

**CAN ACCREDITATION PROCESSES SERVE AS
CHANGE AGENTS IN THE ENGINEERING
ACADEMY?**

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ACCREDITATION AS DRIVING FORCE

- Provides a **direction** to the Institution and its Faculty, Students and Leadership.
- The **mandatory peer review mechanism** enables an outside-in view of the Institution
- Opportunity for **review and reflection** of the activities and performance
- Enables a **prioritization** of activities
- Periodic accreditation prevents complacency and creates an Institution **“on the move”**.

➤ Accreditation processes serve as both **change agents** as well as **catalysts** in Engineering Education, in particular, for promoting Quality in all academic systems and processes.

➤ Accreditation can be a **driving force for change** as far as Quality is concerned.

THE INDIAN EXPERIENCE

- There have been several **beneficial consequences** of the **National Board of Accreditation (NBA)** and the **National Assessment and Accreditation Council (NAAC)** accreditation initiatives, for technical and higher education institutions, respectively.
- Every technical and higher educational institution has begun to appreciate the need to incorporate **Quality** in its academic activities.

➤ The accreditation criteria provide guidelines to the institutions for achieving Quality and Excellence, and, in fact, **define the profile of an Institution of Excellence.**

➤ For example, since the criteria demand that every institution should have Vision, Mission and Goals; industry-institute interaction; R&D..., every institution strives to incorporate these into its **portfolio of policies, plans and activities.**

- A healthy competition is evolving among the institutions, which share **Best Practices**, and seek to emulate the best institutions.
- The public, funding agencies, employees, and, in fact, all the stakeholders, have started to appreciate the role of accreditation in promoting **quality assurance** in technical and higher education.

QUALITY CAN BE DRIVEN BY REGULATIONS AND ACCREDITATION

- In fact, the new NBA accreditation norms require the institutions to define a matrix of Program Educational Objectives and Program Outcomes, and demonstrate the correlation between the two in their academic programs – a **move towards the Washington Accord system.**
- The Institutions are **tailoring their systems and processes** to respond to this requirement.
- This demonstrates that Quality can be driven through regulations and accreditation criteria.

OTHER CHANGE AGENTS

- Of course, there are **other change agents**, as well , such as, for example:
 - the founding mandate;
 - national and state policies;
 - perspective plans;
 - leadership;
 - resources – human, physical and financial -- ;
 - the ecosystems in the institution for creating and sustaining a culture of scholarship, quality, excellence, innovation, etc.

**RANKINGS AND THE RESHAPING OF
HIGHER EDUCATION:
THE BATTLE FOR WORLD-CLASS EXCELLENCE**
[Ellen Hazelkorn, 2011](#)

- **“Rankings** are arguably having a more profound impact on higher education and the construction of knowledge.”
- **“HEIs are responding to league tables and rankings (LTRS), which are having an **impact or influence** — positive or perverse — on institutional behavior, decision-making and actions”.**
- **“While HE leaders are concerned about the impact of rankings, they are also increasingly **responsive and reactive** to them”**

➤ **“Rankings demonstrate the new environment of higher education , and act as a **driver of change**”.**

➤ **“The extent to which these changes are productive or useless is still controversial, but HEIs are worried about their impact on the **reputation** of their institution, individuals, and the country as a whole”**

PRESENT AGENDA

- In relation to the Agenda for discussions being proposed, societal problem-solving has wide scope, encompassing issues thrown up by **NAE's Grand Challenges, and Millennium Development Goals.**
- In order to promote inter/multi disciplinary R&D, we need **structural changes** in the academic programs and processes

- Apart from R&D, **Innovation** has been identified as the basis of both national development and global competitiveness.
- Do we have **reliable metrics and instruments** for assessing the impact of these **intangible goals**?
- **Outcomes** focus not only addresses market forces but also academic mission and goals

**EDUCATING ENGINEERS FOR SUSTAINABLE
PROGRESS: THE RELEVANCE OF ACCREDITATION
WORLD ENGINEERS CONVENTION ,
Geneva , Sept 7, 2011**

**ROUND TABLE DISCUSSION
SEPTEMBER 7, 2011**

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MAJOR FEATURES OF SUSTAINABLE DEVELOPMENT TOPICS

- **Inter-disciplinary**
- **Breadth as well as Depth**
- **Hands – on Learning**
- **Project-based Learning**
- **Human Values and Professional Ethics**
- **Group and Team Work**
- **Analysis as well as Synthesis (Design)**
- **R&D, Innovation, Entrepreneurship**

KNOWLEDGE CONTENT OF SUSTAINABLE DEVELOPMENT

- **Spans Chemical, Civil, Environmental , Mechanical Engineering, Life Sciences, Biotechnology,**
- **Energy, Environment, Ecology, Economics, Education**
- **Water – Resources, Pollution, Waste water Treatment, Conservation, Harvesting,**
- **Renewable Energy Technologies**
- **Energy Conservation**

NEXUS BETWEEN SUSTAINABLE DEVELOPMENT AND ACCREDITATION

- **In as much as Sustainable Development solutions depend on Engineering and Engineering Education, Accreditation which ensures Quality Assurance is crucial to achieving Success.**
- **Accreditation is outcomes-based , and involves both objective (quantitative) as well as subjective (qualitative or judgmental) assessment.**
- **It is interesting that *All ABET 3a-k criteria* have aspects relating to Sustainable Development.**

ABET CRITERIA – 2003/04

Criterion 3. Program Outcomes And Assessment

Engineering programs must demonstrate that their graduates have:

- **(a) an ability to apply knowledge of mathematics, science, and engineering**
- **(b) an ability to design and conduct experiments, as well as to analyze and interpret data**
- **(c) an ability to design a system, component, or process to meet desired needs**
- **(d) an ability to function on multi-disciplinary teams**
- **(e) an ability to identify, formulate, and solve engineering problems**
- **(f) an understanding of professional and ethical responsibility**

ABET CRITERIA – 2003/04

Criterion 3. Program Outcomes And Assessment

- **(g) an ability to communicate effectively**
- **(h) the broad education necessary to understand the impact of engineering solutions in a global and societal context**
- **(i) a recognition of the need for, and an ability to engage in life-long learning**
- **(j) a knowledge of contemporary issues**
- **(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.**

A RECENT INTERNATIONAL ACCREDITATION CONFERENCE IN CHENNAI

- **May 18-19 , 2011**
- **Speakers: 8 International ; 8 Indian**
- **Included: Dr. Iring Wasser**
 - **Prof. Claudio Borri**
 - **Prof Giuliano Augusti**
 - **Dr Hans Hoyer**
 - **Hasan Mandal**
 - **Prof David Holger, Former ABET President**

- **It became evident that India is facing probably the biggest challenges, given the fast and rapidly increasing number of HEIs and the tens of thousands of programs being offered. The sheer **logistical aspects of this endeavor**, including the need for a multitude of peers/experts is daunting”.**