



Newsletter

Ministry of Works and Human Settlement

2020-21 FY / Volume 2/Issue 3

CONSTRUCTION INDUSTRY ROAD MAP



Construction in Thimphu. (photo: internet)

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With increasing urbanization and rapid socio-economic development, the construction industry is experiencing unprecedented growth; however, Bhutan has not been able to capitalize this very opportune moment. In the recent audience granted by His Majesty the King to the Ministry's executives and chiefs, the Ministry was instructed to design a Construction Industry Road Map.

Accordingly, the Ministry formed a task force to develop the road map. To kick start the important assignment, the understanding of current scenario of the construction industry in the country was felt important. Therefore data and information was collected from all 20 dzongkhags and 4 thromdes. The data collected were baseline data on the buildings to understand typology, material, cost, time and

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CONSTRUCTION INDUSTRY ROAD MAP

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construction technologies and related aspects of human settlements. Data and situational analysis of the industries to understand how the existing industries can complement and supplement the futuristic construction industries in terms of capacity, products, number, location and

possible mechanization efforts are also collected and studied.

Research will be conducted on possible technology on timber construction, pre engineered buildings, size, cost and types, tool and mechanization options and alternative material that can enhance wellbeing of the dweller

and time of construction.

Review the curriculum of the College of Science & Technology, Phuentsholing, in line with the standards of regional and international universities will also be conducted.

WATER TARIFF- A WAY TO REDUCE DEPENDENCY ON CAPITAL SUBSIDY

the Thromde was introduced in 1996 following the commissioning of 'Urban Water Supply and Sanitation Projects' funded by DANIDA in six towns. According to the prevailing practices worldwide, the Tariff revision is usually done on an annual basis. The Tariff Structure adopted is 'increasing progressive block rate' with two categories namely Residential and Commercial.

The Tariff revision shall take into account salient aspects such as the

- 'affordability to pay' (ATP) by consumers and
- 'Willingness to pay' (WTP) and at the same time ensuring 100 % metering. However, management/ improvement measures need

Water supply scenario of Thimphu Thromde (year 2020)

Production capacity	24.75 MLD
Water demand	24.33 MLD
Daily consumption	14.30 MLD
Non-Revenue water	42.3 %

Note: The Population figure adopted for the year 2020 is 150,175, considering a net growth rate of 1.3% per annum over the population count of 114,551 for Thimphu Thromde (PHCB 2017).

to be put in place for the existing system which include:

- Addressing of metering inaccuracies
- Enhancing efficiency of billing system / collection
- Implementing of demand management measures and
- Water conservation

activities, amongst others. The Tariff revision will ensure Thimphu Thromde to achieve the following:

- Generate adequate revenue to meet routine operation and maintenance costs against inflation on

cost of materials etc.;

- Carry out major rehabilitation/ augmentation works such as replacement of old and leaking pipes including realignment of pipes;
- Gradually establish Capital Investment Fund for future capital works including major repairs to the water supply system, debt servicing (capital repayment + interest); and cover depreciated costs of assets as cost recovery options;
- Reduce water losses and wastages at consumer levels;
- Reduce water demand and promote water conservation; and
- Reduce capital requirements and defer new water expansion programs.

Revenue vs. Expenditure scenario

As per the **'Revenue vs. Expenditure scenario'** covering the last three years, the average surplus/per annum (after meeting basic O&M costs) now stands at Nu.5.33 million. However, considering that there are several Water supply schemes which were recently built on 'DBOT model through external funding for which the Operation and maintenance (O & M) costs are built in the contracts, there would be a requirement of additional fund of Nu.51.51 million annually for the next three-year period. The current 'Operating ratio' stands at 83.57 % which is indeed a good indicator for a

Water utility, being less than 1.

Consequently, the need to revise the existing tariff is found justifiable so as to be able to meet the additional fund requirement for **'Design, Build, Operate and Transfer (DBOT)'** projects in addition to meeting the routine and planned O & M costs.

The Tariff revision being recommended in year 2021 basically covers the annual inflation over the years and the costs to meet the DBOT costs that are payable to the builders of the recently completed water supply schemes under Thromde. Based on the proposed revised rates, the revenue that would be generated is expected to marginally balance out with the expected expenditure costs with no savings anticipated over the next few years.

In absolute terms, the impact through the proposed revision of water tariff on household would be a marginal increase of Nu.75/- per household per month with the minimum average bill of Nu.162/- per month/household. In other words, the revised water bill following proposed tariff revision would be equivalent to 2.5 % of the lowest salaries presently received by an individual which is observed to be well within the affordability range. As regards affordability, 5% of household income is arbitrarily set as a realistic ceiling of affordability/ benchmark for water and sanitation services (source:

Water Utility Data Book)

To ensure that Thromdes meet its required budget without having to depend on the government for subsidy, Thromdes need to identify buildings/ dwellings and categorize it based on its utilization as residential or commercial. Thromdes need to ensure that water meters that are installed are accurate and wherever need water meter calibration may be done. In doing so, they also need to identify illegal connections and come up with proper strategy to institute a proper system of demand management of water to promote water conservations. They also need to ensure the issue of Non-Revenue Water is addressed.

Thromdes need to initiate a proper "pressure zoning" to optimize distribution network and reduce losses arising out of pipe burst and leakages and carry out proper study prior to giving new water connections to regulate pressure requirements.

In order to ensure that there is enough revenue generated to meet its own O&M and future investment, thromdes need to adopt smart billing/ SCADA system. Such system will ensure that there is proper billing mechanism and monitoring system in place. They also need to prepare a five-year tariff revision plan/projection taking into account the new capital investments that are anticipated apart from O&M costs to facilitate annual revision. ■

IMPLEMENTATION (TRAINING) OF THE KNOWLEDGE TRANSFER COMPONENT OF THE PREPARATION OF FLOOD MANAGEMENT PLAN HELD

The training was held from 8 to 10 March 2021 by Centre for Environmental and Geographic Information Services (CEGIS), Bangladesh. The training was a knowledge transfer component of the project Preparation of Flood Management Plan for Paro Dzongkhag 2019-2020.

As per the Terms of Reference (ToR) the expert team from CEGIS would visit Bhutan and conduct the training but the travel restrictions and

quarantine protocols triggered by the pandemic prevented the conduct of the physical training. The training was provided virtually from Bangladesh from 8 - 10 March 2021.

The participants involved the engineers from FEMD and APECS representatives. The training component included hydrological data processing and analysis, the concept of climate projection, the soil and water assessment tools (SWAT) for

hydrological model development, and the model calibration by SWAT-CUP, followed by the general presentation of SPRC (source, pathways, receptors concept) of flood management plan, the socio economic analysis, the Environmental Impact Assessment for the Paro Flood management plan and finally the financial analysis of the proposed structures in Paro Flood Management Plan. ■

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