

# ***Capacity Building of Public Health Engineers***

## ***Key Note Address***

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**Introduction:** Someone called Engineers as catastrophic. If it is so, the situation becomes more catastrophic. We have to recognize the real cause behind this situation. The diagnosis of this problem is not difficult. The current methodology of working is not complete. It requires major change in mindset of Engineers and requires fresh new strategy. The engineers have to think beyond the curtain. In order to have the complete change in the scenario, the taming of power to appropriate level is required. The decentralized process, as imagined in 73<sup>rd</sup> constitutional amendment may come to help. For this the tides of changes are required. The attitudinal, mental and social changes are necessary to cope with the situation. When we talk about the change, then we should know the subject, the object and the process of the change with our attitude and desire to change. Remember the words of John F Kennedy: If not us, who? If not now, when?

**Value added qualities:** In order to accommodate with the changes, an engineer have to develop the qualities like (i) Democratic, (ii) Team spirit, (iii) Revolutionary, (iv) Self evaluating, (v) Trust, (vi) Dedication, (vi) Empathy and (vii) respecting others. These value added qualities will be helpful to tackle with any situation, they come across.

**Drinking water:** In order to have the perfection in the field of drinking water sector, the public health engineer, apart from the qualities mentioned above, must have the knowledge of the various water sectors such as Water Supply & Sanitation, Food security- Sustainable Agriculture, Ground water, Ecosystem conservation / restoration, Pollution, Dams and Hydel power, Flood Protection / Disaster Preparedness as are directly or indirectly connected with drinking water. The sub sectors can hurriedly be described as:

1. **Domestic Water:** The field of domestic water requires the knowledge of Water and Health, Water security, Ground water, Recharge, Water supply systems, Sanitation, Water harvesting, Recycling and reuse and Sea water resources etc...
2. **Irrigation Water** : The source of domestic water is mostly the surface source as such the knowledge of Irrigation water is must for public health engineer which can be in the field of Dams, Irrigation, Lakes, Wetlands, Rain fed farming, Crops and cropping systems, Evaporation & seepage losses, Sedimentation and silting of reservoirs and Aquatic plants and animals etc...
3. **Social Studies** : It is also very necessary for a public health engineer to have the knowledge of Pricing & Valuation, Public involvement, Food security, Water policies, Development assistance, Education & Awareness, Gender, Urbanization, Trans-boundary water issues, water budgeting, issues pertaining to Water and Poverty etc...
4. **Calamities:** The surrounding atmosphere and the natural calamities affect the source of the drinking water. As such a moderate knowledge of Floods, Storms & Cyclone, Water scarcity, Droughts, Salinity ingress, Coastal erosion and over exploitation of ground water etc. is

necessary for a public health engineer. The knowledge of Disaster management will be very much useful to a public health engineer as the calamities mentioned above often happen in India very frequently in one shape or other.

5. **Ill effects:** The unprotected use of drinking water may create the surroundings which will result in to the ill effects on the society. The public health engineer should have the knowledge of Pollution, Water borne diseases, Diseases due to inefficient disposal of water and waste water, Quality problems due to disposal of industrial waste water, Marshy lands etc. so as to prevent the society from these ill effects.
6. **Inter-sectoral:** The water being a commodity, its availability in the required quality is very essential. Therefore, the knowledge of inter sectoral fields like Private Sector Participation, Public-Private Partnership, Commercialization of Water, Sharing / Information dissemination etc will help in satisfying the user community for giving the better service.
7. **Research and Development:** Public health engineers have to pace with the modern knowledge in order to survive in the field. There should be a continuous professional development in the fields like Assessment of water resources, Design for water resource projects, Safety and longevity of water retaining structures, Soil and material research, Water indicators etc in order to harvest the optimum fruits for the benefit of the society.
8. **Management Studies:** As the source of water is either surface or underground, the management studies pertaining to Coastal Zone Management, Integrated Water Resources Management, Rivers / River basin Management, Better water management practices and improvement in operational technology etc. have become today's requirement.
9. **Hydrological Cycles :** The source of water is dependent on the hydrological cycles like Climate changes, Meteorology, Snow and lake hydrology, River morphology & Hydraulics as such the primary knowledge of these cycles will improve the sustainability.

A successful Public Health engineer should, therefore, possess workable knowledge in all the sectors pertaining to water and should have clear basic concepts of all water related activities and sub-activities. He should have the ability to coordinate with all the departments connected with water and should possess the fundamental virtues and value added qualities and should come out from the academic concept that water is not merely H<sub>2</sub>O but life line for the survival.

**Training Needs:** Project Management, Construction Management, Contract Administration etc are not taught at the engineering degree and diploma level (except few Institutions like CEPT, Ahmadabad). Similarly the Engineering Colleges and Educational Institutes, barring a few, do not have linkage and interaction with implementing agencies and construction industry, thus, there is very little practical on the job training. There is hardly any induction training for fresh engineers on recruitment in PHED / Board's / Corporations and there are no incentives for higher studies / management training in Government / Semi Government Institutions which is a De-motivating factor for young engineers to upgrade their qualifications. Professional bodies like Institution of Engineers, Indian Water Works Association (IWWA) and many others are unable to attract young PHED Engineers.

In view of above, the training to at least for engineers having key posts in PHE/ WS Departments is necessary. Deputy Executive Engineers (SDOs) are the real implementing officers & are responsible

for all basic activities. Good supervision is the art of getting average people to do the superior work. Much depends on the attitude of Executive Engineers (Divisional Officers) and he is supposed to be a good manager in administration, accounts and professional resources. The Superintending Engineers and the Chief Engineers (Zonal Officers) are responsible to prove that the “boss is always right”. They should remember the quotation of ‘Helen Keller’ that “It is terrible thing to see and have no vision”. In order to achieve the above qualities, it is very necessary for engineers to go for trainings continuously during his service course. At least 3% of the career span should be spent on trainings i.e. 10 days in a year on an average. At least 2% of the capital budget shall be allocated for training & capacity buildings and a separate Capacity building cell/ unit should be created in the organization. There are more than fifty activities related to the drinking water which include selection of source, planning and design, implementation, operation and maintenance, water treatment, pricing, metering, sanitation, hygiene, health, prevention of pollution, recharging, recycling and reuse of water, public private partnership, geo-hydrological/ hydrological investigation, remote sensing, GIS mapping, and management issues which can be dealt with during the different trainings. During training, the engineers should be taught the importance of the planning as it is said that “Failing to plan is planning to fail”. The time invested in good planning will reap benefits later in the cycle. The greatest danger for most of us is not that our aim is too high and we miss it, but that it is too low and we reach it as visualized by Buonarroti Michelangelo. If engineers are satisfied with 99%, they cannot achieve 100%.

**Desired Virtues in Public Health Engineer:** It is very necessary for public health engineer to be vigilant at all times, as the services are directly proportional to the health of the public as a whole. He should understand that the technology does not replace the hard work; the best angle is *try-angle*. Team work is also most important. It has been seen that the stupid people work together without hesitancy while smart people hardly work together. The things become easier if one can make smart people to work together. After all Skills are not enough, the attitude makes the difference. It is advisable to complete the work or don't take it. The engineers in general are afraid of the inquiries and therefore they don't take risk and don't go for new work or new technology. It should be remembered that the Ships are safer in harbor but are not made for that purpose. The public health engineer should not be rigid and should readily accept the changes, if the changes are required. The quality consciousness and the discipline are the virtues which engineer is supposed to possess at all times. Engineer should remember that the excellence is not the act but it should be the habit.

**Problems at field level:** The field engineers have various problems like Lack of motivation from competent authority, Lack of faith and interrelationship within the team, Poor approach of technocrats towards trainings, Poor knowledge of finance and administrative rules and regulations, Lack of proper technical knowledge, Lack of managerial qualities, Lack of proper documentation etc. These pitfalls in the present day engineers, working in the field of public service like supply of water, need remedy in order to uplift the tempo of the engineers in their day to day work.

The engineers at higher post should see that the verbal instructions given by them are confirmed in writing and the decisions taken in the meeting are converted in to the orders. They should also provide proper guidance and elevate the fresh engineers so as to help them to stay sharp, build

confidence, and boost productivity. They should also possess the qualities of motivating and inspiring the subordinates. It brings the results.

**SWOT Analysis:** It is a general practice to go for the SWOT analysis for the big organizations. It will be interesting to have the SWOT analysis for the self (person) also. It will be amazing to note that the Strength creates the Opportunities while the Weakness provides the Threat. Engineer needs to analyze himself periodically as what are his Strengths and what are his Weaknesses, so that he can take the actions to create the opportunities and to avoid the threats.

Engineers are generally lacking in leadership qualities. One should learn from WASMO attitude, which says: Go to the people. Learn from them. Live with them. Start with what they know. Build with what they have. The best of leaders when the job is done, when the task is accomplished, the people will say we have done it ourselves. Keep in mind that who has not learned to obey cannot be a good commander. The problem with smart people is that they create the followers and not the leaders. This leads to dark future.

Today's theme of 'Capacity Building of Public Health Engineers' will try to address the above situation and will help in the professional development of public health engineers.