

Engineering Professional Practice (CVL 440)

Roles of Professional Organizations in Regulation and Professional Development

(Chapter 3: 4 hours)

Prof. Dr. Hari Krishna Shrestha
Nepal Engineering College
Changuranayan Municipality-4, Bhaktapur
August 2017



3.0 Roles of Professional Organizations in Regulation and Professional Development

- 3.1 Regulation of the practice of engineering profession
- 3.2 Objectives of NEC and its licensing provision
- 3.3 Codes of ethics and guidelines for professional engineering practice – the NEC code of ethics
- 3.4 Roles of professional organizations in induction of new entrants into the profession
- 3.5 Upgrading and maintaining the professional and technical competence of members of professional association
- 3.6 Providing technical expertise to public authorities in developing policies, acts, standards, project implementation procedures and international agreements and negotiations
- 3.7 Ensuring occupational health, safety and general welfare of the public
- 3.8 Role of professional societies in environmental protection



3.1 Regulation of the practice of engineering profession

One of the fundamental roles of professional associations is to regulate the professional practices of the persons or institutes engaged in a particular profession. E.g., the FCAN regulates the ways contractors, act when performing duties related to their profession, through:

- developing guidelines & procedures to be followed by its members,
- developing minimum standards of profession,
- developing and issuing codes of conduct for FCAN members,
- developing and approving written/unwritten rules of the profession,
- preparing standard procedure/formats of submitting bids,
- monitoring and evaluating compliance of the rules, and
- taking actions against breakers of the rules and/or code of conduct.

NEC and NEA regulate engineering profession by developing policies, plans/programs for the smooth functioning of engineering profession and execute them. The NEC regulates higher engineering education in Nepal through evaluation, recognition and monitoring of academic institutes providing formal engineering education.

3.2 Objectives of NEC and its licensing provision

The objective of **Nepal Engineering Council (NEC)** is to make the engineering profession effective by mobilizing it in a more systematic and scientific (way) and also to register the engineers as per their qualifications.

NEC's duties and responsibilities:

1. To prepare policies, plans and programs for the smooth functioning of the engineering profession and to execute them
2. To set norms and standards for engineering education in Nepal
3. To grant permission and approval to carry out engineering education to those engineering colleges and institutions that meet the required norms and standards and to honor their degrees and certificates
4. To monitor and inspect the quality of engineering education provided by the engineering colleges and institutions
5. To fix the qualification necessary in order to practice engineering profession and to register their name in the Council
6. To remove their name from the registration of the engineering council if found to violate the code of ethics.



3.2 NEC's licensing provision

- **Licensing** is one of the means of regulating the profession. The organizations providing engineering services, e.g., are expected to obtain approval from professional organizations before starting their business, apart from fulfilling legal requirements. FCAN classifies its members into different categories/classes like A, B, C and D; the contractors of each category are limited in the financial amount of work they can bid for.
- **NEC's Licensing Provision for individual engineers:** NEC provides license to individual engineers, in the form of registration. As per Clause 11 of NEC Act, "no person shall practice the engineering profession without getting his/her name registered in the Council". Offenders are subject to fine to Rs. 3000 or jail up to three months or both.
- Type of NEC Licenses are: (a) General, (b) Professional, (c) Foreign

... due to the growing requirement of competent engineers in the Country, in future, only a professional engineer may prepare, sign, seal and submit engineering plans and drawings to a public authority for approval, or to seal engineering work for public and private clients. (India)

Objectives of Nepal Engineers' Association:

- To promote development of the engineering science and technology in Nepal.
- To promote fellowship goodwill and cooperation assistance among the Nepalese engineers and safeguard their rights and interests.
- By utilizing, to the highest extent possible, the participation of the national engineering manpower of the country in the national development activities of Nepal, make effort towards ending foreign dependency in this regard.
- To continuously enhance the highest professional ideals among the members and widen it.
- To develop relations, fellowship and goodwill with international engineering associations and institutions.

(source NEA website,
<http://www.neanepal.org.np/showmodule.php?what=objectives&under=aboutnea>)

NEA is not Nepal Engineering Association.

NEC vs. NEA

NEC	NEA
Statutory body, established under NEC Act, in 1999	An NGO, established in 1962, Social Organizations Registration Act 2034
Must register before practicing engineering profession	Registration/membership is voluntary
Executive body (Governing Board Members) by election and nomination (5+1 nominated by GoN, 5 elected), NEA President, TU representative, Chairman, Vice Chairman, Registrar)	Executive body by election
Evaluates and approves establishment of academic institutes offering engineering programs	No such provision
Offers different categories of engineering profession: general, professional, foreign	Offers membership as general, life, foreign
Monitors academic institutes offering engineering programs (every year for temporary approval and every other year for permanent approval), and cancels approval if found not up to standard	No such provision, but can put moral pressure to improve standard
The directives and code of conduct issued are mandatory	The directives and code of conduct issued are voluntary
More focus on monitoring activities of its members with regard to compliance of code of conduct	More focus on rights and welfare of its members



Nepal
Engineers'
Association

United Nations
Development
Programme



UN
DP

"Mobilization of Engineers for Reconstruction Support in the Districts"

UNDP-NRA has requested 27 Engineers for this function. These Engineers are to be deployed to the districts to supervise reconstruction as soon as possible. Please find below the list of districts and the number of engineers required:

Location	Nos.
Dhading	3
Dolakha	3
Gorkha	3
Kavre	2
Lalitpur (Southern)	1
Lamjung	1
Makawanpur	1
Nuwakot	2

Qualification and Experiences:

1. **M.Sc. (or equivalent) in Earthquake/ Structural/ Geotech. Eng.** with experience in LSM buildings/ analysis, design & retrofitting
2. **B.E. Civil** with at least **5 years** of experiences in analysis, design, retrofitting and implementation of building related construction.



Nepal Engineers' Association (NEA) CORDIALLY INVITES

FOR

Inauguration Program of 15.6 KW

"ON-GRID Solar Power System" Of NEA Building

Joint Inauguration by

Hon. Mahendra Bahadur Shahi
Ministry for Energy

&

Hon. Mithila Chaudhary
Minister for Population & Environment

Policy Highlight by:

Er. Anup K. Upadhyay, Secretary, MoE
Er. Kulman Ghising, MD, NEA

Program Highlight by:

Dr. Bishwonath Oli, Secretary, MoPE
Er. Ram Prasad Dhital, ED, AEPC

Dr. Bishwanath Oli, Dy General Secretary
bshw@neanepal.org.np

Nepal Engineers' Association (NEA)
Pulchowk, Lalitpur, GPO No. 004, Kathmandu, Nepal
Tel: 01-5010251 / 5010252; Fax: 01-5010253
Email: info@neanepal.org.np
Website: www.neanepal.org.np

Date & Time : 12:30 PM onwards, Friday 4th August 2017 (20th Shrawan 2074)
Venue: NEA Central Office, Pulchowk, Lalitpur



3.3 Codes of ethics and guidelines for professional engineering practice – the NEC code of ethics

The code of ethics is the moral guidelines and the standard developed by the professional society and is obeyed by the members of the society. The codes of ethics and guidelines for professional engineering practices in Nepal are promulgated by different professional organizations in Nepal (NEC/NEA/SCAEF/FCAN/NEPCA,CAN,IPPAN,NHA, NMHDA,SEAN, **Solar Electric Manufacturers' Association Nepal [SEMAN]**)

Fundamental Principles for Engineers to uphold and advance the integrity, honor and dignity of engineering profession by (National Society of Professional Engineering, US, 1977),

- Using their knowledge and skill for the advancement of human welfare
- Being honest & impartial & serving with fidelity the public, their employers & clients
- Striving to increase the competencies and prestige of engineering profession, and
- Supporting the professional and technical societies of their disciplines

3.3 Codes of ethics and guidelines for professional engineering practice – the NEC code of ethics

Fundamental canons for professional engineers/Characteristics of Ethical Decision Making (of Accreditation Board of Engg. and Tech)

- Engineers should hold paramount the safety, health and welfare of the public in the performance of their professional duties,
- Engineers shall perform services only in the area of their competencies,
- Engineers shall issue public statements only in an objective and truthful manner,
- Engineers shall act in professional matters for each employer or client as faithful agents or trustees, and shall avoid conflict of interests,
- Engineers shall build their professional reputations on the merit of their services and shall not compete unfairly with others,
- Engineers shall act in such a manner as to uphold and enhance the honor, integrity and dignity of the profession,
- Engineers shall continue their professional development throughout their career and shall provide opportunities for the professional development of those engineers under their supervision.

Similar to Section 2.2

NEC code of ethics

- 1. *Discipline and Honesty:*** The Engineering service/profession must be conducted in a disciplined manner with honesty, not contravening professional dignity and well-being.
- 2. *Politeness and Confidentiality:*** Engineering services for customers should be dealt with in a polite manner and professional information should remain confidential except with written or verbal consent of the customers concerned. This, however, is not deemed to be a restriction to provide such information to the concerned authority as per the existing laws.
- 3. *Non-discrimination:*** No discrimination should be made against customers on the grounds of religion, sex, caste or any other things while applying professional knowledge and skills.
- 4. *Professional Work:*** Individuals should only do professional work in their field or provide recommendation or suggestions only within the area of their study or obtained knowledge or skills. With regards to the works not falling within the subject of one's profession, such as works should be recommended to be done by an expert of the subject matter.



NEC code of ethics

- 5. *Deeds which may cause harm to the engineering profession:*** With the exception of salary, allowance, and benefits to be received for services provided, one shall not obtain improper financial gain of any kind of conduct improper activities of any kinds, which would impair the engineering profession.
- 6. *Personal responsibility:*** All individuals will be personally responsible for all works performed in connection with his/her engineering profession.
- 7. *State name ,designation and registration number:*** While signing the documents or descriptions such as the design , map , specification and estimates etc relating to the Engineering profession , the details should include, the name , designation and NEC registration No. and should be stated in a clear and comprehensive manner.
- 8. *No publicity or advertisement must be made which cause unnecessary effects:*** In connection with the professional activities to be carried out, no publicity or advertisement shall be made so as to cause unnecessary effects upon the customers.

Learn these 8 CoEs by heart

3.4 Roles of professional organizations in induction of new entrants into the profession

Another major role of the professional associations is to guide new entrants into the profession by

- providing orientation and training,
- guiding on the conventions of the profession,
- providing information on the dos and don'ts of the profession,
- potential pitfalls when the Code of Conduct are not followed,
- linking the new comers with established members of the profession.
- Guiding on general job description and employers' expectation from new recruits
- Training new entrants for job seekers, proposal writing, bidding, project terms and conditions negotiation, etc



3.5 Upgrading and maintaining the professional and technical competence of members of professional association

Professional societies take various steps for upgrading and maintaining the professional and technical competence of its members by

- Organizing regular professional development courses and continuing education programs, like running Engineering Staff College
- Organizing skill development oriented training programs
- Organizing regular talk programs to share experiences and lessons learned from different projects
- Providing platform for its members to expose their works by organizing national and international seminars/workshops on regular basis
- Publishing technical journals and news bulletin
- Organizing exposure field visits to different projects
- Providing exposure to national and international experiences by organizing national and international visits to its members
- Proactively working with academic institutes on development and update of university curriculums
- Proactively working with research institutes for involving its members in research and development activities
- Proactively working with service providing organizations (consulting companies, contractors, material suppliers, software developers, equipment operators) to establish link of its members with established organizations.

3.5 Upgrading and maintaining the professional and technical competence of members of professional association

Some of the ways in which the professional associations in Nepal have been playing this role in Nepal are:

- Providing Continuing Education Programs (NEA, SCAEF, FCAN, CAN)
- Engineering Staff College (proposed by NEA, not yet fulfilled)
- Provision of Professional Engineer (NEC)
- Provision of periodic test as part of NEC registration renewal (proposed)
- Professional Development as part of evaluation of engineering colleges (NEA)
- Organizing professional meeting/seminar/conferences/conclave: (NEA, SCAEF, FCAN, CAN...)
- Organizing trainings, weekly lecture series (NEA);
<http://www.neanepal.org.np/showmodule.php?what=weeklytalk&under=home>
- Organizing workshop on specific issues related to engineering education in Nepal (NEC, AECON, OPEN, TUTA)

Some examples: Rapid Assessment Training after April 25, 2015 Gorkha Earthquake; recommendations after Jure Landslide

3.6 Providing technical expertise to public authorities in developing policies, acts, standards, project implementation procedures and international agreements and negotiations

- The legislators and other governmental organizations frequently seek technical expertise from professional associations in the development, drafting and amendments to the existing acts, rules, regulations, policies, guidelines, bylaws, provisions, plans and programs. NEC, NEA, SCAEF, FCAN, CAN and other professional organizations provide technical expertise to different government organizations, including legislators, as and when requested. When these professional associations do not have in-house expertise, they coordinate with individual (or institutional) members to provide such services.
- NEA and DPNet independently conducted study of Jure Landslide (Sunkoshi) in 2014 and submitted expert advice to deal with the disaster.

(<https://drive.google.com/a/nec.edu.np/file/d/0B19Ck0L5dMSrUkIZUDN2dk5lZUx6aEtCYnpmenp2TjFId2kw/edit>)

3.7 Ensuring occupational health, safety and general welfare of the public

- The professional engineering associations are expected to play the role of developers and monitors of quality of works of its members, including the matter of safety and general welfare of the public.
- When a particular member is found to violate the codes of conduct, compromise on quality of works, and neglect public safety and public welfare, the concerned professional engineering association can warn them, and reprimand/cancel their membership.
- NEC is planning to introduce a system of Accountability in Engineering Professional services.
- The standard design manuals, design procedures, building codes, including professional judgments will be evaluated as a part of safety and general welfare of public in engineering works.
- NEC/NEC/ SCAEF/FCAN etc. can monitor provisions of occupational health, safety and general welfare of workers and general public in specific projects.

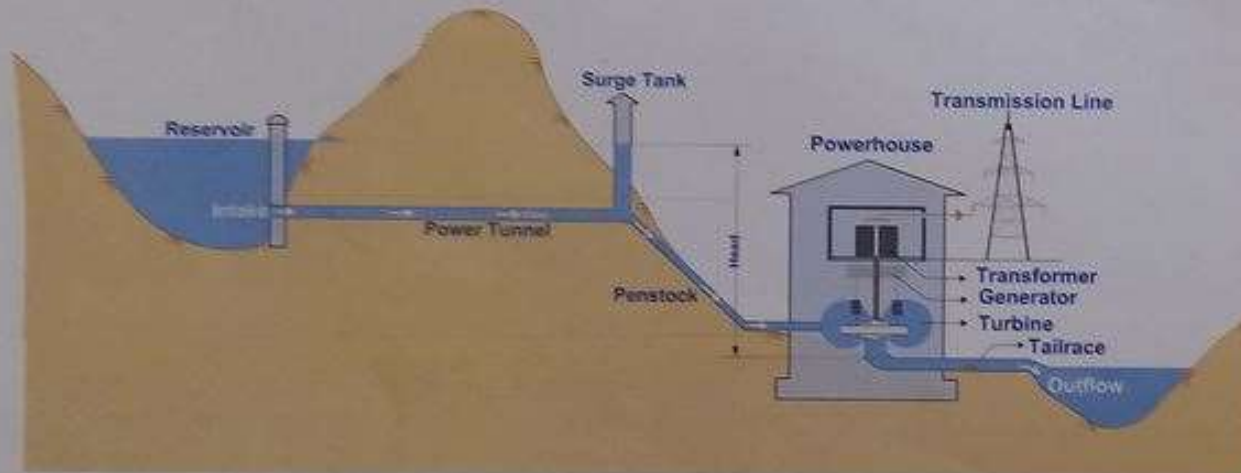
3.8 Role of professional societies in environment protection

- Raise awareness among society members, public decision makers, and legislators on environment & sustainable development issues; work with universities in developing environment protection courses
- Circulate environment protection related acts, rules and regulations to society members
- Study and publish results of impacts (short term and long term) of development works on environment
- Develop manuals and guidelines on design, operation and maintenance of development projects by considering environment protection
- Conduct training courses on environmental law compliance
- Conduct advocacy programs for environment sensitive development methods
- Monitor specific development projects from environment protection aspect and suggest improvements, if needed, in carrying out project works with environment compliance
- Award organizations with excellent environment protection records.

140	ACE Development bank Ltd.	4441110/4445554
141	Feedback Ventures Nepal Ltd.	4169104/4169106
142	Qiankang Allonward Hydro-Equipment Co. Pvt. Ltd.	4228816/4223570
143	Structo Nepal (P) Ltd.	5521192 /5542118

158	Doima Advisor Pvt. Ltd.	4431376
159	Neupane Law Associates	4101631
160	Hydro Magus Pvt. Ltd.	9808953879
161	ACME Technotrade Concern	5552413
162	ChainLink Engineering Private Limited	16636267

Schematic layout of a typical hydroelectric power plant.



Mathematically, electric power generated by Q (m^3/sec) amount of water falling under gravity through height H (m) is given as

$$Power (Watts) = \eta \times \rho \times Q \times g \times H$$

Where,

Q = Flow of water per unit time (Litre/sec or Cubic Metre/sec)

η = Overall efficiency of the system, generally between 70% - 85%

ρ = Density of water, 1000 kg/m^3

g = Acceleration due to gravity, 9.81 m/sec^2



INDEPENDENT POWER PRODUCERS' ASSOCIATION, NEPAL (IPPAN)

PO Box: 20010, Heritage Plaza II, Kamaladi, Kathmandu, Nepal

Tel: +977-1-4169175 | Fax: +977-1-4169175

What information can you obtain from this photograph?

Self test (old question collection)

- Briefly discuss the code of ethics of Nepal Engineering Council.
- Explain the code of ethics applicable to engineering profession.
- What do you understand by the code of conduct? Describe the code of conduct for engineers.
- How do you judge the ethical standard of Engineers in Nepal? Describe the role of Nepal Engineering Council in maintaining ethical standard of Nepalese Engineers.
- Differentiate between the NEA and NEC with suitable examples.
- What are the meaningful roles of professional societies or associations? Why are they needed? Explain.
- Explain roles of Engineering council and Nepal Engineers Association. In what regards, they are different?
- What are the general job descriptions of engineers working in public sector?
- Describe the basic duties of an engineer.

