries (except in the case of *10.01 AC College of Technology* having Departmental Libraries);
- Good investment made in books (Text/Reference), on-line journals, stand alone video courses (e.g., NPTEL).and other e-resources at each Library;
- Computer Centres with Servers, PCs, Licensed Software, Accessories etc.; with proper faculty/staff guidance/maintenance facilities;
- Campus-wide intranets and internet (except in the case of *Tamil Nadu Polytechnic College, Madurai*), with well needed technical support;
- Language Laboratories with state of the art Hardware and Software and instruction facilities for training students in Communication Skills;

- (iv) Emphasis laid on installation and commissioning of all the equipment soon after their receipt, followed by training of faculty/staff on using equipment /software;

- (v) Wide publicity at the institution on new equipment/software received and their capabilities to encourage their use by faculty/students in academic work;

- (vi) Regular maintenance of log books and suitable records on all major items procured to ensure orderly operation;

- (vii) Evolving a comprehensive maintenance policy to ensure their trouble-free functioning, even in the post TEQIP-I period;

- (viii) For equipment of Category C,D, special steps taken to encourage research work using them, even using formal/non-formal networking approaches;

- (ix) All these efforts largely successful, thereby earning admiration and respect from the stake holders, as per the reports submitted by the individual institutions.

**C. Assessment of Discrepancies:**

The assessment of discrepancies between what the institution reported and what the State -level Auditor has found in respect of one institution visited and reported by him, viz. Government College of Engineering, Tirunelveli is summarized below. The State-level Auditor has also given the discrepancies noticed by him in the reporting of data/ information sought by NPIU at few other *programme institutions* in Tamil Nadu. But, these have been included in the Specific Observations given in Sub-Section B above.

Institution	Discrepancy Noticed	Remarks
Government College of Engineering, Tirunelveli	1.ECE Dept.: In the reporting of , Date of Purchase, Date of Commissioning;	Due care to be taken in the future;
	2.Some items at the College wrongly classified: Category 'B' reported as 'A'; 'C' as 'A', and 'D' as 'C';	Not Acceptable;

**D. Assessment of Un-Commissioned/Under-Utilized Equipment & LRs:**

All major items of equipment installed and commissioned in a reasonable time; No undue delays reported in the installation/commissioning of equipment items at most of the *programme institutions*. However, the level of utilization of major equipment reported to be low at present, presumably due to all the eleven *programme institutions* in Tamil Nadu, being not engaged in R&D and consultancy activities. The level of utilization of LRs at each institution generally satisfactory. But, their utilization could be increased further by improving the Library facilities and services.

**E. Short Overall Review:**

A short overall review of each aspect of commissioning and utilization of equipment and LRs obtained under TEQIP-I, as extracted from the reporting format of the State-level Auditor for Tamil Nadu is given below:

- Equipment of Categories A & B procured by the *programme institutions* well used;
- Log-books maintained reasonably well by most of the *programme institutions*;
- Only few items of equipment of Categories C&D; Sparingly used at most cases;
- Faculty training needs in the use of costly equipment not fully met in most cases;
- Lack of adequate senior faculty/leadership in the Colleges limiting equipment use;
- LRs being used well; However, good scope for improving this further;
- R&D culture at a low level; Hence, sponsored projects & consultancy also low;
- Institutional level over viewing/monitoring of equipment not yet functioning;

***F. Some suggestion for enhanced utilization:***

TEQIP-I has been primarily responsible for substantial upgrading of the laboratories, libraries, computers, and intranet/internet facilities at all the *programme institutions* in Tamil Nadu. The following few suggestions are now being made to enhance the utilization of these facilities and providing better academic/research opportunities to the stake holders at each *programme institution*:

- Implementation of total office automation minimizing the administrative overheads for faculty, thereby maximizing their time availability for academic purposes;
- Ensuring that every alternate faculty/staff members are familiar with the resources available in their Departments, apart from thorough knowledge of central facilities;
- Library reading room, daily working hours, technical services for issue/return of books, IT services in the Library to be improved for increased utilization by students;
- Industrial interaction to be increased considerably to facilitate academics to benefit from industry and vice versa; Of great use in revenue generation activities;
- Each *programme institution* to conduct periodic audit of the use of all major equipment (Category C,D), to evolve its own strategy to enhance their utilization;
- Both UG/PG students to be encouraged to familiarize themselves with the new equipment, to enable their wider utilization during project work;
- Take early steps to introduce *Best Practices* for the utilization of equipment/facilities at each College/Institution, as followed at leading institutions;
- Obtain *a priori* commitment from equipment/resource suppliers regarding the possible experiments using the facilities set up and the availability;

## 11 Uttarakhand:

### A. Summary of Observations:

The State of Uttarakhand was included under TEQIP-I in its second cycle beginning from the year 2004-05, along with six other States. The Colleges/Institutions in the State supported under TEQIP-I since this period until March 31, 2009 are listed in Table 13 in the alphabetical order. Of the four Colleges/Institutions listed herein, the starred (\*) one received TEQIP-I support as *lead institution* and the other three as *network institutions*. The list also includes one polytechnic, being marked by a (+) symbol. Major observations as a result of the study and analysis of the Report of the State -level Auditor include:

- All the four *programme institutions* utilized the TEQIP-I allocations judiciously for acquiring new equipment/facilities and LRs required to strengthen academic work;
- Most of the items procured under TEQIP-I utilized for routine UG and PG laboratory work and in some cases also for students' project work;
- No major differences observed in the activities/outcomes/outputs of *lead or network institutions*, like in the case of many other States;
- Good central facilities established by the *programme institutions* for the use of students/faculty and commendable utilization observed;
- TEQIP-I, found of considerable benefit to technical institutions for enhancing the quality and standard of academic activities of their stake holders;

**Table 13 : Colleges/Institutions in Uttarakhand supported under TEQIP-I**

S.No.	College/Institution
11.01	College of Technology (GB Pant University of A & T), Pantnagar*
11.02	Dehradun Institute of Technology, Dehradun
11.03	Govind Bslabh Pant Engineering College, Pauri, Garhwal
11.04	Government Polytechnic, Dehradun (+) (#)

(\*) Lead Institution ; (+) Polytechnic; (#) On-site visit conducted;

### B. Specific Observations:

Broad categorization of equipment procured by all the *programme institutions* in Uttarakhand and their recorded use since the inception of TEQIP-I is given below:

- Category A - ~119 items, with 17,191 students and 160 faculty users;
- Category B - ~ 32 items, with 10,247 students and 112 faculty users;
- Category C - ~ 16 items, with 3,585 individuals for 1,520 hrs/m usage;
- Category D - ~ 4 items, with 1,235 individuals for 222 hrs/m usage;

Thus, the utilization of equipment/facilities at all the *programme institutions* is generally satisfactory. Specific College/Institution-wise data/information on the utilization of resources procured under TEQIP-I are given below in the same order of their listing in Table 13:

**11.01 College of Technology (GB Pant University of A & T), Pantnagar**

- (i) The category-wise distribution of equipment items and their usage at the institution given below:

S. No.	Category of Items	No. of Items.	No. trained	No. of persons using	No. of hours used per month	Usage of Manuals, consumables, etc.
1.	A	48	75	3,799	552	Used in laboratory classes, project/ research work .
2.	B	16	68	1,282	461	-do-
3.	C	04	08	200	180	-do-
4.	D	01	03	90	32	-do-

- (ii) The Categories of items procured for use at Central Facilities at the institution include:- A :150, B :13, C:1 and D:Nil ; No. of hours of usage of A-C, in each case ~ 240/month;

**11.02 Dehradun Institute of Technology, Dehradun**

- (i) The category-wise distribution of equipment items and their usage at the institution given below:

S. No.	Category of Items	No. of Items.	No. rained	No. of persons using	No. of hours used per month	Usage of Manuals, consumables, etc.
1.	A	32	54	9,000	10,000	Used in laboratory classes, project/ research work .
2.	B	8	17	6,700	3,200	-do-
.	C	4	76	390	1,100	-do-
4.	D	0	-	-	-	-

- (ii) The Categories of items procured for use at Central Facilities at the institution include:- A:47, B:06, C:05, and D:03; No. of hours of usage in each case > 4,500/month;

### **11.03 Govind Bslabh Pant Engineering College, Pauri, Garhwal**

- (i) The category-wise distribution of equipment items and their usage at the institution given below:

S. No.	Category of Items	No. of Items	No. trained	No. of persons using	No. of hours used per month	Usage of Manuals, consumables, etc.
1	A	04	14	1,092	80	Used in laboratory classes, project/ research work .
2.	B	04	23	1,065	56	-do-
3	C	08	39	2,995	240	-do-
4.	D	03	18	1,145	190	-do-

- (ii) The Categories of items procured for use at Central Facilities at the institution include:- A: Nil, B:Nil, C: 05, D:Nil; No. of hours of usage: of C 240/month;



#### 11.04 Government Polytechnic, Dehradun

- (i) The category-wise distribution of equipment items and their usage at the institution given below:

S. No.	Category of Items	No. of Items	No. trained	No. of persons using	No. of hours used per month	Usage of Manuals, consumables etc.
1.	A	35	17	3,300	320	Used in laboratory classes, project/ research work .
2.	B	04	04	1,200	240	-do-
3.	C	NIL	NIL	NIL	NIL	-do-
4.	D	NIL	NIL	NIL	NIL	-do-

- (ii) The Categories of items procured for use at Central Facilities at the institution include:- A: 01, B:01, C: Nil; D:Nil; No. of hours of usage of A, B each :~ 200/month;

#### C. Assessment of Discrepancies:

The assessment of discrepancies between what the institution reported and what the State -level Auditor has found in respect of one institution visited and reported by him, viz. Government Polytechnic, Dehradun is summarized below:.

Institution	Discrepancy Noticed	Remarks
Government Polytechnic, Dehradun	1.Video conferencing facility set up not demonstrated satisfactorily;	Some difficulty experienced; Due care to be taken in the future;
	2. Utilization of resources created not properly documented in the Report Format;	Not Acceptable;
	3. Equipment utilization Log books & condition monitoring status reports not maintained properly by most of the laboratories;	Due attention to be paid to this lacuna;

#### ***D. Assessment of Un-Commissioned/Under-Utilized Equipment & LRs:***

All major items of equipment installed and commissioned in a reasonable time; No undue delays reported in the installation/commissioning of equipment items at most of the *programme institutions*. However, the level of utilization of major equipment reported to be low at present, due to all the four *programme institutions* in Uttarakhand, not being engaged much in R&D and consultancy activities. Besides. Lack of senior faculty at many institutions also a serious problem; The level of utilization of LRs at each institution generally satisfactory; But, their utilization could be increased further by improving the Library facilities and services.

#### ***E. Short Overall Review:***

A short overall review of each aspect of commissioning and utilization of equipment and LRs obtained under TEQIP-I, as extracted from the reporting format of the State-level Auditor for Uttarakhand is now given below:

- Equipment of Categories A & B procured by the *programme institutions* used well;
- Log-books maintained by most of the *programme institutions*; Improvement needed;
- Only few items of equipment of Categories C&D; Sparingly used at most cases;
- Faculty training needs in the use of costly equipment not adequate in most cases;
- Lack of adequate senior faculty/leadership limiting equipment use in many cases;
- LRs being used well; However, good scope for improving this further;
- R&D culture at very low level; Hence, sponsored projects & consultancy also low;

#### ***F. Some suggestion for enhanced utilization:***

TEQIP-I has been mainly responsible for substantially upgrading of the laboratories, libraries, computers, and intranet/internet facilities at all the *programme institutions* in Uttarakhand. The following few suggestions are now being made to enhance the utilization of these facilities and providing better academic/research growth in the State to meet the increasing needs and expectations of stake holders at each *programme institution*:

- Ensure that every alternate faculty/staff member is familiar with all the resources available in the Departments, apart from thorough knowledge of central facilities;

- Library reading room, daily working hours, technical services for issue/return of books, IT services in the Library to be improved for increased utilization by students;
- Industrial interaction to be increased considerably to facilitate academics to benefit from industry and vice versa; Of great use in revenue generation activities;
- R&D work to be given serious attention to build up research culture, handle sponsored projects and make best use of the new equipment/LRs obtained;
- Take up continuing education for industry personnel and faculty members of other institutions in the State and elsewhere on a regular basis for revenue generation;
- Both UG/PG students to be encouraged to familiarize themselves with the new equipment, to enable their wider utilization during project work;
- Take early steps to introduce *Best Practices* for the utilization of equipment/facilities at each College/Institution, as followed at leading institutions;

## ***12 Uttar Pradesh:***

### ***A. Summary of Observations:***

Uttar Pradesh was included under TEQIP-I in its first cycle beginning from the year 2003-04, along with five other States and the CFIs. The Colleges/Institutions in the State supported under TEQIP-I since this period until March 31, 2009 are listed in Table 14 in the alphabetical order. Of the ten Colleges/Institutions listed herein, the starred (\*) one received TEQIP-I support as *lead institution* and the other nine as *network institutions*. The list also includes one institution being marked by a (x) symbol, which submitted its Report in the *NPIU* format too late for inclusion in the Report of the State level Auditor.. Hence, *NPIU* forwarded it directly to the National-level Auditor for review and inclusion in the revised version of the National Report. . Major observations as a result of the study and analysis of this Report and that of the State -level Auditor include:

- All the *programme institutions* generally utilized the TEQIP-I grants judiciously for acquiring new equipment/facilities and LRs required to strengthen academic work;
- Most of the items procured under TEQIP-I utilized for routine UG and PG laboratory work and in some cases also for students' project work;
- No major differences observed in the activities/outcomes/outputs of *lead or network institutions*, like in the case of many other States;

- Good central facilities established by the *programme institutions* for the use of students/faculty and commendable utilization observed;
- TEQIP-I, found of considerable benefit to technical institutions for enhancing the quality and standard of academic activities of their stake holders;

**Table 14: Colleges/Institutions in Uttar Pradesh supported under TEQIP-I**

S. No.	College/Institution
12.01	Bundelkhand Institute of Engineering & Technology, Jhansi
12.02	Dr. Ambedkar Institute of Technology of Handicapped, Kanpur
12.03	Government Central Textile Institute, Kanpur (#)
12.04	Harcourt Butler Technological Institute, Kanpur*
12.05	Institute of Engineering & Technology, Lucknow
12.06	Integral University, Lucknow (x)
12.07	Kamla Nehru Institute of Technology, Sultanpur
12.08	Madan Mohan Malaviya Engineering College, Gorakhpur
12.09	Shri Ram Murthi Smarak College of Engineering & Technology, Bareilly
12.10	United College of Engineering & Research, Allahabad

(\*) Lead Institution; (x) Late receipt by *NPIU* & forwarded directly to the National level Auditor;  
 (#) **On-site visit conducted;**

### ***B. Specific Observations:***

Specific College/Institution-wise data/information on the utilization of resources procured under TEQIP-I are given below in the same order of their listing in Table 14:

#### ***12.01 Bundelkhand Institute of Engineering & Technology, Jhansi***

Detailed review of this institution could not be taken up, as the State-level Report had not included the data/information as required for this purpose, due to the gross inadequacies noticed in its Performance Report on the Utilization of Equipment and LRs provided by the institution.

#### ***12.02 Dr. Ambedkar Institute of Technology of Handicapped, Kanpur***

Detailed review of this institution could not be taken up, as the State-level Report had not included the data/information as required for this purpose, due to the gross inadequacies noticed in its Performance Report on the Utilization of Equipment and LRs provided by the institution.

### ***12.03 Government Central Textile Institute, Kanpur***

- (i) Provisioning/ utilization of resources at the highly specialized textile engineering. Departments found satisfactory; Mostly used for laboratory studies;
- (ii) All records, log books and laboratory manuals of equipment resources well kept; Most of the equipment found to be in good working order and put to good use;
- (iii) The status of ac mains power and internet yet poor at the institution, disturbing the utilization of the various facilities set up quite often; To be given due attention;
- (iv) The campus-wide intranet fully established; Yet, its use found to be limited, apparently due to staff inadequacies; Remedial action necessary urgently;
- (v) Reasonably good industrial interaction in spite of limited R&D work; Good scope for further expansion based on the new facilities established;
- (vi) Central Library well expanded; But, low level of utilization as yet; Good scope for extending working hours, making use of on-line journals, e-books etc.;
- (vii) Central computing facility well established; But, comfort level and ambience not yet satisfactory; To be given priority attention to expand the user base;

### ***12.04 Harcourt Butler Technological Institute, Kanpur***

- (i) Allocated grants well used for judiciously procuring the most essential resources; Widely utilized by UG/PG students for laboratory/project work;
- (ii) Utilization of new resources, like equipment, design automation software and campus-wide intranet reasonable at present; Good scope to increasing this further;
- (iii) Library facilities well upgraded with books, journals, e-resources and others; Their increased utilization over longer periods by all the stake holders to be looked into;
- (iv) Sponsored projects, consultancy and continuing education, yet low; To be encouraged because of their greater scope for increased utilization of equipment/facilities set up;
- (v) Revenue generation using TEQIP-I facilities to be given due attention; Senior faculty to work out an appropriate strategy for this purpose soon;

**12.05 Institute of Engineering & Technology, Lucknow**

- (i) Provisioning/ utilization of resources well done; Judicious choice of equipment/facilities suitable for academic work; Mostly used for laboratory studies;
- (ii) Records, Log books, Maintenance manuals well kept; Of great use in ensuring orderly utilization of facilities established at the institution;
- (iii) Utilization of library resources, design automation and other software, yet limited; Increased use possible by going over to campus-wide LAN and 24/7 access;
- (iv) Sponsored R&D, consultancy and continuing education, yet low; To be encouraged because of their greater scope for increased utilization of equipment/facilities set up;
- (v) Revenue generation using TEQIP-I facilities to be given due attention; Senior faculty to work out an appropriate strategy for this purpose soon;

**12.06 Integral University, Lucknow**

- (i) Allocated grants used for procuring the following items of equipment:

Category	Items(Numbers)	No. of Users since installation	No. of Hrs./Month
A	<ul style="list-style-type: none"> <li>• Server (2)</li> <li>• 15KVA DG Set(1)</li> <li>• Photocopying Machine (1)</li> </ul>	01 02 01	Not indicated Not indicated Not indicated
B	<ul style="list-style-type: none"> <li>• Elevator (1)</li> <li>• Fermentor (1)</li> <li>• 160 KVA DG Set (1)</li> <li>• DLP Projector (!)</li> <li>• Xeon Server (1)</li> </ul>	All faculty/students Students 02 01 01	Not indicated Not indicated Not indicated Not indicated Not indicated
C	<ul style="list-style-type: none"> <li>• 500 KVA DG Set (1)</li> </ul>	02	475

- (ii) The institution claims to have adequate consumables and spares to maintain the equipment in working order and also maintenance manuals are available;
- (iii) Use of equipment mostly for general applications and for the use of administrative functions, except in the case of Servers used in the Computer Centre;
- (iv) The procurement of equipment largely to support asset creation, rather than to provide for academic/research work; This appears unusual under TEQIP;

- (v) No report included on LRs procured for use at the institution; Doubtful whether the Library upgraded and LRs obtained at all;

**12.07 Kamlu Nehru Institute of Technology, Sultanpur**

- (i) Allocated grants well used for judiciously procuring the most essential resources; Widely utilized by UG/PG students for laboratory/project work;
- (ii) Utilization of resources, like equipment, design automation, other software and campus-wide intranet found to be reasonable for present curriculum/syllabus use;
- (iii) However, maximizing utilization possible by accessing e-books & on-line journals on intranet, better use of central computing facility & industrial interaction;
- (iv) Overall, the utilization satisfactory for regular academic work including students' project work and research activities of faculty/students;
- (vi); Sponsored R&D, consultancy and continuing education, yet low; To be encouraged because of their potential for increased utilization of equipment/facilities set up;
- (vii) Revenue generation using TEQIP-I facilities to be given due attention; Senior faculty to work out an appropriate strategy for this purpose soon;

**12.08 Madan Mohan Malaviya Engineering College, Gorakhpur**

- (i) Allocated grants well used for judiciously procuring the most essential resources; Widely utilized by UG/PG students for laboratory/project work;
- (ii) Utilization of library resources, design automation and other software reasonable; Increased use possible by going over to campus-wide LAN and 24/7 access;
- (iii) All the facilities generally utilized for regular academic work including student projects and research work of faculty/students;
- (iv) R&D culture on the campus, yet limited; But, good scope now possible with the new facilities added and exploit their potential leading to their increased utilization;
- (v) Revenue generation using TEQIP-I facilities to be given due attention; Senior faculty to work out an appropriate strategy for this purpose soon;

**12.09 Shri Ram Murthi Smarak College of Engineering & Technology, Bareilly**

Detailed review of this institution could not be taken up, as the State-level Report had not included the data/information as required for this purpose, due to the gross inadequacies noticed in its Performance Report on the Utilization of Equipment and LRs provided by the institution.

**12.10 United College of Engineering & Research, Allahabad**

Detailed review of this institution could not be taken up, as the State-level Report had not included the data/information as required for this purpose, due to the gross inadequacies noticed in its Performance Report on the Utilization of Equipment and LRs provided by the institution.

**C. Assessment of Discrepancies:**

The assessment of discrepancies between what the institution reported and what the State -level Auditor has found in respect of one institution visited and reported by him, as summarized below:.

Institution	Discrepancy Noticed	Remarks
Government Central Textile Institute, Kanpur	No discrepancies noticed;	Satisfactory;

**D. Assessment of Un-Commissioned/Under-Utilized Equipment & LRs:**

All major items of equipment installed and commissioned in a reasonable time; No undue delays reported in the installation/commissioning of equipment items at most of the *programme institutions*. However, the level of utilization of major equipment reported to be low at present, largely due to mains power back up problems and limited R&D and consultancy activities. Besides. Lack of senior faculty at many institutions also a serious problem; The level of utilization of LRs at each institution is generally low; But, their utilization could be increased further by improving the Library facilities and services and by extending the working hours substantially at each *programme institution*;

**E. Short Overall Review:**



A short overall review of each aspect of commissioning and utilization of equipment and LRs obtained under TEQIP-I, as extracted from the report of one institution directly forwarded and the reporting format of the State-level Auditor for Uttar Pradesh is now given below:

- Equipment of Categories A & B procured by the *programme institutions* used well;
- Log-books generally maintained by the *programme institutions*;
- Only few items of equipment of Categories C&D; Sparingly used at most cases;
- One institution invested the grant for power back up only & not for lab. equipment;
- Faculty training needs in the use of costly equipment not adequate in most cases;
- LRs being used well; However, good scope for improving this further;
- R&D culture at very low level; Hence, sponsored projects & consultancy also low;
- Four institutions not provided data/information as required in the *NPIU* format:

***F. Some suggestion for enhanced utilization:***

The support under TEQIP-I has been generally responsible for substantially upgrading of the laboratories, libraries, computers, and intranet/internet facilities at all the *programme institutions* in the State of Uttar Pradesh. The following few suggestions are now being made to enhance the utilization of these equipment, LRs and facilities for providing better academic/research growth in the State to meet the increasing aspirations and expectations of the faculty/staff/students. at each *programme institution*:

- Ensure the regular availability of ac mains power and broadband internet connectivity to raise the satisfaction level of the stake holders in the technical education system;
- Take suitable steps for most of the faculty/staff getting good familiarity with the various resources in the Departments and also enough knowledge of central facilities;
- Library reading room, daily working hours, technical services for issue/return of books and IT services to be improved for increased utilization by students;
- Industrial interaction to be increased considerably to facilitate academics to benefit from industry and vice versa; Of great use in revenue generation activities;
- R&D work to be given serious attention to build up research culture, handle sponsored projects and make best use of the new equipment/LRs obtained;
- Take early steps to introduce *Best Practices* for the utilization of equipment/facilities at each College/Institution, as followed at leading institution

### 13 West Bengal:

#### A. Summary of Observations:

The State of West Bengal was included under TEQIP-I in its second cycle beginning from the year 2004-05, along with six other States. The Colleges/Institutions in the State supported under TEQIP-I since this period until March 31, 2009 are listed in Table 15 in the alphabetical order. Of the eleven Colleges/Institutions listed herein, the two starred (\*) ones received TEQIP-I support as *lead institutions* and the other nine as *network institutions*. The list also includes three University level institutions. Of these institutions, one marked by a (x) symbol had not been included in the Report of the State level Auditor. Hence, the performance of this institution has not been reviewed in the present Report. Major observations as a result of the study and analysis of the State -level Report for West Bengal include:

- All the ten *programme institutions* utilized the TEQIP-I grants judiciously in acquiring new equipment and LRs in the Categories A-D for academic/research work;
- The items procured under TEQIP-I utilized well for routine UG and PG laboratory work in most cases and also for students' project/research work in a few cases;
- Many institutions not maintaining records/log books on the users or on the hours of used; However, utilization generally high due to large students' intake in each case;
- R&D culture and output observed to be better at the University level institutions than at others, leading to higher utilization of Category C,D items at these institutions;
- *Lead institutions* found to be better equipped for revenue generation through sponsored projects, consultancy and related activities;
- TEQIP-I, observed to trigger the technical institutions in enhancing the quality & standard of their academic & research activities for the benefit of their stake holders;

**Table 15 : Colleges/Institutions in West Bengal supported under TEQIP-I**

S. No.	College/Institution
13.01	Asansol Engineering College, Asansol
13.02	Bengal Engineering & Science University, Howrah*
13.03	Government College of Engineering & Ceramic Technology, Kolkata (x)

13.04	Government College of Engineering & Textile Technology, Serampore
13.05	Haldia Institute of Technology, Haldia
13.06	Institute of Engineering & Management, Kolkata
13.07	Jadavpur University, Jadavpur*
13.08	Jalpaiguri Government Engineering College, Jalpaiguri
13.09	Kalyani Government Engineering College, Kalyani (#)
13.10	Netaji Subhash Engineering College, Kolkata
13.11	University of Calcutta, Kolkata

(\* ) Lead Institutions; (x) Not included in the State level Report; (#) On-site visit conducted;

### ***B. Specific Observations:***

Specific College/Institution-wise data/information on the utilization of resources procured under TEQIP-I are given below in the same order of their listing in Table 15:

#### ***13.01 Asansol Engineering College, Asansol***

- (i) Majority of equipment of category A only; But, the number of users so far, not satisfactory.
- (ii) Some data provided on utilization unrealistic; e.g., Category C item, viz., 3 GHz Spectrum Analyzer: 80 users so far and 36 hours/month usage;
- (iii) Low level of usage for other Category C items, like. CNC Machine: 75 hrs, Hydraulic Machine: 45 hrs; Unsatisfactory utilization: To be given serious attention;
- (iv) Library utilization satisfactory; Good balance of text/reference books & e-journals provided; Campus LAN helpful in improving services; But, working hours, yet low;
- (v) R&D culture, low at present; Limitation on taking up sponsored projects/consultancy; Senior faculty to look into this and take corrective steps soon;

#### ***13.02 Bengal Engineering & Science University, Howrah***

- (i) Installation and commissioning of equipment/facilities generally well done, except in one case; Most items obtained of Category A,B; Utilized well by UG/PG students;

- (ii) Category C, D items numbering 10&9 only; Being useful for PG/Research, limited number of users & utilization hours; Senior faculty to initiate corrective steps;
- (iii) Library facilities well upgraded; But, over importance given to reference books than text books; E-journals also subscribed; Limited user base with research focus;
- (iv) R&D culture including Ph.D studies developing well; Sponsored projects/consultancy yet limited; To be given more importance in the immediate future;
- (v) Revenue generation using TEQIP-I facilities to be stepped up, for achieving self sustenance in its activities, including equipment maintenance/usage;

### ***13.03 Government College of Engineering & Ceramic Technology, Kolkata***

No review of this institution has been included in this National Report, as the institution had not been included in the State-level Report.

### ***13.04 Government College of Engineering & Textile Technology, Serampore***

- (i) Major equipment acquired for UG/PG studies of Categories A&B; Utilization satisfactory; But, Category C (4) & D(3) items got for UG/PG, found used sparingly;
- (ii) Range of items and LRs acquired satisfactory for academic work at the institution; Installation and commissioning generally satisfactory;
- (iii) Data given on equipment utilization for Category C&D items often found to be inconsistent; Record keeping and log books to be maintained better;
- (iv) Over 15,360 books (text/reference), 52 journals & 11 LRs added to the Library; Use reasonable; But, daily working hours to be further extended to increase utilization;
- (v) R&D activity yet at a low level; Hence, sponsored projects, consultancy very low; Also continuing education work negligible; Steps to be taken to enhance all these;

### ***13.05 Haldia Institute of Technology, Haldia***

- (i) Installation and commissioning of equipment/facilities reasonable, except in the case of few Departments like Applied Electronics & Instrumentation; Utilization good;
- (ii) Most equipment items of Categories A&B useful for routine laboratory/project work at UG/PG level; No items of Category C&D acquired; Hence, R&D work limited;

- (iii) Data given on equipment utilization often found to be incomplete/inconsistent; Record keeping, maintenance of log books of all equipment to receive due attention;
- (iv) Library up-gradation reasonably satisfactory; Moreover daily working hours limited; Hence, utilization yet at a low level; Senior faculty to take corrective measures here;
- (v) No attempt being made at revenue generation using TEQIP-I facilities; Industrial interaction to be given serious attention to evolve a good strategy for this purpose;

### ***13.06 Institute of Engineering & Management, Kolkata***

- (i) Data furnished by the institution (Table 6.1 A) largely incomplete, making it difficult to draw any inferences on equipment types, their utilization level and successes;
- (ii) Records and log books on equipment/facilities as required by *NPIU* not maintained properly; Management to look into this lapse and corrective steps to be taken soon;
- (iii) Data provided on the status of Library acquisitions and utilization also inconsistent; Also, daily working hours wrongly given; Special care to be taken on data;
- (iv) In short, institutional performance on equipment and LRs commissioning and utilization under TEQIP-I not satisfactory;

### ***13.07 Jadavpur University, Jadavpur***

- (i) Inadequacies and inconsistencies in data provided, making it difficult to draw proper inferences on the variety of equipment/LRs got and their commissioning/utilization;
- (ii) Records and log books on equipment/facilities as required by *NPIU* not maintained properly; However, equipment utilization found to be rather low in most cases;
- (iii) Many Category C & D items procured for R&D activities; But, increase in the Ph.Ds turned out, journal papers published or sponsored projects taken up not reflected;
- (iv) One item: Super Heavy Deflectometer (No. 358) costing Rs 14.5 Million, located in a Department, with virtually no users except an instructor; Serious case of under use;
- (v) Wide range of software (including licensed one's) procured and being used; But, data provided on their costs, numbers, commissioning, utilization thoroughly inadequate;
- (vi) More emphasis laid on expensive reference books for use in the Library; But, the utilization level rather low, as expected; Also general utilization of Library not given;
- (vii) The institution known for R&D contributions for a long time; But, the impact of TEQIP-I on this activity for increased revenue generation not reflected anywhere;

- (viii) A Video conferencing system (Category D) installed; No trained Operator available or any user, leading to doubt on any need analysis done before procurement;

### ***13.08 Jalpaiguri Government Engineering College, Jalpaiguri***

- (i) In all 48 items (A= 38, B=6, C=3, D=1) procured, installed and commissioned; Being mostly for routine laboratory/project work, their utilization found satisfactory;
- (ii) Data presented somewhat inconsistent at places; e.g, Server, Storage, PCs, LCD projector shown with 1400 users; Not clear whether it is in total or individually;
- (iii) Library upgraded well with books, journals and other LRs; But, the utilization low so far; Serious attention required to improve Library facilities & extend working hours;
- (iv) R&D culture low as yet, resulting in low industrial interaction, negligible sponsored projects and consultancy activities on the campus;
- (v) Revenue generation based on TEQIP-I facilities to receive major attention in the immediate future; Senior faculty to deliberate and evolve suitable strategy for this;

### ***13.09 Kalyani Government Engineering College, Kalyani***

- (i) Majority of equipment from Categories A&B, useful for regular course work; Commissioning/utilization satisfactory and students using them for laboratory work;
- (ii) All equipment judiciously chosen, procured and installed to support the curriculum/syllabus followed; Hence comfort level of students found to be high;
- (iii) Category C&D items mostly software related having multi-user licenses; Hence, found widely useful by large number of students & other users of campus intranet;
- (iv) Library well provided with more text books than reference books, journals and other LRs; Found widely used by the students, in spite of the staff limitations;
- (v) So far, R&D culture at a low level, resulting in negligible industrial interaction and benefits like revenue generation; Senior faculty to give serious thought to this;

### ***13.10 Netaji Subhash Engineering College, Kolkata***

- (i) Over 60 equipment of Categories A & B acquired; All useful for routine courses and laboratory work; Commissioned and put to use in time; Students utilizing well;

- (ii) Only one Category C item, viz., Language Laboratory acquired and installed; Being utilized widely for instruction in communication skills to students;
- (iii) Library upgraded by adding new books; but, procurement not well balanced as many costly reference books having limited use acquired rather than well needed text books;
- (iv) Library working hours extended and reading room facilities improved to attract more students; Efforts in the right direction; But, increase in utilization yet low;
- (v) R&D work yet, at a low level; Hence, negligible industrial interaction and benefits like revenue generation; Senior faculty to give serious thought to this;

**13.11 University of Calcutta, Kolkata**

- (i) Wide range of equipment in all the Categories A-D acquired; Commissioned and put to use in time for UG/PG/Research students and faculty members;
- (ii) Utilization reasonable for Category A & B items, mostly used for routine UG/PG laboratory work; But, for Category C & D items utilization found not satisfactory;
- (iii) Some inconsistencies found in the data provided; e.g., relating to High Performance Chromatograph(Category D) , whose commissioning delayed by >1 year after receipt;
- (iv) Library resources including LRs upgraded well; But, daily working hours not extended much; Library utilization by students/faculty yet low;
- (v) Being a University of long standing, R&D culture reasonable; but, impact of TEQIP-I on increasing the R&D base leading to higher revenue generation not noticed;

**C. Assessment of Discrepancies:**

The assessment of discrepancies between what the institution reported and what the State -level Auditor has found in respect of one institution visited and reported by him, as summarized below:.

Institution	Discrepancy Noticed	Remarks
Kalyani Government Engineering College, Kalyani	No discrepancies noticed;	Satisfactory;

**D. Assessment of Un-Commissioned/Under-Utilized Equipment & LRs:**

All major items of equipment installed and commissioned in a reasonable time; No undue delays reported in the installation/commissioning of equipment items at most of the *programme institutions*. However, the level of utilization of major equipment reported to be low at many *programme institutions* as outlined in Sub-Section B above. Lack of senior faculty at many institutions also a serious problem; The level of utilization of LRs at each institution is generally low, as major investments have been made mostly in costly reference books and journals. However, some improvement in , their utilization could be brought about by extending the Library working hours substantially at each *programme institution*;

***E. Short Overall Review:***

A short overall review of each aspect of commissioning and utilization of equipment and LRs obtained under TEQIP-I, as extracted from the report of one institution directly forwarded and the reporting format of the State-level Auditor for West Bengal is now given below:

- Equipment of Categories A & B mostly procured; Used well in most cases;
- Log-books generally maintained by the *programme institutions*;
- Only few items of equipment of Categories C&D; Sparingly used at most cases;
- Reporting inconsistencies noticed from some *programme institutions* (Sub Section B);
- Faculty training needs in the use of costly equipment not adequate in most cases;
- LRs being used not too well; However, good scope for improvement;
- R&D culture at very low level; Hence, sponsored projects & consultancy also low;

***F. Some suggestion for enhanced utilization:***

The support received under TEQIP-I has been generally responsible for substantially upgrading of the laboratories, libraries, computers, software and intranet/internet facilities at all the programme institutions in West Bengal.. The following few suggestions are now being made to enhance the utilization of these equipment, LRs and facilities for providing better academic/research growth in the State to meet the increasing demands, aspirations and expectations of the faculty/staff/students. at each *programme institution*:



- Take suitable steps for most of the faculty/staff getting good familiarity with the various resources in the Departments and also enough knowledge of central facilities;
- Curriculum of courses, practical classes and project work to be reoriented to benefit from the new facilities set up and engage in training of needy technical persons;
- Library reading room, daily working hours, technical services for issue/return of books, IT services in the Library to be improved for increased utilization by students;
- Industrial interaction to be increased considerably to facilitate academics to benefit from industry and vice versa; Of great use in revenue generation activities;
- R&D work to be given serious attention to build up and strengthen research culture, work on sponsored projects and make best use of the new equipment/LRs obtained;
- Take early steps to introduce *Best Practices* for the utilization of equipment/facilities at each College/Institution, as followed at leading institutions;

#### ***14. Centrally Funded Institutions:***

##### ***A. Summary of Observations:***

The Centrally Funded Institutions (CFIs) were included under TEQIP-I in its first cycle beginning from the year 2003-04, along with six other States. The Institutions selected for support under TEQIP-I since this period until March 31, 2009 are listed in Table 16 in the alphabetical order, as reproduced from Table 2 along with a few more details. The list includes two institutions marked with a (x) symbol, which submitted its Report in the *NPIU* format too late for inclusion in the Report of the CFI-level Auditor.. Hence, *NPIU* forwarded it directly to the National-level Auditor for review and inclusion in the revised version of the National Report. The two institutions visited by the CFI-level Auditor for on-site verification are also marked (#) in Table 16. Major observations as a result of the study and analysis of the Report of the CFI--level Auditor include:

- Utilization of TEQIP-I grants by all the eighteen *programme institutions* judiciously done to obtain new equipment/LRs of all categories for academic/research work;
- The items procured under TEQIP-I utilized well for routine UG and PG laboratory work in most cases and also for students' project/research work in some cases;
- Record keeping and maintenance of log books satisfactory at most of the *programme institutions*; However, this practice observed to be rather weak in some cases;

- Equipment and LR utilization by students found to be generally acceptable for Category A&B items and not so much for items of Category C&D;
- R&D culture and output observed to be high only at few *programme institutions*; Found to be rather weak in most other cases; Urgent attention required in these cases;
- Few institutions found to take up sponsored projects, consultancy and continuing education activities; But, majority of them yet at a low level in these activities;
- Most *programme institutions* observed to be able to enhance the quality, standard of academic/research work in a good way for the benefit of their stake holders;

**Table 16 : Centrally Funded Institution supported under TEQIP-I**

S. No.	Institution
14.01	Dr. B. R. Ambedkar National Institute of Technology, Jalandhar
14.02	Malviya National Institute of Technology, Jaipur (#)
14.03	Maulana Azad National Institute of Technogy, Bhopal (x)
14.04	Motilal Nehru National Institute of Technology, Allahabad
14.05	National Institute of Foundry & Forge Technology, Ran0chi (#)
14.06	National Institute of Technology, Calicut (x)
14.07	National Institute of Technology, Durgapur
14.08	National Institute of Technology, Hamirpur
14.09	National Institute of Technology, Jamshedpur
14.10	National Institute of Technology, Kurukshetra
14.11	National Institute of Technology, Rourkela
14.12	National Institute of Technology, Silchar
14.13	National Institute of Technology, Srinagar
14.14	National Institute of Technology, Surathkal
14.1	National Institute of Technology, Tiruchirapalli
14.16	National Institute of Technology, Warangal
14.17	Sardar Vallabhbhai National Institute of Technology, Surat
14.18	Visvesvaraya National Institute of Technology, Nagpur

(x): Late receipt by *NPIU* & forwarded directly to the National level Auditor; (#) On-site visit conducted;

***B. Specific Observations:***

Specific Institution-wise data/information on the utilization of resources procured under TEQIP-I are given below in the same order as of their listing in Table 16. Information on the number of users (UG, PG, Research students) and the number of hours of utilization in January 2009 of only Category C and D items by all the CFIs, as extracted from Table 6.1(b) filled in by them, has been presented at the end, as Table 17, which is self explanatory.

**14.01 Dr. B. R. Ambedkar National Institute of Technology, Jalandhar**

- (i) Most of the equipment received commissioned, stock registers maintained & log books prepared; Adequate number. of instructors trained for operation;
- (ii) Equipment obtained largely useful for UG/PG/Research students for laboratory experimentation; Most items widely utilized by the students;
- (iii) Surprisingly no provision made for spares, in-house maintenance or assigning AMC of equipment; Not a healthy practice; Corrective steps urgent;
- (iv) Operating manuals available only for some equipment to guide users; Such manuals to be made available for all the equipment to aid the users;
- (v) Library resources upgraded reasonably well with text/reference books; But, e-journals, e-books & other LRs to be added; Library yet to attract more students;
- (vi) R&D activities low, leading to a limited number of sponsored projects & consultancy; Senior faculty to work out a proper strategy to enhance this;

**14.02 Malviya National Institute of Technology, Jaipur**

- (i) Large variety of equipment required for UG/ PG / Research students obtained and commissioned in time; Being well utilized by students and faculty alike;
- (ii) Log books maintained, operating manuals made available and provision made for in-house maintenance on a case by case basis; Utilization greatly facilitated;
- (iii) Equipment spares and consumables not available in all the cases; To be looked into and corrected to enable their uninterrupted utilization, as warranty period crossed;
- (iv) Library upgraded considerably by new books(=4161), e-journals (=2000) and software packages (=16); but, other facilities including working hours not extended;

- (v) R&D activities at a low level; Hence, industrial interaction/ sponsored projects not yet effective; Urgent steps to be taken to increase these for better equipment utilization;

#### ***14.03 Maulana Azad National Institute of Technology, Bhopal***

- (i) Equipment items of all the Categories, A-D, procured, installed, commissioned and put to use, covering:
  - Category A: 60 items
  - Category B: 30 items
  - Category C: 17 items
  - Category D: 1 item
- (ii) Items meeting the requirements of academic and research work of students and faculty; Hence, used well and very frequently;
- (iii) Staff reasonably well trained to operate sophisticated items of Categories C & D, and maintenance handled internally; Stocks of spares/consumables maintained;
- (iv) Steps taken to upgrade library and add LR's for supporting academic and research work not indicated; Hence, no comments being made on this;
- (v) Research contributions and industrial consultancy using the new facilities yet to pick up; However, much efforts being made in this direction;

#### ***14.04 Motilal Nehru National Institute of Technology, Allahabad***

- (i) Most of the equipment commissioned in time, recorded in stock register, provision made for maintenance and instructors trained for their operation; Being used widely;
- (ii) Items generally required for UG/PG/Research students to support laboratory studies in their academic/research programmes; Being put to good use by students/faculty;
- (iii) But, equipment usage for formal networking, R&D activities, sponsored projects and consultancy yet at a low level; To be stepped up in the immediate future;
- (iv) Up-gradation of Library by adding books, journals and other resources done reasonably well; But, utilization so far, appears limited; Corrective steps required;
- (v) Industrial interaction, continuing education and related activities for revenue generation still low; Serious attention to be paid to increase these

#### ***14.05 National Institute of Foundry & Forge Technology, Ranchi***

- (i) Most of the equipment received and commissioned in time, except one HIP m/c (Table 6.1B); Stock registers kept and instructors also trained in their operation;
- (ii) Equipment utilization progressing well, as students using them for laboratory experimentation as part of UG/PG/Research activities;;
- (iii) Provision not made for in-house maintenance; Not a healthy practice as most items crossed their warranty period; To be looked into and corrective steps taken urgently;
- (iv) Library facilities up-graded by procuring good number. of reference books, journals and software packages; Good case for extending daily working hours;
- (v) R&D activities rather low, resulting in low level of sponsored projects and consultancy; Urgent attention to be paid for revenue generation using these;

**14.06 National Institute of Technology, Calicut**

- (i) Equipment items procured using all the available sources, including TEQIP-I listed together; Surprisingly, contribution of TEQIP-I not properly separated, as required;
- (ii) Equipment items covering all the Categories, A-D, for meeting the needs of all the academic Departments procured, installed in time, commissioned and put to use:
  - Category A: 120 items;
  - Category B: 33 items;
  - Category C: 13 items;
  - Category D: 8 items;
- (iii) Staff reasonably well trained to operate sophisticated items of Categories C & D, and maintenance handled internally; Stocks of spares/consumables maintained;
- (iv) Library expansion well done by the addition of new books, journals and other LRs; Used well by students and faculty alike;
- (v) Research output, industrial interaction, continuing education and related activities for revenue generation yet not adequate; Serious attention to be paid to this soon;

**14.07 National Institute of Technology, Durgapur**

- (i) All the equipment received, commissioned in time; Stock registers/Log books kept & instructors well trained to operate them; Large number of users facilitated;

- (ii) Most of the items required by UG/PG/Research students for laboratory studies in their academic/research programmes; Hence, their utilization highly satisfactory;
- (iii) Adequate provision not made for in-house maintenance; Not a healthy practice as most items crossed their warranty period; Corrective steps urgently required for this;
- (iv) Library facilities up-graded by adding good number. of reference books, journals and software packages; Good case for extending daily working hours;
- (v) R&D activities rather low, resulting in low level of sponsored projects and consultancy; Urgent attention to be paid for revenue generation using these;

**14.08 National Institute of Technology, Hamirpur**

- (i) All equipment commissioned in time soon after receipt; Stock registers maintained & instructors also trained in their operation and large number of users facilitated;
- (ii) Most of the items being useful for UG/PG/Research students for laboratory studies in their academic/research programmes, utilization highly satisfactory;
- (iii) Adequate provision already made for in-house maintenance & consumables kept; Of help to ensure regular operation, as many items crossed their warranty period;
- (iv) Library facilities up-graded by adding good number of text/reference books; But, journals and software packages not added; Low level of usage observed;
- (v) R&D activities rather low, resulting in negligible sponsored projects and consultancy; Urgent attention to be paid to improve revenue generation;

**14.09 National Institute of Technology, Jamshedpur**

- (i) All the equipment received & commissioned timely; Stock registers kept & instructors trained to operate them; No log books available, but only manuals;
- (ii) Most of the items required by UG/PG/Research students for laboratory studies in their academic/research programmes; Hence, being utilized by them regularly;
- (iii) Provision made for in-house maintenance; Helpful to ensure uninterrupted operation as most items crossed their warranty period; Hence, students generally satisfied;
- (iv) Library facilities up-graded by adding good number of text/reference books and software packages; Working hours acceptable; Yet, low utilization observed;

- (v) R&D culture limited, resulting in low level of sponsored projects and consultancy; Urgent attention to be paid for revenue generation using these;

#### ***14.10 National Institute of Technology, Kurukshetra***

- (i) Most of the equipment installed & commissioned in time; Stock registers maintained & instructors trained to use them; Operating manuals made available; Widely used;
- (ii) Items obtained mostly for UG/PG/Research students in the laboratory studies as part of academic /research programmes; High level of utilization by students/faculty;
- (iii) Provision made for equipment maintenance in-house; Also spares/consumables available in many cases;; Helpful to ensure the general satisfaction of students;
- (iv) Library facilities up-graded by adding good number of text/reference books, e-journals ; But, no software; Working hours acceptable; Yet, utilization low;
- (v) Equipment used well for networking activities; But, as yet, limited use for R&D, sponsored projects and consultancy services; To be stepped up;.

#### ***14.11 National Institute of Technology, Rourkela***

- (i) All equipment received & commissioned timely; Stock registers kept & instructors trained to operate the equipment; No log books, but operating manuals available;
- (ii) Most of the items required by UG/PG/Research students for laboratory studies in their academic/research programmes; High level of utilization by students/faculty;
- (iii) Provision not made for in-house maintenance of equipment; Not a good practice as many items now crossing warranty period; Urgent corrective steps required;
- (iv) Library facilities up-graded by adding good number of text(200)/reference(1099), books, CDs(38) & software packages; Yet, low utilization by students;
- (v) R&D culture limited, resulting in low level of sponsored projects and consultancy; Urgent attention to be paid for revenue generation using these;

#### ***14.12 National Institute of Technology, Silchar***

- (i) Most of the equipment installed & commissioned in time; Stock registers & Log books kept; Instructors trained to use equipment; Operating manuals given to users;

- (ii) Items obtained mostly for UG/PG/Research students in the laboratory studies as part of academic /research programmes; High level of utilization by students/faculty;
- (iii) Provision made for equipment maintenance in-house; Also spares/consumables available in many cases;; Helpful to ensure the general satisfaction of students;
- (iv) Library up-graded by Library Automation Software with all books & resources being embedded with RFID tags/sensors; But yet, utilization at low level;
- (v) Equipment use for R&D, networking, sponsored projects and consultancy services limited, as yet; Strategy to be evolved to step this up;

#### ***14.13 National Institute of Technology, Srinagar***

- (i) All the equipment received & commissioned timely; Stock registers kept; But, only few instructors trained to operate the equipment; Reasonable level of utilization;
- (ii) Mostly, items required by UG/PG students & Faculty for laboratory studies covered; Data provided being incomplete, no further comment on utilization;
- (iii) Some provision made for in-house maintenance; Helpful to ensure uninterrupted operation of equipment; Many items crossed their warranty period;
- (iv) No comments being made on Library facilities in the absence of data provided by the institution in its Performance Report;
- (v) R&D culture limited, resulting in low level of sponsored projects and consultancy; Urgent attention to be paid for revenue generation using these;

#### ***14.14 National Institute of Technology, Surathkal***

- (i) All the equipment received, commissioned timely; Stock registers kept & many instructors trained; Widely used by students and faculty members alike;
- (ii) Most of the items required by UG/PG/Research students for laboratory studies in their academic/research programmes; Hence, large number of students using them;
- (iii) Provision made for in-house maintenance of equipment; Useful practice as many items now crossing warranty period; Helpful to satisfy the needs of students/faculty;
- (iv) Library facilities up-graded by adding good number of reference books, journals & software packages; Surprisingly only few test books added; Limited users;



- (v) R&D culture yet to grow; Hence, low level of sponsored projects and consultancy; Urgent attention to be paid for revenue generation using these;

#### ***14.15 National Institute of Technology, Tiruchirapalli***

- (i) Majority of equipment received, commissioned in time; Stock registers, log books & operating manuals kept; Instructors trained; Widely used by students/faculty;
- (ii) New equipment mostly required by UG/PG/Research students for laboratory studies in their academic/research programmes; High, level of utilization observed;
- (iii) Reasonable provision made for in-house maintenance of equipment; Good practice as many items now crossing warranty period; Helpful to satisfy the users' needs;
- (iv) Library facilities up-graded by adding good number of reference books, journals & software packages; Surprisingly only few text books added; Limited users;
- (v) R&D culture yet to grow; Hence, low level of sponsored projects and consultancy; Urgent attention to be paid for revenue generation using these;

#### ***14.16 National Institute of Technology, Warangal***

- (i) All the equipment received, commissioned in time; Stock registers & operating manuals kept; Many instructors trained; Widely used by both students & faculty;
- (ii) Most of the items for use by UG/PG/Research students for laboratory studies in their academic/research programmes; Large numbers using them; to get benefitted;
- (iii) Some provision made for in-house maintenance of equipment; Useful practice as many items now crossing warranty period; Helpful to meet the users' needs;
- (iv) Library facilities up-graded by adding good number of text books; But, no reference books/journals; Only limited software; Limited number of users;
- (v) R&D culture yet low; Hence, low level of sponsored projects and consultancy; Urgent attention to be paid for revenue generation using these;

#### ***14.17 Vallabhbhai Patel National Institute of Technology, Surat***

- (i) All the equipment items received, commissioned in time; Stock registers & operating manuals kept; Instructors trained; Widely used by students and faculty alike;

- (ii) Most of the items required by UG/PG/Research students for laboratory studies in their academic/research programmes; Hence, large number of students using them;
- (iii) Provision made for in-house maintenance of most equipment; Useful practice as many items now crossing warranty period; Helpful to satisfy users' needs;
- (iv) Library facilities – No data/information provided by the institution in its Performance Report; Hence, no comments being made;
- (v) R&D culture yet to grow; However, no data provided by the institution on the sponsored projects/consultancy activities; Hence, no comments being made;

**14.18 Visvesvaraya National Institute of Technology, Nagpur**

- (i) All the equipment received, commissioned timely; Stock registers log books & operating manuals kept; Instructors trained; Widely used by students/faculty alike;
- (ii) Most of the items required by UG/PG/Research students for laboratory studies in their academic/research programmes; Hence, large number of students using them;
- (iii) Some provision made for in-house maintenance of equipment; Good practice for rich dividends in future, as many items now crossing warranty period; Helpful to users;
- (iv) Library facilities- Data/Information not provided by the institution in its Performance Report; Hence, no comments being made;
- (v) R&D culture yet to grow; Hence, low level of sponsored projects and consultancy in many Departments; Urgent attention to be paid to this;

**Table 17: Utilization of Category C & D Equipment by CFIs**

S. No.	Institution	No. of Users (UG/PG/Research)	No. of Hours Used (January 2009)
14.01	Dr. B. R. Ambedkar National Institute of Technology, Jalandhar	188	341
14.02	Malviya National Institute of Technology, Jaipur	700	31,161
14.03	Maulana Azad National Institute of Technology, Bhopal	>350	Information not given
14.04	Motilal Nehru National Institute of Technology, Allahabad	2,200	1,600
14.05	National Institute of Foundry & Forge Technology, Ranchi	886	913
14.06	National Institute of Technology, Calicut	Students & Faculty	Information not given

14.07	National Institute of Technology, Durgapur	12,383	11,176
14.08	National Institute of Technology, Hamirpur	Not quantified	68
14.09	National Institute of Technology, Jamshedpur	180	180
14.10	National Institute of Technology, Kurukshetra	4,156	155
14.11	National Institute of Technology, Rourkela	2,088	1,354
14.12	National Institute of Technology, Silchar	717	717
14.13	National Institute of Technology, Srinagar	Information not given	Information not given
14.14	National Institute of Technology, Surathkal	16,412	66,512
14.15	National Institute of Technology, Tiruchirapalli	116,988	139,410
14.16	National Institute of Technology, Warangal	1,808	1,620
14.17	Sardar Vallabhbhai National Institute of Technology, Surat	Information not given	Information not given
14.18	Visvesvaraya National Institute of Technology, Nagpur	240	684

**C. Assessment of Discrepancies:**

The assessment of discrepancies between what the institution reported and what the CFI-level Auditor has found in respect of two institutions visited and reported by him is summarized below:

Institution	Discrepancy Noticed	Remarks
Malviya National Institute of Technology, Jaipur	None	Reporting by institution satisfactory
National Institute of Foundry & Forge Technology, Ranchi	Log-books not maintained in proper format; Besides, not prepared at all in most cases;	Not acceptable; Early steps to be taken to correct the situation;

**D. Assessment of Un-Commissioned/Under-Utilized Equipment & LRs:**

There has been no evidence of any item of equipment remaining un-commissioned and/or un-utilized at any of the 18 CFI-level *programme- institutions* included in the Report of the CFI-level Auditor, except in the following one case:

- *National Institute of Foundry & Forge Technology, Ranchi*: Installation, commissioning and utilization of HIP m/c (given in Table 6.1(B)) considerably delayed beyond April 2009; Reason given being the non-availability of a separate chamber/room for this equipment;

No report received from any *programme- institution* on the un-utilized LR's. All the LR's procured by each *institution* seem to be adequately utilized.

#### ***E. Short Overall Review:***

A short overall review of each aspect of commissioning and utilization of equipment obtained under TEQIP-I, as extracted from the reporting format is given below:

- Most of the equipment procured by the *programme institutions* extensively used;
- Log-books are generally maintained, especially for equipment of Categories C and D;
- Cross Departmental use of equipment being attempted; But, yet at a low level;
- Utilization of equipment for networking and service to community, yet to pick up;
- Institutional level over viewing/monitoring of equipment/facilities set up, yet low;

#### ***F. Some Suggestion for Enhanced Utilization:***

The support received under TEQIP-I has been generally responsible for substantially upgrading of the laboratories, libraries, computers, software and intranet/internet facilities at all the *programme institutions* of the CFI-category. The following few suggestions are now being made to enhance the utilization of these equipment, LR's and facilities for providing better academic/research growth at these CFIs to meet the increasing demands, aspirations and expectations of the faculty/staff/students. at each *programme institution*:

- Curriculum including practicals and project work to be reoriented and launch new academic programmes, if necessary, to benefit from the new facilities set up;
- Embark on continuing education and training opportunities for technical personnel in the region by making use of the new facilities established;

- Library reading room, daily working hours, technical services for issue/return of books, IT services in the Library to be improved for increased utilization by students;
- Industrial interaction to be increased considerably to facilitate academics to benefit from industry and vice versa; Of great use in revenue generation activities;
- R&D work to be given serious attention to strengthen research culture, sponsored projects, consultancy and make best use of the new equipment/LRs obtained;
- Take early steps to introduce *Best Practices* for the utilization of equipment/facilities at each *programme institution* as followed at leading institutions;

## 5.0 Some General Suggestions for Enhancing Utilization

A number of suggestions have been already given at the end of each State/CFI-level Report presented in Sub-Sections 1F-14F under Section 4.0 above. However, this Section is specially prepared to provide a few general suggestions to supplement the above suggestions. The general suggestions given herein are classified under three broad categories, viz., *academic*, *research* and *extension*. The constitution of a Committee of senior faculty members at each institution to coordinate, oversee and monitor the activities under each category would be of great benefit to the institution in enhancing the utilization of the various resources created under TEQIP-I and also planning for the future. The general suggestions under each category are now given:

1. *Academic*: Equipment/LRs and other resources are the backbone of any academic institution. Mostly, Category A and B items find good use in the academic work of UG/PG students. The utilization of these items can be substantially increased by taking the following steps at each institution. These should be easily possible at institutions having the autonomous status.
  - Curriculum and syllabi to be reoriented to provide courses having more laboratory orientation; Inter-departmental courses also to be encouraged;
  - Practical oriented project work/internship to be emphasized in the curriculum of both UG/PG students; Industry-oriented project work to be taken up at all the departments;
  - Elective courses to be introduced in new and emerging areas and also in interdisciplinary subjects at both UG/PG, to encourage experimental work by students;
  - All the students to be encouraged to use the library facilities (text/reference books, journals) on a regular basis, for preparing their Term Papers;

- Faculty to receive good training in operating all the new equipment, so that they can guide/help the students and motivate them for experimental studies.
- Continuing education programmes to be arranged in new/emerging areas, based on the facilities set up and encourage wider participation by professionals from all over;
- UG/PG students to be encouraged to use campus-wide intranet, internet, e-journals, educational CDs and other ICT products for enhancing their self-learning;

2. Research: Equipment/LRs and other resources are also required in a big way to take up research work for getting higher Degrees or other purposes . Both the faculty research and students' research can greatly benefit from these facilities. Category C and D items can find good use in research work, although Category A and B items are also useful here. The utilization of these items can be greatly improved by taking the following steps at each *programme institution*. All institutions having a research focus or the status of research centre, to benefit immensely by these facilities;

- Research topics for personal/Ph. D research to be of experimental or computational; Researchers to be encouraged to time share the use of Category C & D items;
- Costly equipment items to be preferably categorized as *Central Facilities* and always maintained in good condition; Useful at any time for researcher;
- Faculty and Students engaged in research to consult library facilities and LRs on a regular basis, necessitating extended working hours; Institutions to facilitate this;
- List of all major equipment of Category C, D & their specifications, location/contact person details to be available on web site; Helpful in cross departmental uses;
- Encouraging faculty/students to publish research findings in peer reviewed journals and/or present papers at major conferences; Patenting new ideas also to be facilitated;
- Faculty to undertake sponsored R&D projects from national/international Agencies; Institutions to encourage this activity by giving proper incentives to such faculty;
- Research facilities at the institution to be accessible to research students/faculty from other institutions and industry professionals as well during pre-fixed time slots;
- Faculty/students to avail of professional society connections to get from them new learned journals, CDs & educational material on a regular basis, for their Library;

3. Extension: Extension is a useful activity at any technical institution, as it enables the institution to take up formal/non-formal networking with other institutions/industries and also service to the community. Equipment, LRs and other resources would also be of great use in taking up extension activities at each *programme institution*. Here, equipment of all the Categories (A-D) would be helpful. Some useful steps for this purpose are listed below. As extension activities would also include, professional/industrial interaction and consultancy work and providing standardized testing service using sophisticated test instruments, both helpful for revenue generation at the institution, due attention has to be paid to undertake them at the earliest. These would be of great use in enhancing the utilization of equipment and LRs at the *programme institutions*:

- Training programmes to be conducted for technical professionals from industries/ other sectors on special equipment/facilities set up; A precursor for industry contacts;
- Each institution to bring out a good brochure outlining its major equipment/facilities and their specifications, along with their faculty qualifications/expertise;
- The Facilities & Expertise Brochure to be in print and/or in electronic form (for web site) & widely circulated at institutions; Highly useful for industrial interaction;
- Such interaction helpful in industrial consultancy activities and revenue generation to be taken up; Institutions to encourage concerned faculty by giving them incentives;
- The Facilities & Expertise Brochure also helpful in networking with other institutions, both formal and non-formal, for mutual benefit;
- Library membership to be extended to faculty/students from other institutions and R&D/industry personnel; Useful for revenue generation & industrial interactions;
- Interaction with alumni to be stepped up, for being able to forge better ties with the world of work and enabling the *programme institutions* increased use of facilities;
- Need analysis to precede future procurement of equipment/facilities/LRs; Relevant items useful for many users at *programme institutions*, only to be acquired;

## 6.0 Concluding Remarks

From the study conducted on *the utilization of institutional resources created under TEQIP-I project* in the 127 *programme institutions*, both at the State- and the CFI-levels and presented in this Report, the following conclusions are now drawn:

- 1) *Most of the institutions have done the installation and commissioning of equipment/facilities acquired by them in a short time. They have also been utilizing these items for academic/research/extension activities. While the level of utilization of Category A and B items is generally satisfactory, the present utilization level of Category C and D is rather low.*
- 2) *Most of the institutions have trained at least some of their Faculty/staff for operating the sophisticated equipment obtained, particularly of Category C & D types. Operating manuals have been prepared for many items equipment to encourage their smooth functioning by students and other users at all times. But, record keeping like maintaining log books is not strictly followed at many institutions.*
- 3) *Most of the institutions have made limited provision to meet the costs of maintenance of equipment/facilities acquired. They have stocked only a limited quantity of spares and consumables. These institutions may get into maintenance problems soon, as many items of equipment/facilities have surpassed the warranty period. In a few cases, AMC has been entered into with the equipment suppliers to ensure their uninterrupted functioning. But, this is not done uniformly at all the institutions.*
- 4) *In most cases, computation facilities, campus-wide LAN, internet access and licensed software packages for specialized use have been procured/ installed. They are being utilized well over long working hours. But, the same care and attention has not been shown in the identification and procurement of other expensive items of equipment. As a result, they are not being put to regular use. This is not a good practice.*
- 5) *Library facilities covering text/reference books, journals, CDs and other educational resources have been added and many facilities in the Library computerized/automated. But, the Library utilization in most cases, is at a low level and the students/faculty are not being attracted to the Library in large numbers.; This needs to be reviewed urgently and Library ambience, services and working hours improved further to attract more number of students and faculty to use this facility. .*
- 6) *In a few cases, equipment/facilities are not working or found to be grossly under-utilized, as pointed out at various places in the State/CFI-level Reports (e.g., in the States of Jharkhand, Kerala, Maharashtra and Uttarakhand and in the CFI at Ranchi). This is not acceptable. Here, ways and means need to be found to bring all of them into regular operation without further loss of time.*



*Some suggestions have been given in the Report to handle the above issues. The administrators and planners at NPIU/SPFUs and the learned faculty members at the programme institutions concerned may give due consideration to these suggestions.*

## **ACKNOWLEDGEMENTS**

It has been a great pleasure and honour for the Author to get this opportunity to make a study of the Reports prepared by the State/CFI-level Auditors appointed by NPIU and prepare a *National Report on the Utilization of Institutional Resources Created Under TEQIP-I in the Programme Institutions*, as assigned by NPIU. The author wishes to compliment the State/CFI-level Auditors for their excellent work, which has been of great assistance in this assignment. The author also acknowledges the useful comments/suggestions received from the NPIU and the *World Bank* on the earlier draft Report (January 2010) prepared, which have been of great value in finalizing this revised version of the National Report. Further, the direct/indirect support received from NPIU/SPFUs, which has enabled him to complete the Report in the allotted time is gratefully acknowledged.

(Prof. B. S. Sonde)

Bangalore, April 12<sup>th</sup> 2010

**APPENDIX A**

**List of Auditors and Corresponding States for Report/Institutions for visit**

<b>S. No.</b>	<b>Mentor/Auditor</b>	<b>Name of State for which report is to be prepared</b>	<b>Name of institution to be visited</b>
1	Dr MU Deshpande Plot No. 101, Gandhi Nagar, Nagpur-440010, Ph 0712 2242236, M 09657724034, mudeshpande@gmail.com	Andhra Pradesh (12) *	JNTU College of Engineering, Kukatpally, Hyderabad
		Jharkhand (4)	Bihar Institute of Technology, Sindri
2	Dr NA Jose NLRA No. 123, Ulloor, Trivandrum, Kerala- 695 011 Ph 0471-2444921, M 9447586898, jose_n_a@yahoo.com	Karnataka (14)	University of Vishweshwaraiah College of Engineering, Bangalore
		Himachal Pradesh (3)	Government Polytechnic College, Hamirpur
3	Dr Bh Nagabhushana Rao 3, Elegant Apartments, 11, Balakrishna Street, Valmiki Nagar, Thiruvannamiyur Chennai, Tamilnadu- 600 041 Ph 044-24415270/24453629, M 9940134138, naaags@yahoo.co.in	Maharashtra (17)	Vishwakarma Institute of Technology, Pune
			Yeshwantrao Chavan College of Engineering, Nagpur
4	Prof C Radha Krishna Former Director, UGC Academic Staff College, Jawaharlal Nehru Technological University, Hyderabad 101, Avanthi Apartments, Street No. 8, Habsiguda, V.V. Nagar Hyderabad-500 007, A.P. Ph.: ® (040) 27170888, M 9848049499, radhakrishna.chebiyam@gmail.com	Tamil Nadu (11)	Government College of Engg, Tirunelveli
		Uttarakhand (4)	Government Polytechnic, Dehradun
5	Prof JSR Subrahmanyam 585, Gandhi Nagar, Hyderabad-500 080, M 9848020243 jsrsubrahmanyam@yahoo.com, hyd1_jsrs@sancharnet.in	Uttar Pradesh (10)	Uttar Pradesh Textile Technology Institute, Kanpur
		Kerala (5)	College of Engineering, Trivandrum
6	Prof G Jayasankar TC-1/821 Opp Medical College High School, Medical College PO, Thiruvananthapuram, Kerala- 695 011, Ph 0471-2444347, M 9895168216, gjayasankar@gmail.com	West Bengal (11)	Kalyani Government Engineering College, Kalyani
		Haryana (4)	Guru Jambheshwar University, Hisar
7	Dr SR Chandak Chandralok Bldg. 3, Model Colony Gokhale Nagar Road, Pune- 411 016 Ph 020 25650296, M 9850154280, chandak2008@yahoo.com	Centrally Funded Institution (18)	Malaviya National Institute of Technology, Jaipur
			National Institute of Foundry & Forge Technology, Ranchi
8	Dr KA Bhaskaran, Ret Prof (IIT Chennai) F1, Padman Apartments, No. 69/N46, Second Main Road, Gandhi Nagar, Adyar, Chennai, Tamilnadu- 600 020. Ph 0091-44-24451155, M 9840216604, bhaskaran_ka@hotmail.com	Gujarat (6)	Govt Polytechnic, Ahmadabad
		Madhya Pradesh (7)	Rewa Engineering College, Rewa
<b>Final Report Writing</b>			
9	Prof BS Sonde 274, Sri Ananth Nagar, 18th Cross, Electronic City, Hosur Road Bangalore - 5601001, Ph 27831114, M 9845383029 , bssonde@vsnl.net	Consolidation & analysis of 13 State level reports and CFIs report(of 18 CFIs), and preparation of National Report	

**Summary of the clarifications provided by the institutions on comments given by auditor in National Report**

**Haryana  
Kurukshetra University**

<b>S.No</b>	<b>Comments given by the Auditor</b>	<b>Clarification given by the College/University</b>
1.	<p>(i) Format filled in by the institution incomplete and as such reflected also in the Report of the State level Auditor</p> <p>(i) Justification provided for Category C and D items also misplaced and inconsistent leading to no conclusions being drawn</p> <p>(ii) Similar case also with the library and LRs</p> <p>Hence, the institution to be asked to provide the required information strictly in accordance with the NPIU format for any meaningful understanding/ appreciation of its achievements under TEQIP-I</p>	Revised format provided by the Kurukshetra University

**YMCA Institute of Engineering, Faridabad**

<b>S.No</b>	<b>Comments given by the Auditor</b>	<b>Clarification given by the College/University</b>
1.	In many case, data/information provided incomplete, making it difficult to understand on the installation, commissioning and	Installation and commissioning is related to machines procured under TEQIP. However for the laboratory equipment, it is related to successful demonstration, testing and training for their usage.

	utilization of equipment/facilities	Dates have been specified in the submitted document incorporating above successful completion of tasks
2.	However, some notable software obtained include: Pro Engineer, VLSI Design Tool Kits and Open Inventor Software, used by limited number of students/faculty	The Specific software (s) are not the general purpose utility, but are meant for skill upgradation of specific engineering disciplines. Hence, the usage hours reflects the usage by the students of particular discipline as a part of their curriculum. However, the short term training programmes have been conducted for skill upgradation to get the people employability as there is huge demand in market for skilled persons in these areas
3.	Expensive (Category C & D) equipment obtained include: TIG/MIG Welding m/c, CNC Turning m/c, surface grinder, Precision lathe, etc., being widely being used	The institute has a specialized workshop as a part of Curriculum (12 hours minimum per week) excluding laboratory hours and such facilities are to be used by each student of each discipline during workshop session. That is the reason, for their wide utility
4.	On the other hand, other expensive items like Storage CRO found to be used rather sparingly by UG/PG students; However, desktop PCs well used for project work	The Digital Storage Oscilloscopes (DSOs) are to be used by students of ECE/EIC/Electrical Engineering disciplines for their general purpose measurement of signals in Laboratory and Workshop sessions. At the same time, the Desktops are the common supporting facility in each Laboratory and workshops of this University
5.	Notebook PCs obtained in large numbers and given to faculty members; User profile and hours of usage data not available from the institution	The notebooks have been issued to the Faculty members for encouraging usage of PPTs, Online resources, Lecture note series, development of Teaching materials for effective class room teaching and the same are being widely used in the classes. Actual usage need not to be calculated in hours/days but outcome in terms of utilization for the effective teaching (Improvement in Teaching Learning Methodology)
6.	Text/Reference books added to the library in wide use; Library timings also extended by some time to enhance usage; Overall performance acceptable	Books in the library including its reference Section and the e-Journals subscribed even after end of TEQIP Project are being widely used in the departments through Library

## Himachal Pradesh

### Government Polytechnic, Sundarnagar

S.No	Comments given by the Auditor	Clarification given by the College/University
1.	Almost all the equipment/software received under TEQIP-I found useful for the class-room/laboratory instruction of students; Reasonably satisfactory utilization	Satisfactory
2.	Most of the items installed in time, commissioned without much delay and put to use for the benefit of students in large numbers	Satisfactory
3.	However, one major item procured in 2007, viz., Router, found non-functional at present; Steps to be taken urgently to get it working and network in order	CISCO Router has been installed, configured and made functional by Avaya Global Connect Limited on 9 <sup>th</sup> September, 2009
4.	Library added with ~15,000 new books; but utilization yet low; Serious steps to be taken to improve students' facilities and extend working hours	<p>(a) Library Autonomous Machine has been installed in the Library and is functioning properly. The machine is helping the stake-holders (Faculty, staff &amp; students) for proper utilization of various books.</p> <p>(b) One photocopier machine has been installed in the Library for facilitating the students.</p> <p>(c) Library Timings have been extended from 9.30 AM to 5.00 PM and the Library will remain opened during the lunch break also</p>
5.	Principal and senior faculty to work out methodology to enhance revenue generation using TEQIP-I facilities	(a) In order to enhance the IRG in the Institution, under continuing Education Cell, training programmes for working personnel of HPWWD.

	and also step up extension activities	<p>HIMUDA and I &amp; PH are being conducted on regular basis</p> <p>(b) IRG is being also generated by conducting coaching classes for Polytechnic Admission Test (PAT) for the matriculates</p> <p>(c) The institution has already generated an amount of Rs. 31 lakhs approximately by conducting training programmes, extending testing facilities, hiring of infrastructure facilities etc</p>
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## Jharkhand

### Birla Institute of Technology, Sindri

S.No	Comments given by the Auditor	Clarification given by the College/University
1.	Installation, commissioning and utilization of Category A and B items reasonably satisfactory; UG & PG students making use of these items for their studies	Satisfactory
2.	Data/information on installation and commissioning of Category C and D items not provided, leading to inability in making comments on this	Data provided as Annex-2
3.	Category C and D items actually installed include HSD fired Steam boiler, and Atomic Absorption Spectro Photometer, yet used in a limited way	HSD fired Steam boiler & Atomic absorption spectro photometer are now being used to a larger extent. Students have started taking advantage of equipments for their project work. Faculty members are also using these equipments for their research work
4.	Two other expensive items, viz., Electrochemical Machining set and CNC m/c already installed not functioning well; to be brought to working order soon	Electrochemical Machining Set and CNC m/c are now functioning well and have been brought in to working order

5.	Library facilities including books, e-resources, journals added in large number, better reading room provided and working hours extended; User numbers increased	
6.	Good encouragement given to R&D and consultancy, leading to a good culture of sponsored projects and revenue generation at the institution	Every possible encouragement is being provided to take up the R & D activities & consultancy assignments. This has led to good culture for research work and to some extent revenue generation
7.	Emphasis to be laid on need analysis while planning future requirements under TEQIP to derive increased benefits for the stake holders	Need analysis has already been carried out for future requirements under TEQIP in order to derive increased benefits for the stake holders. We have also carried out TNA & SWOT analysis with the help of expert in order to get maximum benefit from the TEQIP

## Karnataka

### Siddaganga Institute of Technology, Tumkur

S.No	Comments given by the Auditor	Clarification given by the College/University
1.	Installation, commissioning and utilization of common laboratory equipment/facilities not done properly and efficiently, as expected from a good institution	We would like to bring to your notice that the overall utilization is satisfactory. However, in respect of the equipments cited in your letter the utilization was not satisfactory till January, 2009. We noticed this problem and took steps for better utilization. A copy of the consolidated statement showing the utilization of equipments as cited in your letter is enclosed for your kind reference. There is improvement in the usage of these equipments as evident from the increased figures of utilization in hours per month
2.	Some Category B items found utilized only sparingly after delayed commissioning by about 2 years: RF/DC Planar	We have developed a new R & D lab called "Thin film laboratory" in the Department of Instrumentation and Electronics using RF/DC Planar Magnetron Sputtering Unit, DC

	Sputtering Unit, D.C Magnetron/RF Power supplies	Magnetron Power Supply, RF Power Supply
3.	Besides, some items found utilized too infrequently, like, Engine Test Set, AAS and Helium Mass Spectrograph.; senior faculty concerned to introspect and work out suitable methodology to make increased use of such items and avoid the above situations at the Institute	Helium Mass Spectrometer with Automatic Leak Detector. We had submitted a research proposal titled "Studies on fan modules of gas turbines through thin film sensors" to Aeronautical Research Development Board under DRDO for Rs. 46.95 lakhs during August 2009. We were called for presentation on 5 <sup>th</sup> March 2010 (Annexure 1 provides copy of the proposal and call letter for presentation). We have received positive response from the funding agency and the official confirmation is awaited. The expert from HAL present during this presentation has invited Dr. R.J. Stephen, Principal Investigatory of Thin Film Laboratory for further discussion for using thin film technology in the aircraft parts. In addition, 3 scholars (two inhouse and one from non-program institute) are working for PhD program using the facilities created in the thin film laboratory. The Engine Test Rigs procured to Mechanical Engineering Department have been included for regular laboratory experiments for UG program (VI sem. Energy lab). A copy of the timetable and laboratory manual is enclosed for your kind reference (please see Annexure 2). Using Atomic Absorption Spectrophotometer two peer reviewed journals papers (Journal of Molecular Catalysts published by Elsever and Journal of Transition Metallic Chemistry



		published by Springer) have been published jointly with faculty from Bangalore University
4.	Other facilities like Library, campus wide LAN, computers in various laboratories found well used by students and faculty alike	Satisfactory
5.	R&D culture yet to take deep roots at this institution; Only then possibility of innovation and resource generation expected to come up	In addition to the above, we have obtained R & D funds of worth Rs. 129.40 lakhs by using the equipments procured under TEQIP. Annexure 4 provides the details of the equipments and the amount of funds obtained. Research Project presentation worth Rs. 106.73 lakhs are made and the final sanction is awaited

## Kerala

### College of Engineering, Thiruvananthapuram

S.No	Comments given by the Auditor	Clarification given by the College/University
1.	Provisioning and utilization of resources in the laboratories/workshops of core engineering departments of a high order, barring a few exceptions	Utilization of resources in all labs has achieved 100% . Log books are maintained in order to review the utilization. All students in B. Tech & M. Tech are provided with all resources. We have taken steps to utilize the resources to the maximum possible extent in the few exceptional cases
2.	Major items of Category C/D include HT laboratory and ATE facility at EEE Dept CAM/CIM facility in ME Dept.; but, so far used only sparingly	M.Tech students are doing practical classes in the CIM lab as a part of their syllabus. B.Tech Mechanical/Industrial students are doing practical as a part of their machine shop practical. Usage register is kept in the lab for entering the details
3.	Some items received in time, yet to be fully commissioned, like Computerized Diesel/Petrol Engine Test Rigs, CNC Milling m/c and 3D Visualization system	Status of Computerized Diesel/Petrol Engine Test Rigs: After installation of computerized diesel and petrol engine test rigs, the supplier M/s. Apex innovation, Sangli, came here when a complaint was reported, which was during the warranty period (warranty was only for one year from 15.09.2007 to 14.09.2008). The engine is being given for practical classes for PG (Thermal and propulsion). Demonstration of the working of the engine is being given to UG students  Status of CNC Milling Machine: CNC Milling machine was commissioned and working smoothly. This facility is being utilized for conducting practical classes for B.Tech & M.Tech students and CNC machine tool programming programmes etc. usage

		<p>register is kept in the lab for entering the details</p> <p>3D Visualization system has been commissioned on 10.04.07 and is being used by 22 students and staff per month</p>
4.	<p>Such delays/under-utilization not conducive to high quality and standard of academic/research work; Steps to be taken to remedy the situation early</p>	<p>Steps have already been taken to remedy the under utilization of resources. Maintenance of log books has been made compulsory for the review of utilization of resources</p>
5.	<p>Library books, e-resources and journals added in large numbers; But, utilization limited; Space inadequacy, reading room comforts and working hours yet serious</p>	<p>a) Space inadequacy – MBA Department which is functioning in the Library Block will be shifted to their own building in near future and then this space can be utilized for Central Technical Library</p> <p>b) Reading room comforts and working hours – since October 1<sup>st</sup> 2009 working hours of the library has been enhanced to eleven hrs, i.e. from 9am to 8pm. As the working hours was enhanced, utilization of Library books has also increased</p> <p>c) Drinking water facility is provided inside the Reference hall and the Air conditioning of the reference section is under consideration</p>
6.	<p>Computing facilities, intranet and internet well provided; Large numbers already using them; But, maintenance of log books yet not satisfactory</p>	<p>Single log books are now kept for all software and internet access. Steps have been taken to keep separate log book or pages for individual software usage. The software procured are being used for B.Tech &amp; M.Tech project work as well as regular class work</p>
7.	<p>Research culture already present; But, to be stepped up considerable to take up more sponsored projects and revenue generation</p>	<p>Centre for Engineering Research and Development (CERD) has been established by the Government. This functions in the College. This centre will found the faculty members of all Government Engineering Colleges to start</p>

		research and also to equip them to bring more sponsored research projects to the institute. Thus the establishment of CERD will definitely enhance the research culture
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## Madhya Pradesh

Shri GS Institute of Technology & Science, Indore

S.No	Comments given by the Auditor	Clarification given by the College/University
1.	Almost 100% utilization of grants by the institution to strengthen laboratories and facilities; Procurement including mostly Category A items for UG/PG students	"NOTED"
2.	Other items include Category B(=5), C(=9 and D(=1) items; While Category B items used by UG/PG/Research students, Category C,D items not used by any one	<p><b><u>Category C-9</u></b>  <b>Equipment--</b> Projects in Single mode optical fibers, Optical Spectrum Analyzer (AQ6315A), Standard Triaxial Testing Machine, Biomodelling RP System, Atomic Absorption Spectrophometer, FTIR, Trace Element Analyser, Rheometer  <b>Action taken:</b>                      These equipments were purchased for Applied Physics, Civil Engg., Biomedical Engg., &amp; Applied Chemistry Department and used by UG &amp; PG Students. Instruments as Optical Spectrum Analyzer, FTIR, Trace Element Analyzer used for research works by the Faculty Members &amp; Research Scholars. Equipment like Standard Triaxial Testing Machine, purchased by Ce-AMD for Testing/Consultancy along with teaching (Laboratory Practicals) by UG students.  <b>Equipment -</b> Visual Display System for GJA  <b>Action taken:</b>                      This equipment is used for Presentation in Seminar, Conference, Workshop etc. as Central facility. Hence the student community is also benefited by this equipment. Institute always encourage students to utilize this equipment as and when it required.  <b><u>Category D-1</u></b>  <b>Equipment--</b> 3D Digital Scanner  <b>Action taken:</b>                      This equipment as a scanner has been utilized by the Institute in multifold activities for Academic &amp; Administration purpose, right from the day it was installed</p>
3.	Surprisingly, one each of Category C and D items obtained by the Dept of BME, not yet commissioned at all, although received quite some time back	<p><b><u>Category C-1 &amp; D-1</u></b>  <b>Equipment-</b> Biomodelling RP System, Standard Triaxial Testing Machine  <b>Action taken:</b>                      These equipments were purchased for the benefit of IPE/MED/Biomedicalo Deptt. Now these equipments have been installed in the Advanced Technology Centre (CAD/CAM Laboratory). These instruments are fully operational for the benefit of UG/PG &amp; Research Scholars.</p>

4.	The LRs (Software) procured found useful to UG / PG students; Hence, Library being widely utilized by them	'NOTED'
5.	However, revenue generation using TEQIP-I items found virtually non-existent; Senior faculty of the institution to look into this and correct the situation soon	Instruments purchased under TEQIP-I were mainly used for Academic purpose. However Revenue generation was done whenever such request came to the institute. Special directive have been issued to all the Departments to utilize these equipments for the generation of the revenue by testing and consultancy for the benefit of the industries in and around Indore

## Maharashtra

### Dr. Babasaheb Ambedkar Technological University, Lonere

S.No	Comments given by the Auditor	Clarification given by the College/University
1.	Log books maintained well for equipment and software items	Satisfactory
2.	Hours used in Jan '09 as per log book Reasonable	Satisfactory
3.	Modeling, Analysis, Drafting and optimization software used sparingly, even though of benefit to many departments. Some equipment under categories A and B also underutilized ( e.g., Nos. 24 - 29 in Table 6.1A ) Preparative LC also underutilized use of rest of the equipment and other software highly satisfactory	Revised format provided by the Dr. Babasaheb Ambedkar Technological University Lonere
4.	<b>Cross-departmental usage</b> None reported	
5.	Use of expensive equipment yet low University to initiate new strategy for this, like increasing sponsored R&D and consultancy	

### University Institute of Chemical Technology, Mumbai

S.No	Comments given by the Auditor	Clarification given by the College/University
1.	Log books maintained well for equipment and software items	Satisfactory
2.	Hours used in Jan '09 as per log book reasonable	Satisfactory
3.	Majority of the equipment and software used for research work; A few also used for sponsored projects and consultancy. But, few only used for UG/PG teaching and practical classes. Some items of equipment and software found not used at all even once since Commissioning, (e.g., Nos. 116 – 121 in Table 6.1A)	<p>The auditors have found the majority of equipments and softwares are used in research work and few are used for the consultation and sponsored projects. The auditors, however, also passed remarks that very few equipments are used for UG and PG teaching and practical classes. I would like to bring to your attention that the Institute of Chemical Technology has 12 PG Courses of which 2 are interdisciplinary, i.e. more than two Departments are involved in conducting these programmes</p> <p style="text-align: center;">On an average there are 120 + PG students are graduating every year from the Institute of Chemical Technology. All our PG programmes have one year of</p>

		<p>theory courses and one year of research work. All these PG students have a direct access for all the equipments meant for research. These gets reflected in number of research papers which are published by Masters students along with their guide and along with other Ph.D. students in the same or other departments. Therefore, all the research equipments are used by more than 250 + students. Many of the research facilities are also made available to the projects which are conducted in the final year of the UG courses. However, the UG students are given assistance by the PG students in the same or the departments for operation of many of these equipments. As a result, usages are always recorded by the PG/Ph.D. students only</p>
4.	<p><b>Cross-departmental usage-</b> Little scope observed for interdepartmental activity</p>	<p>All the facilities which are generated under the TEQIP are also made available to uses from other departments as we have avoided duplication of many equipments. Since there are atleast 80PG students working in the interdisciplinary areas, there is interdepartmental sharing of many facilities. As the Institute conducts 2 M.Tech. programmes i.e. Bioprocess Technology and Perfumery Flavour Technology, where the departments of Chemical Engineering, Pharmaceutical Technology and Foods Engineering Technology are actively involved. Similarly, a Centre of Advanced Studies in Physicochemical properties related to Fibers, Dyes, Polymers is jointly supervised by the Department of Fibres &amp; Textile Processing Technology, Dyes &amp; Intermediates Technology, Polymer Engineering and Surface Coating Technology and the Department of Physics. All these departments have to share their facilities for conducting UG/PG programmes as well as research in interdisciplinary areas</p>
5.	<p>The Institute explore ways and means to use all items of equipment/software for UG/PG programmes in a better way, to be in step with the objectives of TEQIP-I</p>	<p>All Chemical Technology Courses in Institute of Chemical Technology are supported by the Department of Physics, Chemistry, Applied Mathematics, General Engineering and Chemical Engineering where the facilities generated under TEQIP Phase-I are used to conduct UG/PG courses and UG practical</p> <p>In the revised course structures at ICT, Electives are being offered in</p>



		interdisciplinary manner. Similarly, the intake of Masters and Ph.D. levels has been made complete interdisciplinary
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**Tamil Nadu**  
**Government College of Engineering, Tirunelveli**

S.No	Comments given by the Auditor	Clarification given by the College/University
1.	Equipment utilization Log-Books and Condition Monitoring Status Reports not systematically maintained by most of the Laboratories	Heads of various departments are committed to maintain the Equipment utilization Log books and Condition Monitoring Status Reports systematically for each laboratory and workshop. Every month it will be verified and countersigned by HOD and Principal in future
2.	Discrepancy noticed at several places in the reported records, particularly in the ECE Department in the reporting of items like, Date of Purchase, Date of Commissioning	Discrepancy noted in the auditors report has been rectified
3.	Some items of equipment wrongly classified (e.g., Category 'B' reported as 'A', 'C' reported as 'A', and 'D' reported as 'C')	Discrepancy noted by the auditor against wrong classification was corrected and the same was handed over to the auditor on the date of auditor's visit itself. The corrected classified report is also enclosed herewith
4.	Not many faculty members yet in a position to operate the new facilities created in their Departments	Steps are taken to expand the Professional Development of Faculty members. All the faculty members in the respective departments are able to operate the new installed facilities
5.	Lack of leadership due to inadequate number of senior faculty members in some Departments, a serious issue to enable better utilization of facilities	In the department of ECE after the auditor's visit the faculty members have attended 4 training programmes in the emerging fields. Out of them two programmes are of two weeks duration. The department of Civil Engineering has organized a state level technical symposium. Also six invited lectures were organized with Industrial experts. Similarly the department of Mechanical, Electrical and Computer Science & Engg. have organized both National level Technical Symposium and Conferences with involvement of Faculties of this organization, Industrial experts and delegates from other Institutions

6.	R & D culture at the Institution yet weak, leading to limited sponsored project and consultancy ; To be stepped up for increased revenue generation	In this year 12 projects were submitted under MODROBS scheme, 4 projects under RPS, 2 projects under TAPTEC and 1 project under SERC scheme. Among them 1 RPS project was called for presentation to expert committee panel at AICTE, New Delhi and awaiting for final results. Financial aid has also been granted from AICTE for the conduct of two weeks faculty development Programme. Department of ECE and Mechanical Engineering have conducted two CEP programmes each after the auditor's visit. It is also proposed to conduct many such programmes in the near future
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### West Bengal

#### Institute of Engineering & Management, Kolkata

S.No	Comments given by the Auditor	Clarification given by the College/University
1.	Data furnished by the institution (Table 6.1 A) largely incomplete, making it difficult to draw any inferences on equipment types, their utilization level and successes	Data furnished in the Table 6.1 A has been made complete with installation dates. Annexure-I shows the tables which are correct properly. The statement shows the equipment type, their utilization level and successes
2.	Records and log books on equipment/facilities as required by NPIU not maintained properly; Management to look into this lapse and corrective steps to be taken soon	Records on equipment are maintained in the stock register in each of the laboratories. The utilization is calculated based on the hours used in the specific laboratory. This is obtained from the routine which is maintained properly on a daily basis and subsequently the usage is calculated. As per the directive of the NPIU, immediate actions were taken to make the log book system more structured and organized. The log book shows details i.e. students' roll no., lab session, group no., assignment/experiment, man-hour utilization and total number of students who utilized the equipment
3.	Data provided on the status	The data for reference books and text books

	<p>of Library acquisitions and utilization also inconsistent; Moreover daily working hours also erroneously given; Special care to to be taken, while presenting data</p>	<p>were interchanged due to typographical error and it looked incorrect. It has been corrected since then. Hours used in January' 2009 is incorporated as an example. The system followed in the library is as following:</p> <ul style="list-style-type: none"> <li>➤ Books and other materials are issued to the students between 9am to 6 pm on weekdays.</li> <li>➤ The reading room however remains open for 24 hours where the students do study and access the internet.</li> </ul> <p>Table 6.1 B has been corrected. There was typographical error. Instead of writing "Yes", typist wrote "No". I overlooked it unfortunately. The necessary corrections have been incorporated</p>
4.	<p>In short, institutional performance on equipment and LRs commissioning and utilization under TEQIP-I not satisfactory</p>	<p>From the viewpoint of the users and stakeholders' audits. It has been found that there has been a substantial addition of resources during the TEQIP period. Institute will however, take greater care while presenting the data in future</p>

**Jadavpur University, Jadavpur**

<b>S.No</b>	<b>Comments given by the Auditor</b>	<b>Clarification given by the College/University</b>
1.	<p>Inadequacies and inconsistencies in data provided</p>	<p>Data provided by us have always been as per the supplied format. The complete list of equipments/LRs procured along with ID marks was provided through SPFU. Each of these items was properly commissioned before final payment has been audited by the financial auditors appointed by NPIU. Table 6.1A indicates the date commissioning of each equipment. Table 6.1B details the utilizations of equipments costing over 10 Lakh and the group of users. However, the equipment under categories C and D the number of persons who have used the equipment refers to the faculty members conducting classes and research and work</p>

		and not the number of students/scholars involved in a class or group. However, data on actual no of students in a class/group using the facility will be recorded in future in the log book
2.	Records and log books on equipment/facilities as required by NPIU not maintained properly	Records and logbooks as per the format give by NPIU are maintained. But, the utilization audit in JU appeared to us quite scanty and casual. We admit the low utilization of research equipments in some cases. However, it must be understood that a research equipments in some cases. However, it must be understood that a research equipment needs a long gestation time for proper utilization as it requires sensitization of researchers (both faculty members and scholars) towards the use of these equipments to enhance quality of research output. Photocopy of logbook of a sample equipment is enclosed with the hard copy for reference. In addition it must also be mentioned that many of these equipments require long start-up, stabilization and calibration time before actual test performance/data collection. For example, Cryogen Free High Field Magnet and Cryogen Free Physical Properties Measurement system run for 24 hrs a day, 365 days a year to maintain 4K temperature at all times.
3.	Many Category C & D items procured for R&D activities	The increase in number of ME/M Tech, PhD turned out, sponsored projects taken up, journals papers published during this period is given below:  <b>Increase in number of PG and doctoral Students:</b>  ME/M.Tech annual intake increased by 45% ME/M.Tech annual pass out increased by 58%.  Number of PhD awarded in a year increased by 82%  Number of PhD registration in a year increased by 91%.

		<p>Increase in number of sponsored research projects:</p> <p>Average number of sponsored research project sanctioned in a year has increased by 38%, though the increase in project value has increased by more than 60%.</p> <p><b>Journal papers</b> published in</p> <p>2004-05 : 346,</p> <p>2007-08: 562,</p> <p>2008-09 (upto Sept) : 658.</p> <p>These data were reported earlier in different formats.</p> <p>There has been almost 220% increase in 4 years of TEQIP-I (taking total no of publication in 2008-09)</p>
4.	One item: Super Heavy Deflectometer (No. 358) costing Rs 14.5 Million	<p>The comment on Super Heavy Deflectometer (No. 358) appears confusing. This equipment is kept in the Construction Engineering Department but for use of faculties and scholars of Civil Engineering and Construction Engineering. Prof. P.P. Biswas and Prof. S. Saraswaty have been formally trained at the manufacturer's site (Kolding, Denmark) in September, 2008 for seven days. Two technical staff members Sri Sadhan Ghosh, Sri Surajit Som and a couple of PhD scholars have been trained on operation. The equipment has also been put to use in consultancy work for 1) Agra Highway 2) Mumbai Airport 3) Nasik Military Airbase (4) Barasat-Taki Highway generating a net IRG of more than 5 Lakh Rupees. Usage pattern of this equipment in 2009 in field testing (out of campus) is enclosed with hard copy</p>

5.	Wide range of software (including licensed one's) procured and being used	The list of LRs procured with cost and date of installation was supplied earlier through different format. Item 6.2 B contains the softwares costing more than 5 Lakh. These softwares are being used by undergraduate and postgraduate students during their laboratory work and project work. Most of these are supported through the campus wide network having multiple user network licenses as indicated in Item 6.2B
6.	More emphasis laid on expensive reference books for use in the Library	JU receives a generous grant for purchase of text books for use in the libraries. The TEQIP fund has therefore been used for purchase of reference books primarily for supporting research in emerging areas. Rightly has it been pointed out "the utilization level rather low, as expected". Item 6.2 A however, misquotes the number of books purchased against "Text Books". However, the general utilization of library was never included in any format and hence not reported. JU has two Central Libraries in two campuses and departmental libraries in 17 departments/schools. The Central Libraries are accessible for nine and half hours a day, 360 days a year. This was seven and half hour per day for about 270 days a year before the commencement of TEQIP I. Maximum number of books (5) issued to each student a point of time did not increase during the TEQIP-I period but average number of books issued to a student in a year has increased by 22%
7.	The institution known for R&D contributions for a long time	The impact of TEQIP I in terms of R & D contribution for increased revenue generation was never asked for in such quantitative terms . The total increased IRG from all components were

		<p>periodically supplied during JRM reports. In case of JU since fee hike was not implemented during TEQIP-I period the increased IRG is primarily from the R &amp; D projects and consultancy jobs. Increase in industrial testing and consultancy : Average annual industrial testing and consultancy job value has been increased to Rupees 4 Crores from 2 Crores approximately</p>
8.	<p>A Video conferencing system (Category D) installed; No trained Operator available or any user</p>	<p>The video conferencing system, installed in JU, was procured looking at the user friendliness. No specially trained operator is required to run the system. Every unit of University where the consoles are installed have adequate technical assistance to operate the system. This system was procured for academic communication amongst departments of the university as well as with other network institutions. The proper need analysis was done to arrive at the number of consoles, their placement and range of connectivity</p>