

Conceptual Framework  
for the proposed establishment of  
**Nepal Engineering Staff College**

**Er. Kishore K. Jha**

(NEC 2928 Civil)

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# Objectives and Agenda

- I. International Context of PE System and its Linkages to CPD
- II. Status of Training Providers (Public and Private) in Nepal
- III. Status of Training Providers in South Asia
- IV. Assessment of Stakeholders' Opinion
- V. Legal/Institutional Framework of the proposed NESC

# Why PE System and its Accreditation – Systematic CEE (CPD)?

-International Engineering Alliances

# International Engineering Alliance

International Professional Engineers Agreement (IPEA)  
(supersedes Engineers Mobility Forum 1997)

## Full Members:

- **Australia** - Represented by [Engineers Australia \(1997\)](#)
- **Canada** - Represented by [Engineers Canada \(1997\)](#)
- **Chinese Taipei** - Represented by [Chinese Institute of Engineers \(2009\)](#)
- **Hong Kong China** - Represented by [The Hong Kong Institution of Engineers \(1997\)](#)
- **India** - Represented by [Institution of Engineers India \(2009\)](#)
- **Ireland** - Represented by [Engineers Ireland \(1997\)](#)
- **Japan** - Represented by [Institution of Professional Engineers Japan \(1999\)](#)
- **Korea** - Represented by [Korean Professional Engineers Association \(2000\)](#)
- **Malaysia** - Represented by [Institution of Engineers Malaysia \(1999\)](#)
- **New Zealand** - Represented by [Institution of Professional Engineers NZ \(1997\)](#)
- **Singapore** - Represented by [Institution of Engineers Singapore \(2007\)](#)
- **South Africa** - Represented by [Engineering Council of South Africa \(1997\)](#)
- **Sri Lanka** - Represented by [Institution of Engineers Sri Lanka \(2007\)](#)
- **United Kingdom** - Represented by [Engineering Council UK \(1997\)](#)
- **United States** - Represented by [National Council of Examiners for Engineering and Surveying \(1997\)](#)

## **Provisional Members:**

- **Bangladesh** - Represented by [Bangladesh Professional Engineers, Registration Board](#)
- **Pakistan** - Represented by [Pakistan Engineering Council](#)
- **Russia** - Represented by [Association for Engineering Education of Russia](#)

APEC Engineer Competence Agreement  
(APECECA)

## Members:

- Australia** - Represented by [Engineers Australia \(2000\)](#)
- Canada** - Represented by [Engineers Canada \(2000\)](#)
- Chinese Taipei** - Represented by [Chinese Institute of Engineers \(2005\)](#)
- Hong Kong China** - Represented by [The Hong Kong Institution of Engineers \(2000\)](#)
- Indonesia** - Represented by [Persatuan Insinyur Indonesia \(Institution of Engineers\) \(2001\)](#)
- Japan** - Represented by [Institution of Professional Engineers Japan \(2000\)](#)
- Korea** - Represented by [Korean Professional Engineers Association \(2000\)](#)
- Malaysia** - Represented by [Institution of Engineers Malaysia \(2000\)](#)
- New Zealand** - Represented by [Institution of Professional Engineers NZ \(2000\)](#)
- Philippines** - Represented by [Philippine Technological Council \(2003\)](#)
- Russia** - Represented by [Association for Engineering Education of Russia \(2010\)](#)
- Singapore** - Represented by [Institution of Engineers Singapore \(2005\)](#)
- Thailand** - Represented by [Council of Engineers Thailand \(2003\)](#)
- United States** - Represented by [National Council of Examiners for Engineering and Surveying \(2001\)](#)

# Two Stage Process of Membership to IPEA

Stage I: Initially, an organisation will apply to become a Provisional Member. An organisation wishing to be a Provisional Member - must be nominated by two Full Members in writing, and will be accepted only upon a positive vote by at least two-thirds of the Full Members at a General Meeting of the IPEA.

Stage II: Transfer of Provisional Member to Full Member.

Full Members are organisations responsible for registers of those professionally qualified engineers who have;

1. been assessed as eligible for independent practice within their own economy, and
2. Whose academic achievement equivalent to that of a graduate holding an engineering degree accredited by an organisation holding membership of the Washington Accord, and
3. gained a minimum of seven years practical experience since graduation; and spent at least two years in responsible charge of significant engineering work; and
- 4. maintained their continuing professional development at a satisfactory level, and**

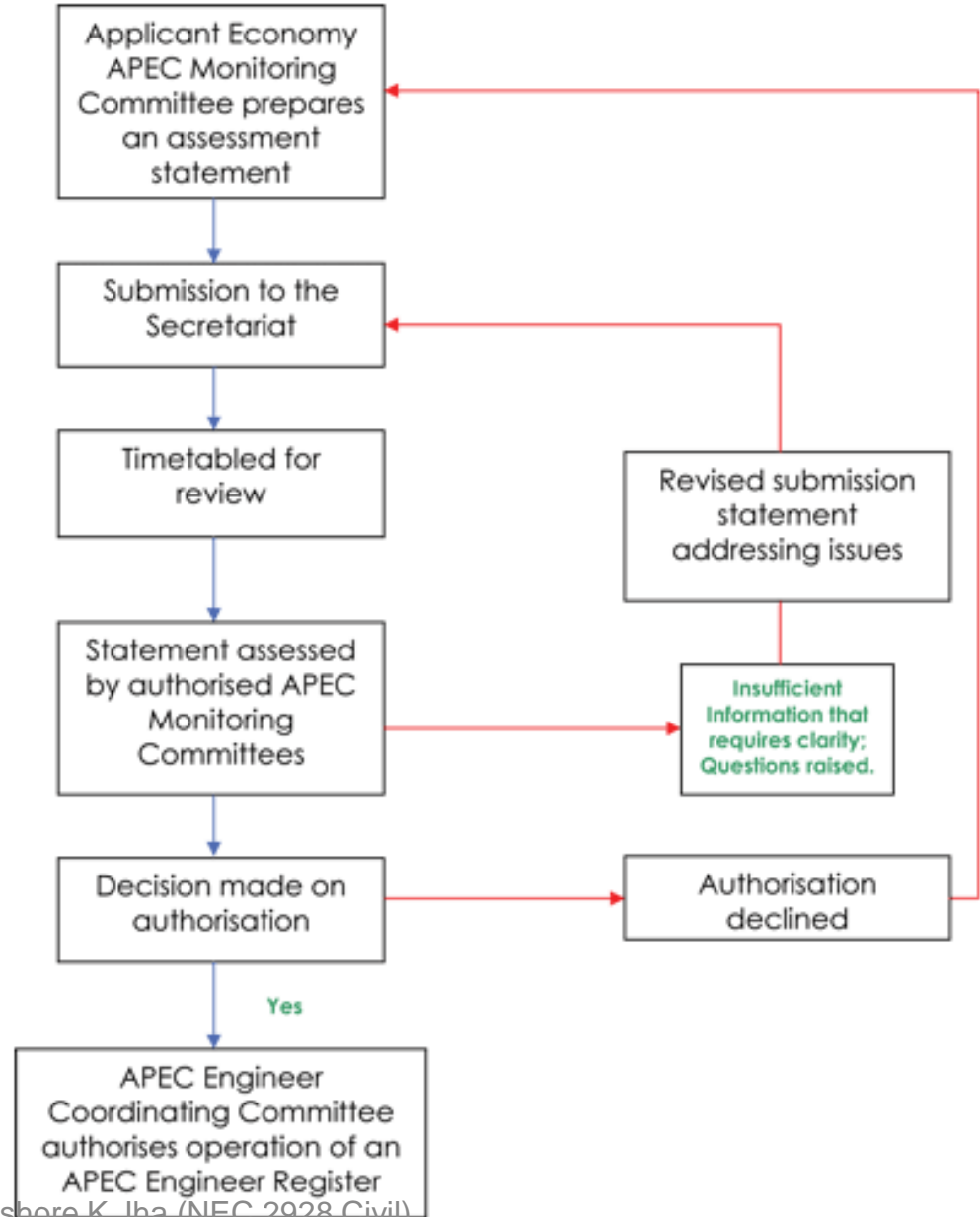
Requires Mentoring by Full Members to help draft “The Assessment Statement” ( to ensure that the criteria required by the IPEA International Register Co-Ordinating Committee are met).

# Application Procedure for APEC Engineer Registry

- Applications must conform to the principles set out in *The APEC Engineer Manual* and to such guidelines as may be approved from time to time by the APEC Engineer Coordinating Committee.
- Monitoring Committee will be required to prepare and submit to the APEC Engineer Coordinating Committee.
- Authorisation will require support from two-thirds of the authorised Monitoring Committees at the biennial meeting of the APEC Engineer Coordinating Committee.

## Benefits

- Opportunity to have their professional standing recognised within the APEC region.
- Each member of the APEC agreement has given an undertaking that the extra assessment will be minimised.



# Washington Accord

The Washington Accord, signed in 1989, is an international agreement among responsible bodies for accrediting engineering degree programs. It recognizes the substantial equivalency of programs accredited by those bodies and recommends that graduates of programs accredited by any of the signatory bodies be recognized by the other bodies as having met the academic requirements for entry to the practice of engineering.

## Signatories .

**Australia** - Represented by [Engineers Australia \(1989\)](#)

**Canada** - Represented by [Engineers Canada \(1989\)](#)

**Chinese Taipei** - Represented by [Institute of Engineering Education Taiwan \(2007\)](#)

**Hong Kong China** - Represented by [The Hong Kong Institution of Engineers \(1995\)](#)

**India** - Represented by [National Board of Accreditation \(2014\)](#)

*(Applies only to programmes accredited by NBA offered by education providers accepted by NBA as Tier 1 institutions.)*

**Ireland** - Represented by [Engineers Ireland \(1989\)](#)

**Japan** - Represented by [Japan Accreditation Board for Engineering Education \(2005\)](#)

**Korea** - Represented by [Accreditation Board for Engineering Education of Korea \(2007\)](#)

**Malaysia** - Represented by [Board of Engineers Malaysia \(2009\)](#)

**New Zealand** - Represented by [Institution of Professional Engineers NZ \(1989\)](#)

**Russia** - Represented by [Association for Engineering Education of Russia \(2012\)](#)

**Singapore** - Represented by [Institution of Engineers Singapore \(2006\)](#)

**South Africa** - Represented by [Engineering Council of South Africa \(1999\)](#)

**Sri Lanka** - Represented by [Institution of Engineers Sri Lanka \(2014\)](#)

**Turkey** - Represented by [MUDEK \(2011\)](#)

**United Kingdom** - Represented by [Engineering Council UK \(1989\)](#)

**United States** - Represented by [Accreditation Board for Engineering and Technology \(1989\)](#)

**Organisations holding provisional status** have been identified as having qualification accreditation or recognition procedures that are potentially suitable for the purposes of the Accord; those organisations are further developing those procedures with the goal of achieving signatory status in due course; qualifications accredited or recognised by organisations holding provisional status are not recognised by the signatories

**Bangladesh** - Represented by [Board of Accreditation for Engineering and Technical Education](#)

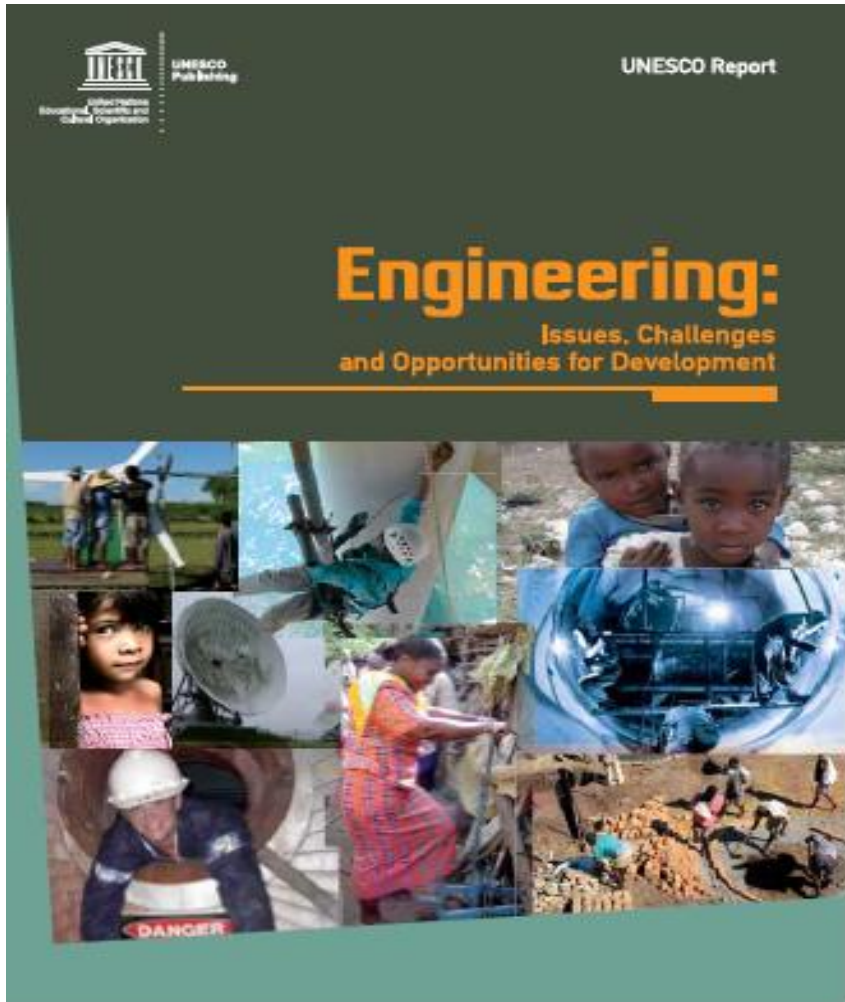
**China** - Represented by [China Association for Science and Technology](#)

**Pakistan** - Represented by [Pakistan Engineering Council](#)

**Peru** - Represented by [ICACIT](#)

**Philippines** - Represented by [Philippine Technological Council](#)

# Significance of CEE – CPD in the International Context



The critical roles of engineering in addressing the large-scale pressing challenges facing our societies worldwide are widely recognized. Such large-scale challenges include access to affordable health care; tackling the coupled issues of energy, transportation and climate change; providing more equitable access to information for our populations; clean drinking water; natural and man-made disaster mitigation, environmental protection and natural resource management, among numerous others. As such, mobilizing the engineering community to become more effective in delivering real products and services of benefit to society, especially in the developing world, is a vitally important international responsibility.

The Report sheds new light on the need to:

- develop public and policy awareness and understanding of engineering, affirming the role of engineering as the driver of innovation, social and economic development;
- develop information on engineering, highlighting the urgent need for better statistics and indicators on engineering (such as how many and what types of engineers a country has and needs – which was beyond the scope of this Report);
- transform engineering education, curricula and teaching methods to emphasize relevance and a problem-solving approach to engineering;
- more effectively innovate and apply engineering and technology to global issues and challenges such as poverty reduction, sustainable development and climate change – and urgently develop greener engineering and lower carbon technology.

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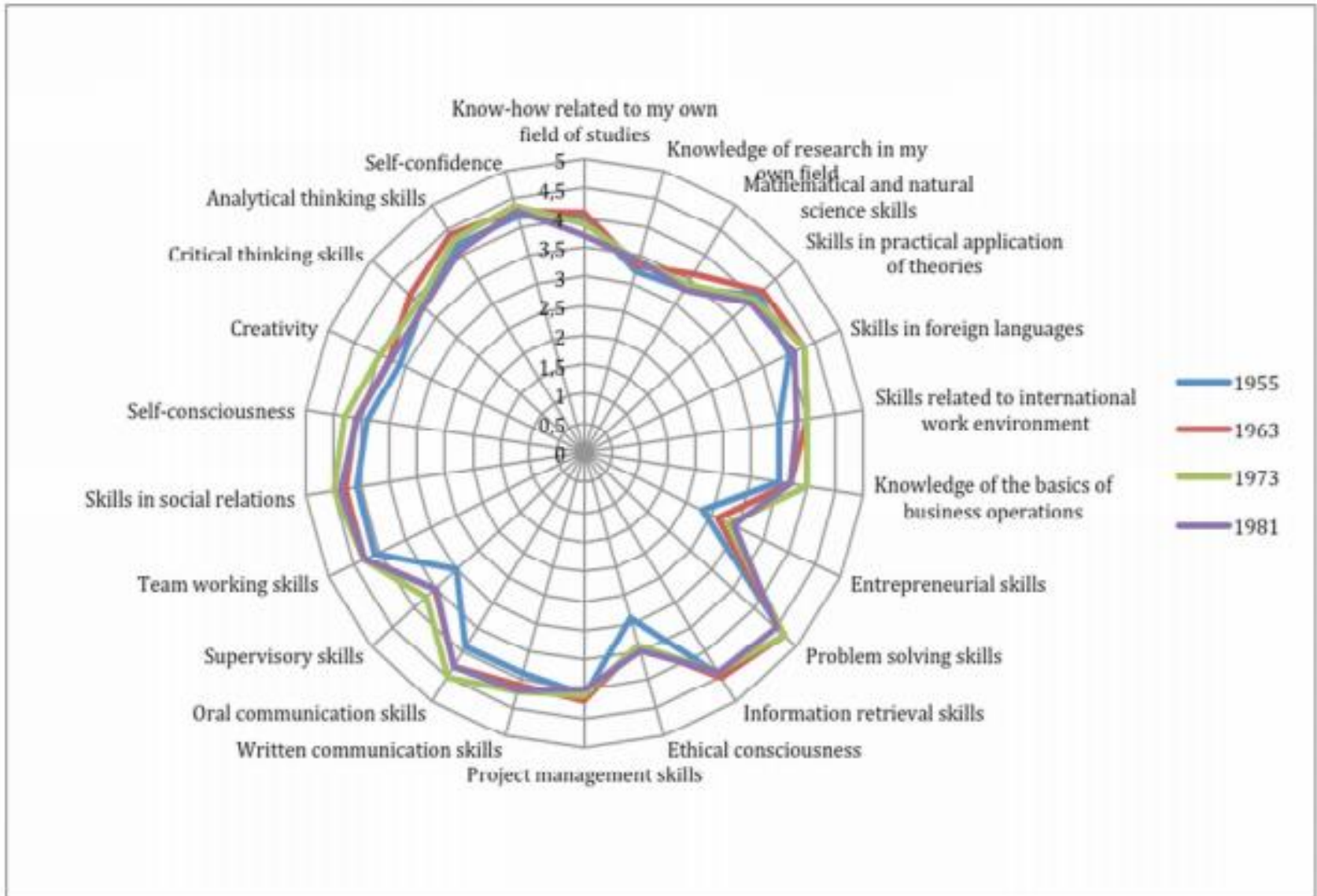
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International Association for Continuing Engineering Education (IACEE) is an international, non-profit and non-governmental organization with the objective of bringing together diverse professionals with an interest in Continuing Engineering Education (CEE). Membership includes academic and corporate providers, professional organizations/societies and individuals with an interest in CEE, which is of ever-increasing importance for society. The aim of IACEE is to support and enhance lifelong engineering education and training world-wide.

The 2014 WCCEE, held June 24-27, 2014 at Stanford University, Palo Alto, CA, USA, was a highly successful conference that brought together nearly 200 participants from 27 different countries and six continents

# Changing Needs of Professional Engineers



# Continuing Professional Development (CPD) for Engineers

- Changing nature of challenges for engineering profession- Recognition that a first degree provides just an initial education and that with huge explosion of knowledge CEE is essential for specialized professional skills.
- An accredited professional development scheme enables assured pathway for its engineers to demonstrate international standards of competence and professionalism.
- **Accredited schemes** enable individuals to build a portfolio of evidence and demonstrate the required level of competence for professional registration - as a Professional Engineer.
- CPD is “a systematic, ongoing structured process of maintaining, developing and enhancing skills, knowledge and competence both professionally and personally in order to improve performance at work.

## II. Status of Training Providers (Public and Private) in Nepal

# Training Institutes in Nepal: Existing Scenario

## Public:

- NASC
- Nepal Telecom (Annual training program)
- Nepal Electricity Authority
- Training Wing DOR & Mechanical Training Center
- Central Regional Water Supply and Drainage Department
- Continuing Education Division, IOE Pulchowk
- DWIDP
- TITI
- AEPC
- DOLIDAR
- DOI
- Others

## Private

- Engineering Colleges
- Others

# Functions/Challenges/Opportunities

- Adequate space and necessity of training equipment
- Most of them have their own complex, hostel facilities and lab equipment
- Provide short term and tailor-made training course
- Nominal remuneration to the trainer ~1000 per class
- Accreditation of the training certificate
- Knowledge gap

# Possible Collaboration

- Develop NESC as an umbrella training organization
  - Jointly develop training programs with the respective training center
  - Optimize utilization of existing infrastructure
- Organize technical training in collaboration with the NASC
- NESC should be established through GoN Act for Accreditation and easy collaboration with GoN's institutions
- Institutional overhead should be nominal
- Networking with the similar international organization for the higher level training and research activities

# IV. South Asian context of CPD



# Governing Structure of ESCI

- an autonomous institution of IEI (est. 1981). Subject to the general control of the Council of IEI, the management of the ESCI shall be vested in the Board of Management. The Governing Council shall be the supreme advisory body.

- **Governing Council**

- Lead by Chairman & Vice Chairman, Eminent Persons nominated by IEI - Members Include: VC of IGNOU. Director General of CSIR, Chairman of AICTE , Educational Adviser (T) to the HR Ministry of Gol, nominee of Andhra Pradesh State Government and all the members of the BoM as its ex-officio members. In addition 10 members from industry, academia, donors forum, special interest, state governments and central government nominated by IEI council. - Total **21**.
- Functions: Perspective Planning, Policy Guidelines, Performance Review and Advice. Meets twice a year.



Er. Kishore K Jha (NEC 2928 Civil)

# Continued---- Structure of ESCI

- Board of Management
  - Lead by President of IEI as the Chairman and Immd. past President IEI as Vice – Chairman (ex-officio)
  - Members Include: Chairman – ESCI' Governing Council (ex-officio), 3 nominated by the IEI Council from amongst themselves, The Chairman - AP State Centre of IEI (ex-officio), The Secretary & DG of IEI (ex-officio) along with The DG of ESCI (ex-officio) and One representative of the teaching faculty of the ESCI to be appointed by the DG
  - Functions: Overall technical, administrative and financial management of NASC . Board meets 4 times a FY. Meetings convened by DG with concurrence of Chairman. Quorum consist of the President or imm. Past President of the IEI and any four members of the Board.

# Organizational Management - ESCI

- Director General
  - Appointed by the Board on invitation - designated full time administrative and technical head – tenure 4 years (renewable)
  - Responsible and accountable for the proper administration and functioning of the ESCI.
  - Assisted by Divisional Chiefs of Center for Climate Change, Civil and Transportation Engineering, Environmental Management, Information Technology, Management and Technology, Power and Energy, Quality and Productivity and Water Resources divisions. Besides, Chief of Account & Administration and Chief of School of Post Graduate Studies.

# Governing Structure of ESCB

- an autonomous institution of IEB (est. 2001) governed by a Board of Governors responsible to the Council of IEB.

- **Board of Governors**

- Lead by the President of The IEB as Chairman of the Board (Ex-Officio) - Members Include: DG – Tech. Educ., JSs of Ministries of Housing & Works and Education , VP & GS of IEB (ex-officio), 5 from private sector 2 from public sector and 2 academician nominated by IEB, 5 institutional nominees (ICAB, FBCCI, BMA, Bar, Agri-inst) plus Rector as Exec. Secy.

Of the Board (ex-officio) - **21**

- Functions: Policy Directives and Regulatory, Approves Budget & Annual Program, Performs overall technical, administrative and financial management of ESCB

# Organizational Management - ESCB

- Rector
  - Executive head (CEO) of the ESCB shall be designated as Rector and will be nominated by the Board of Governors and approved by the Council of The Institution of Engineers, Bangladesh
  - Accountable to execute the decisions of the ESCB.
  - Assisted by Dean as his immediate deputy followed by Senior Trainer, under whom 3 Trainers (Faculties) and Support Staff operates.
  - In addition, have a training wing under the Dean with provision of a Training Manager and Executive Officer with support staff.

# Governing Structure of NASC

- established under NASC Act 2039 BS

- **Governing Council**
  - Lead by Minister of General Administration -  
Members Include: VC-NPC, PSC, TU, Chief Secy., GA & Finance Secretaries plus ED . Total 8.
  - Functions: Policy Directives and Regulatory, Approves Budget & Annual Program
- **Executive Committee**
  - Lead by Executive Director (as chairperson)
  - Members Include: 5 Secretaries of GON (GA, L&J, Finance, PSC & NPC) plus 3 eminent persons nominated by GoN, and Deputy ED of NASC.
  - Functions: Overall technical, administrative and financial management of NASC

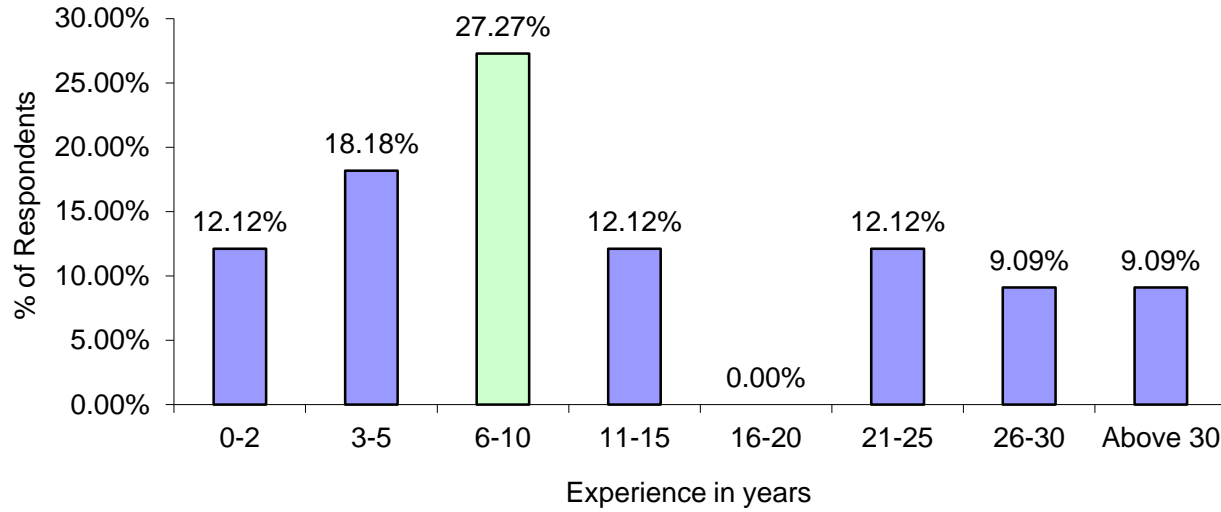
# Organizational Management - NASC

- Executive Director
  - Appointed for 5 years by the GoN (can have further 5 yrs. Extension)
  - Accountable to execute the directions and decisions of the GA & EC.
  - Leads five departments –
    1. Management Learning Group,
    2. Governance and Development Management Learning Group,
    3. Public Service Training Department
    4. Research and Consulting Department
    5. Management Services Department

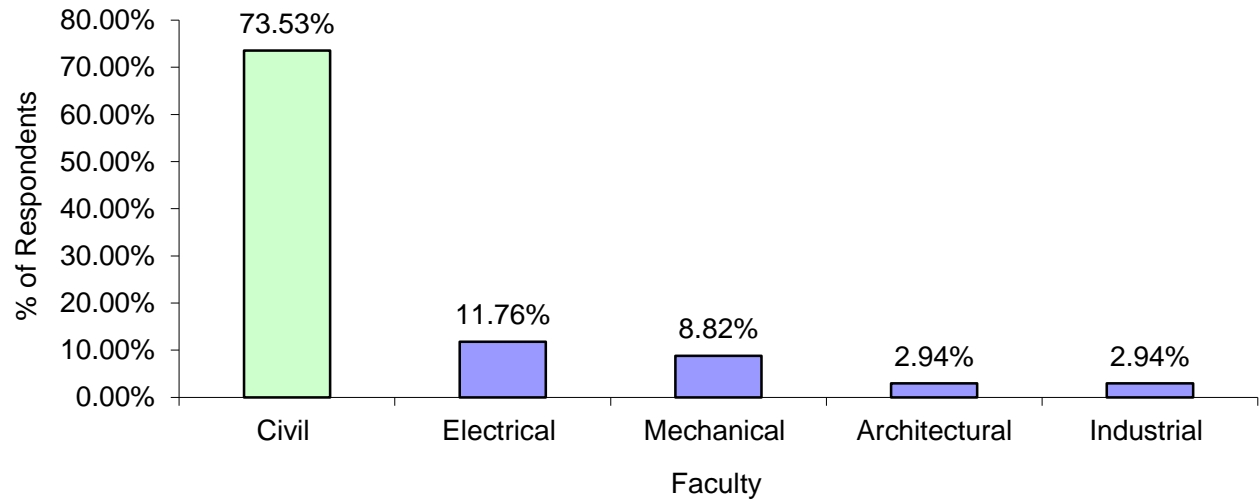


# IV. Need Assessments and Stakeholders Opinion!

### Respondents by Professional Experience in years

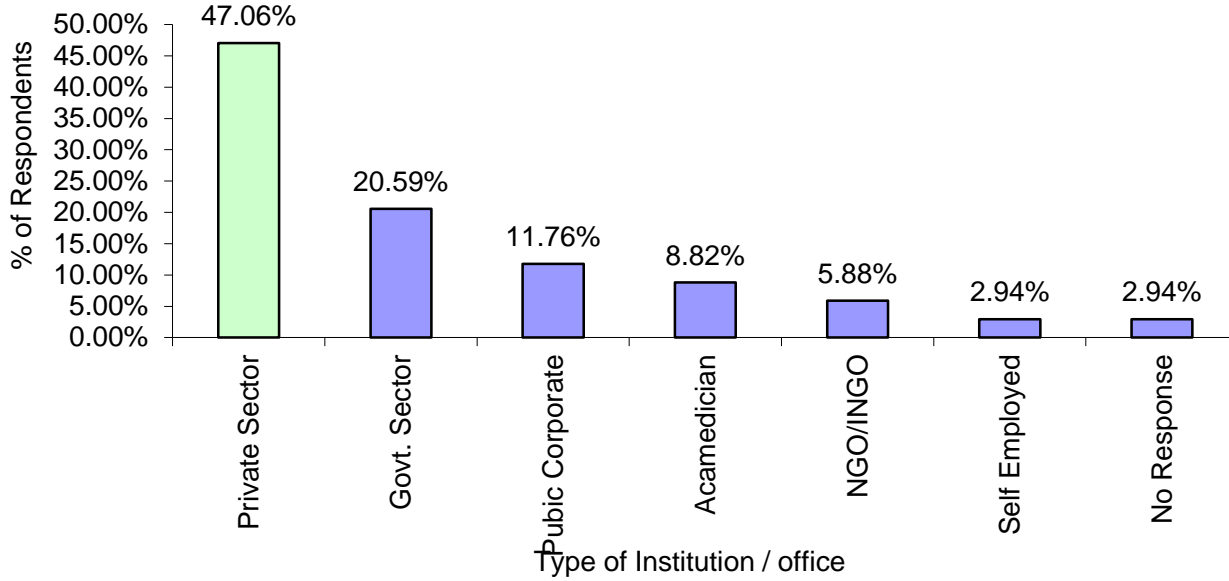


### Respondents by Engineering Discipline (Faculty)

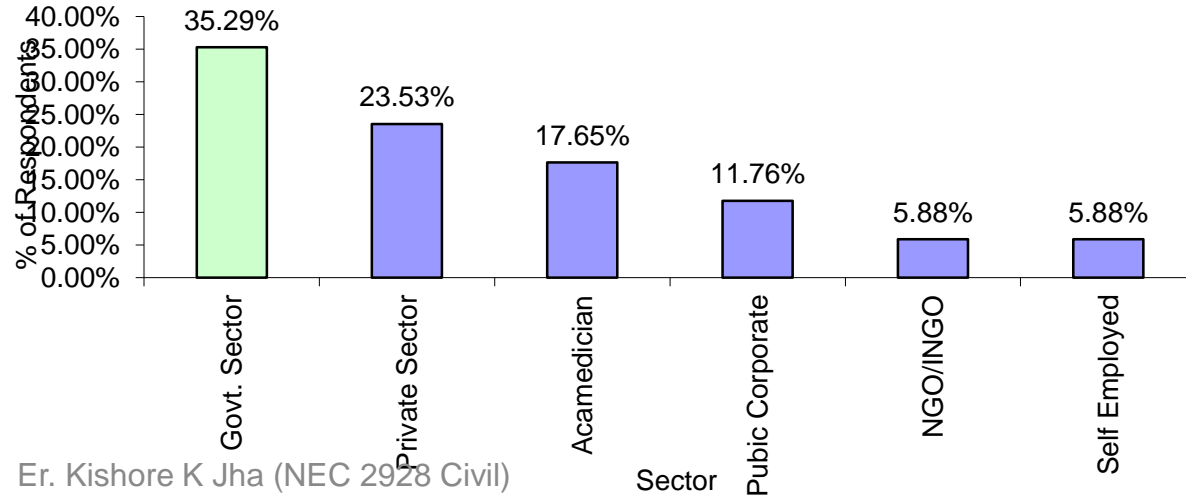


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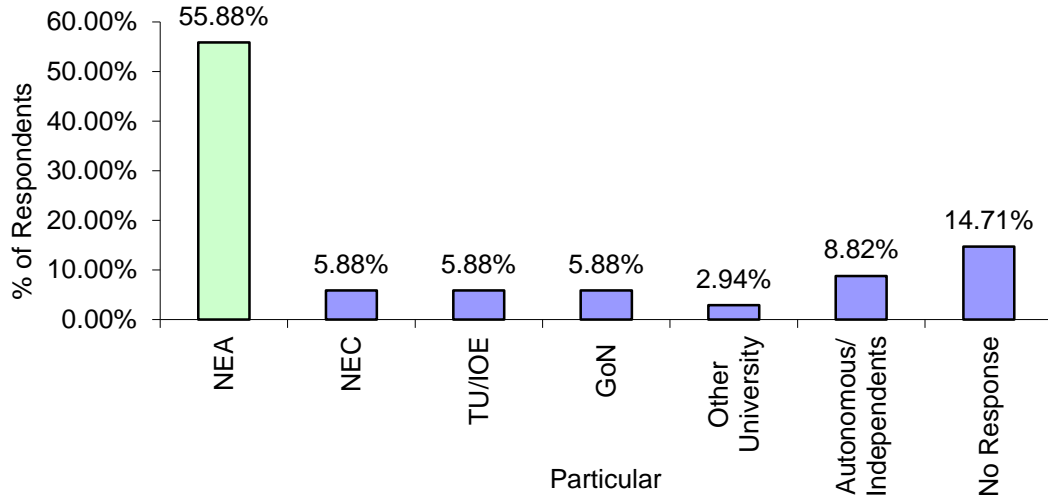
Respondents by Types of Institution / office



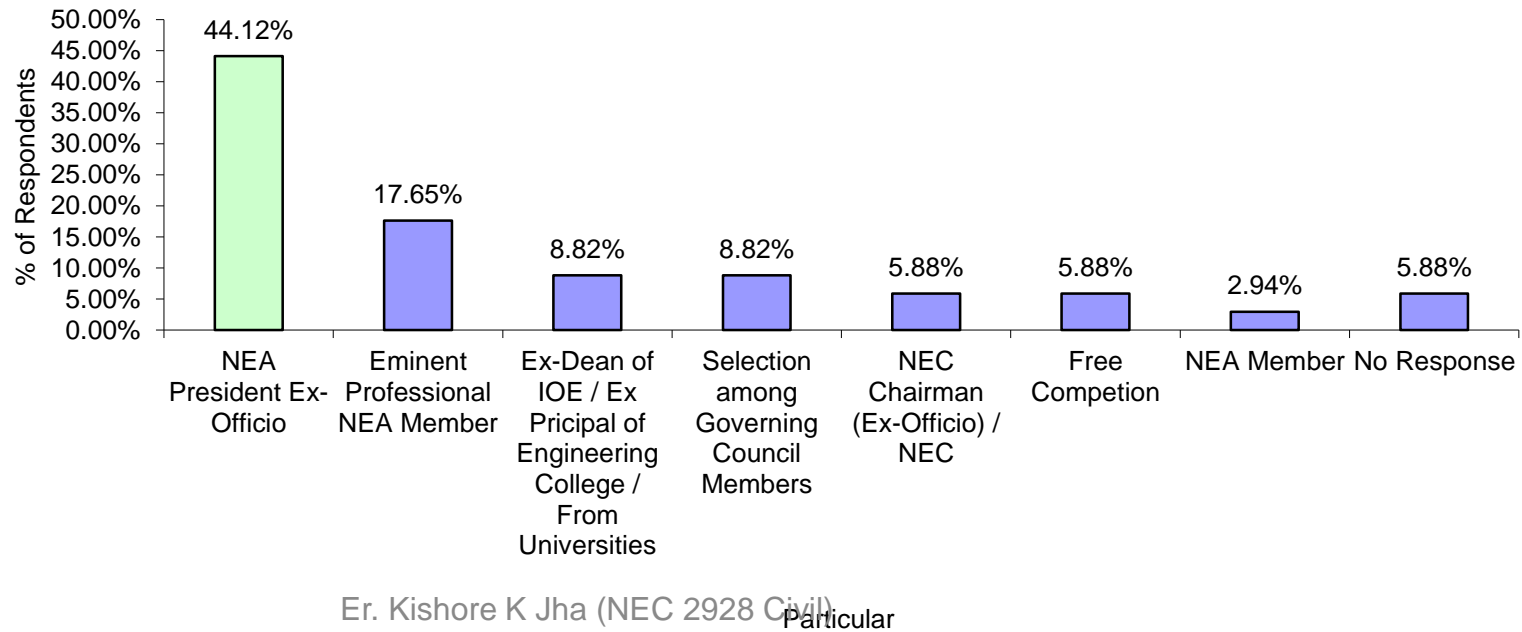
Secorwise Respondents by received trainings



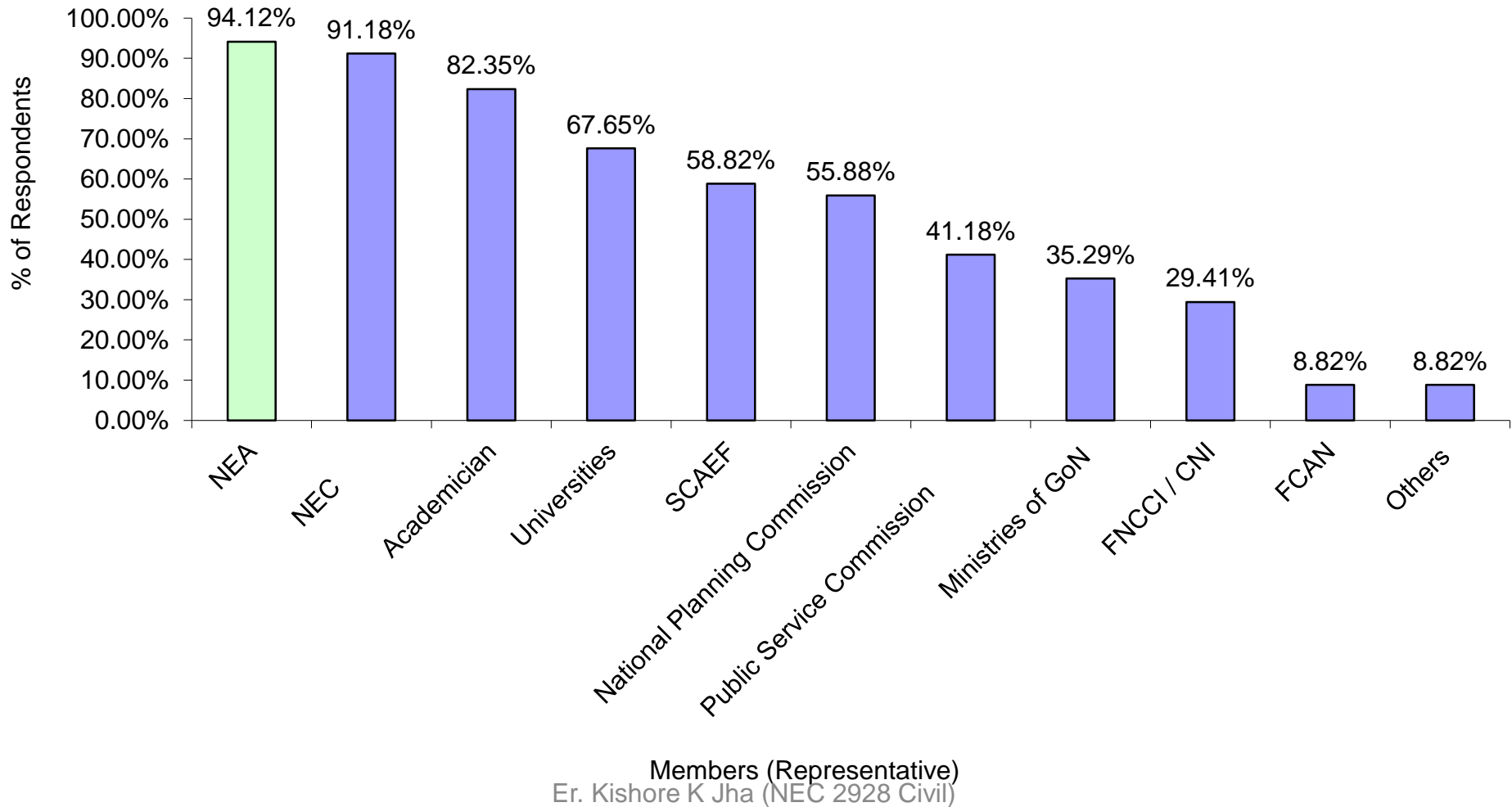
Respondents by their view on Engineering Staff College be an autonomous organ of the



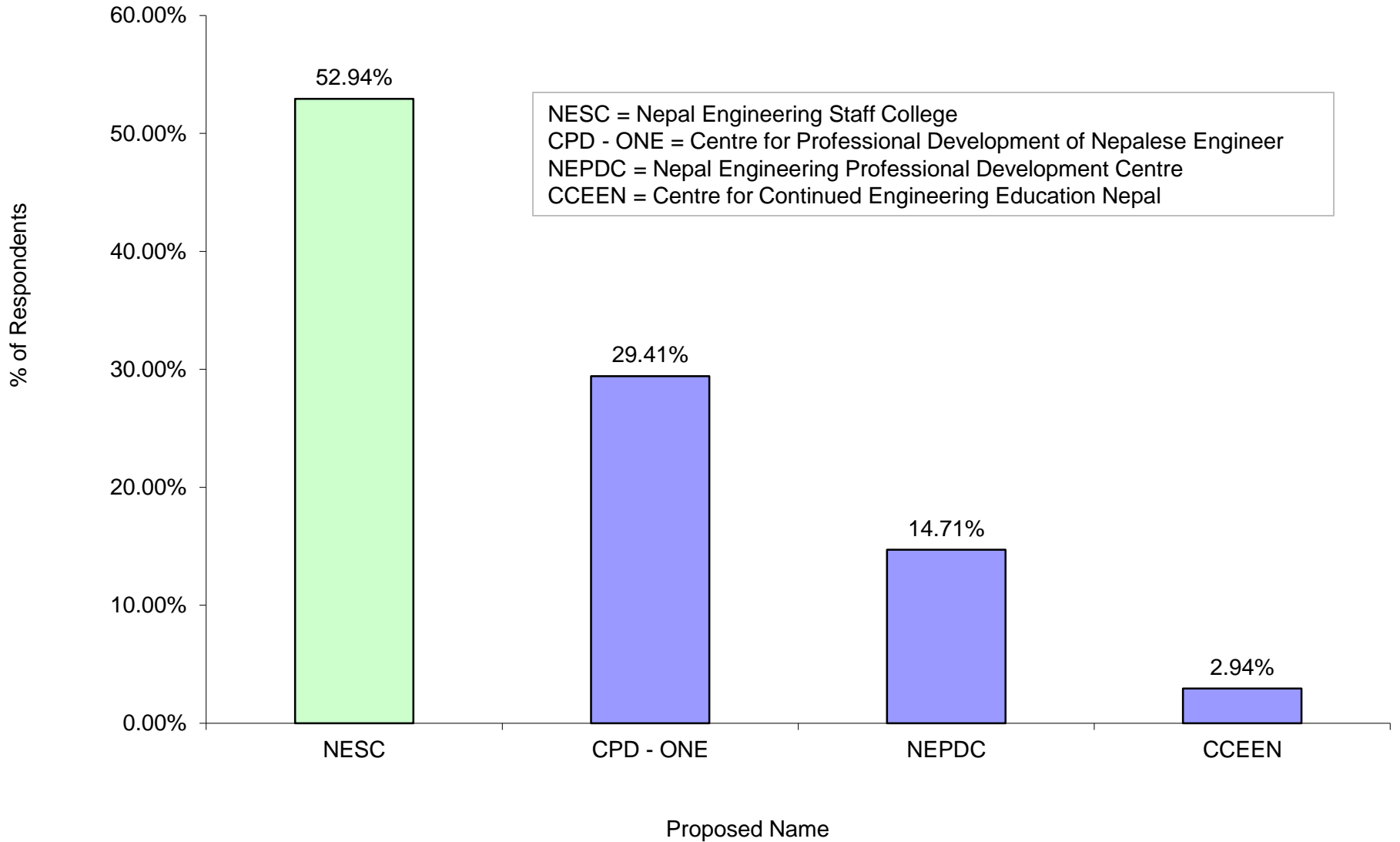
Respondents by their view on the selection Chairperson of the BOM



## Preferences for Representation of the related Institutions in the BOM



# Respondents by their view on Name of the Proposed Staff College



# V. Legal/Institutional Framework of the proposed NESC

# Management Structure of NESCC

## Guiding Principles

- to be established as an autonomous institution through an Executive Order or as Not for Profit Company
- the management of the ESC shall be vested in the Board of Management. Following the lessons learnt in the South Asian context (India, Bangladesh and Pakistan and Sri Lanka) the NEA like professional bodies shall lead and extensively participate in the BoM.
- the financial management of the ESC shall follow the public private partnership model.



- **Board of Management (13)**
  - Lead by President of NEA (ex-officio) – 1 no.
  - Immediate Past President of NEA (ex-officio) – 1 no.
  - General Secretary of NEA as member (ex-officio) - 1 nos.
  - The Chairperson of the Nepal Engineering Council (ex-officio) – 1 no.
  - One member nominated by NEA from amongst eminent engineers (academia or independent professional) – 1 nos.
  - The President of SCAEF and FCAN or their nominee – (ex-officio) – 2 nos.
  - JSc's representing GoN (e.g. NPC, PSC, and concerned Ministry) - 3 nos.
  - ED of NESC (ex-officio)– 1 no.

Functions: Overall technical, administrative and financial management of NESC .

# Organizational Management - NESCS

- Executive Director
  - Designated full time administrative and technical head
    - tenure 4 years (renewable).
  - Appointed on invitation by the Board based on recommendation of the Search Committee (SC) as per criteria approved by the Board.
  - The SC, consisting of five members - JS of PSC, General Secretary -NEA and one among the Past President.
  - Responsible and accountable for the proper administration and functioning of the NESCS.
  - The Organogram of NESCS to be developed based on need.

# VI. Action Plan and Way Forward

# Action Plan – Activities and Timeline

१	प्रतिवेदन सम्बन्धित निकायबाट स्वीकृत
२	<b>Activities in the First 6 Months</b>
२	NPC बाट Task Force को गठन
२	Task Force ले सरोकारवालाहरूसँग छलफल गरी NESC को स्थापनार्थ पहल गर्ने ।
२	Task Force ले NESC को लागि आवश्यक भौतिक संरचना निर्माणको लागि जग्गा उपलब्ध गराउने ।
२	प्रस्तावित संस्थाको संरचना बारे सम्बन्धित निकायहरूसँग छलफल गरी कार्य अगाडी बढाउने
३	Training Need Assessment को सम्बन्धमा सम्बन्धित निकायहरूसँग छलफल गरी परामर्शदात्रीले पहिचान गरेको तालिम विषयबारे सुनिश्चित गर्ने र सो मध्ये कुनै एक विषयमा तालिम संचालन गर्न पहल गर्ने । तालिम ३-६ दिनको गर्ने तथा यी तालिम NEA ले आफ्नै पहलमा गर्ने । यसको लागि NEA ले श्रोतको बन्दोबस्थ आफै गर्ने ।

३	<b>Activities in the Second 6 Months</b>
३.१	NEA ले Task Force को प्रतिवेदन बमोजिम प्रस्तावित संस्थालाई ऐन अथवा अन्य कानूनी आधारबाट स्थापना गर्ने ।
३.२	संस्थाको संरचनालाई पूर्णता दिने ।
३.३	संस्थाको नाममा जग्गा उपलब्ध गराउने प्रकृतिलाई पूर्णता दिने ।
३.४	सम्बन्धित निकायहरूसँग छलफल गरी Training Need Assessment Update गर्ने र सो अनुसार NEA को भवनमा तालिम संचालन गर्ने ।
३.५	तालिमलाई निरन्तरता दिने ।

४	<b>Activities in the third 6 Months</b>
४.१	प्रस्तावित संस्थाको विचमा अथवा ऐन अनुसार विभिन्न विभागहरु स्थापना गर्ने तथा त्यसको लागि आवश्यक जनशक्ति परिपूर्ति गर्ने ।
४.२	तालिम संचालन गर्नको लागि भवन Lease अथवा भाडामा लिने ।
४.३	NESC को लागि आवश्यक भौतिक पूर्वाधारको निर्माणको लागि Survey तथा Detailed Design कार्यको लागि प्रकृया अगाडी बढाउने ।
४.४	नेपाल भित्र तथा बाहिर भएको यस्तै प्रकृतिको संस्थाहरूसँग Networking कार्यलाई तिब्रता दिने
४.५	सम्बन्धित निकायहरूसँग छलफल गरी Training Need Assessment Update गर्ने र सो अनुसार NEA को भवनमा तालिम संचालन गर्ने ।
४.६	तालिमलाई निरन्तरता दिने ।



# Action Plan – Activities and Timeline

५	Activities in the Fourth 6 Months
५.१	NEC संग Training को पाठ्यक्रम आदि विषयमा अनुमति लिई संचालन गर्ने ।
५.२	भौतिक संरचनाको Survey तथा Detailed Design कार्यलाई पूर्णता दिने ।
५.३	तालिमलाई निरन्तरता दिने ।

६	Activities in the Fifth 6 Months
६.१	तालिमलाई निरन्तरता दिने ।
६.२	भौतिक संरचना निर्माण कार्य पूरा गर्ने ।

# Training Topics for Immediate Delivery

Proposed Training Programme in NESC for Immediate Implementation

SN	Component and Programme Title	Duration (Days)	Date & Venue	Responsible Organization	Resources		No of Participants
					Financial	Human	
1	Survey and Design of Micro Hydro Power Projects	3	NEA Building	NEA	GoN, Donor Agencies working for Nepal	Local	20
2	Survey, Design and Installation of Solar PV	9	NEA Building	NEA	GoN, Donor Agencies working for Nepal	Local	20
3	Geographical Information System (GIS)	10	NEA Building	NEA	GoN and Private	Local	20
4	Energy and Environmental Management	7	NEA Building	NEA	GoN and Private	Local	20
5	Information & Technology	7	NEA Building	NEA	GoN and Private	Local	20
6	CFD hydraulic analysis, Monitoring & Evaluation	10	NEA Building	NEA	GoN and Private	Local	20
7	Trainings on TSSR and SARF preparations	10	NEA Building	NEA	GoN and Private	Local	20
8	Computer program Training on Structural analysis software such as SAP/ETAPS/STAADPRO.Microsoft's Project	15	NEA Building	NEA	GoN and Private	Local	20
9	Preparation of Contract Documents	7	NEA Building	NEA	GoN and Private	Local	20
10	Disaster Management	7	NEA Building	NEA	GoN and Private	Local	20
11	Climate Change	15	NEA Building	NEA	GoN and Private	Local and International	20
12	Water supply and structure design	7	NEA Building	NEA	GoN and Private	Local	20
13	Design of Road and its application in the practical field.	10	NEA Building	NEA	GoN and Private	Local	20
14	Road Safety	10	NEA Building	NEA	GoN and Private	Local and International	20
15	Urban Issues	10	NEA Building	NEA	GoN and Private	Local and International	20