


WEDC
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Tailor-made or off the peg?


Background to Planning.

Project Planning Methodologies coordinate the wide range of disciplines and control the long series of tasks involved in the planning process.

Pre-investment planning develops projects through from their inception to completion to give schemes that are (one hopes) technically sound, economic, financially viable, socially acceptable, - and institutionally possible.

Planning is an empirical science rooted in a 'practice' that grows like topsy with the institutions doing the planning. Planning methodologies make this 'practice' more systematic and controllable.

Established planning 'practice' can cause difficulties when the sector programme is suddenly accelerated in scale or scope.

The rapid increase in Water Decade expenditures has caused difficulties in many water and sanitation departments, particularly in the small-urban (4-15,000 people) and rural (measured in 100's) subsectors.

Does the cost of pre-investment planning matter when we consider the lifetime cost of a project? This paper, using experience from the Philippines and Indonesia, suggests that it does. The planning should not only be efficient in resource use, but planners should be wary of ascribing needs to the users that they will be unwilling to pay for once the investment is sunk in the ground.

Large urban, small urban, and rural subsectors - a comparison.

Water and sanitation departments before the Decade concentrated their efforts on the large urban sub-sector using comprehensive Methodology Manuals for the pre-investment planning.

Urban areas, as centres of economic activity and civil administration, contain a large proportion of high income earners who can afford an economic rate. The large number of people served and their housing density give substantial economies of scale, reducing unit costs.

Large urban schemes are 'technique-intensive' to plan and use teams of skilled designers. They are built by skilled contractors and then delivered to the users. Operation and maintenance is normally in the hands of professionals as part of a municipal authority.

In contrast, rural schemes are 'people intensive'. They use simple and standard components - the risks of expensive design errors being minimal. Income levels are low, the population is dispersed, so unit costs must be held down by lowering service levels.

They are built either by semi-skilled artisans, by the users themselves, or by a combination of the two. Operation and maintenance is generally the responsibility of the users.

Between large urban and rural schemes lie the small urban projects - the subject of this paper - that cater for small, low density populations with low average income and few skills in the community. These are often too large for off the peg rural designs, yet too small to justify the tailor made systems of large urban schemes.

They are a special case requiring a hybrid planning methodology that incorporates the experience and techniques of both the rural and urban planning subsectors.

The pre-investment planning activities needed for the subsectors are compared in Fig 1.

Small-Urban Planning: the Philippines and Indonesia.

The Philippines -LWUA.

Small-urban water supply schemes in the Philippines are handled by the Local Water Utilities Administration(LWUA) and the Rural Waterworks Development Corporation(RWDC).

LWUA is a lending agency that also carries out the pre-investment planning, assists in construction and management advice, and provides low cost loans.LWUA works through locally elected Water Districts(WDs) that are ultimately responsible for the schemes.

LWUA have found that the cost of pre-investment planning is inversely proportional to project size:

Popln. (av)	Study Cost	Study cost Construction
192,000	\$110,000	4%
92,700	\$85,000	8%
73,200	\$83,000	16%
42,400	\$81,000	38%

These studies included a Master Plan, and a single phase feasibility study with 5-8 years design horizon.

But small-urban schemes, even with pared down planning steps had pre-investment costs between 20-50% of estimated construction costs; in one case the study cost exceeded the estimated cost of the construction.

These excessive costs occurred because whatever the scheme size the 'planning practice' demanded the same engineering staff time; the smallest schemes with little data in fact demanded longer study time than the largest schemes and in many instances were shown to be unviable after months of work.

This has prompted LWUA to revise their planning methodology, design standards, and seek flexibility through the use of micro-computers.

The Philippines -RWDC.

RWDC has the task of providing the rural villages with improved water supplies through point sources and stand-posts. They provide technical assistance in design and construction, grants and low interest loans to a village level WD.

RWDC's approach is simple, field orientated and aimed at mass implementation to meet stiff targets. Designs and drawings are standardised for low capacity systems that are intended to meet basic needs. Pre-investment planning costs are less than 10% of construction costs.

RWDC is finding, however, that their standardised approach is too inflexible for the larger schemes in their programme.

Indonesia: IKK

To meet the targets of the Water Decade programme the Indonesian government set up the 'Ibukota Kecamatan (IKK) programme to provide 1700 small towns (populations 5-15,000) with a basic water supply by 1990.

This fast implementation is to be met using standardised designs which have low service levels and are cheap. Planning is therefore simplified by designs and costs being taken off the peg.

These designs come in a range of standard sized packages. Service levels are fixed at 50:50 house connections: public faucets. Flow is restricted to 600 l/hh/d for households and 6000 l/pf/d for the standposts. IKK pays for investment costs but the users are expected to pay for operation and maintenance.

Studies have shown that the users are not satisfied with the IKK service levels and in many instances regard the new schemes as only marginally better than their existing supplies. Between 70-95% of households are able to pay for house connections, although the design allows only 50% connections.

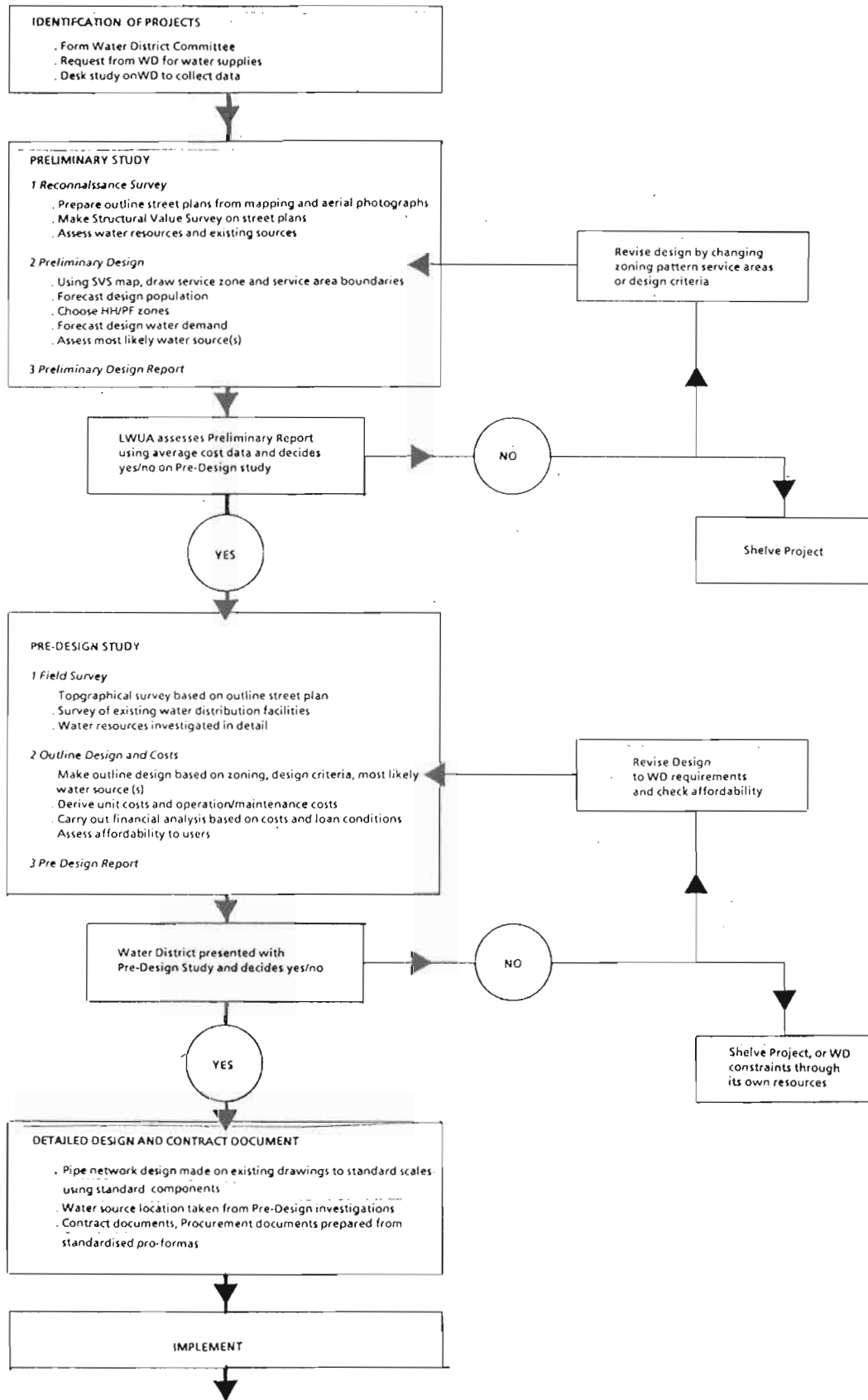
The IKK is now considering ways to make the planning process more flexible to meet actual site conditions and the wishes of the users.

LWUA's Approach to more flexible design.

Use of micro-computers.

In 1981 LWUA, with the assistance of UNDP, began a research programme to integrate micro-computers in the planning process to make more efficient use of staff, reduce design costs, and investigate more alternatives.

Fig 2 Decision Flow Chart. for Revised Small-Urban Planning Methodologies



Research was carried out costing the effect of lowering design standards and service levels. Minimum pipe sizes were reduced, fire flows deleted, residual pressures reduced, and service levels lowered. Reducing design standards only lowered capital costs by 20%; but reducing service levels as well lowered costs by 30-40%.

Modifying design in this way reduced water rates by 47% in one of the towns studied, making an initially unviable project financially viable.

In practice, of course, design standards are seldom maintained. Systems are mostly operated on a fill and draw basis and design flows are seldom reached.

LWUA's objective was to limit pre-investment planning costs to 13% of construction costs. The schemes had to be financially viable and acceptable to both LWUA and the users.

Revised planning procedures were tried out on six projects as a guinea pig using the methodology shown in Fig 2.

Each of these steps advanced the planning to a higher level and allowed LWUA's decision makers to intervene if the schemes proved likely to be unviable. The procedure also presented the WD's with a feasible scheme to consider and be modified to their requirements without wasted design work.

This approach built the experience of senior engineers into the start of the planning process in the Preliminary Study. It makes a compromise between a comprehensive study that reduces risks of errors and the limited study of the standard package approach.

The computer network package allowed the systems to be modelled to trade off service level reduction against user preference for fully piped systems.

Data collected during the studies showed that the income profiles of the towns varied widely and a pre-determined service level mix would have been inappropriate.

Financially viable, mixed service level designs caused problems when presented to the WDs who were unwilling to consider standposts at all because of the difficulties of collecting revenue.

Some Conclusions.

The planning experiences in both the Philippines and Indonesia in small-urban water supply systems suggests that 'appropriate' planning methodologies are as necessary as 'appropriate' water supply technology.

Pre-investment planning for these systems must be flexible, use experienced judgement for early decisions instead of extensive and expensive documentation, and be responsive to user preferences.

Small-urban projects present the planner with the problem of designing a system that is cheap enough to be financially viable yet have a service level that reaches the 'critical mass' of the higher income groups willingness to pay.

Experience in both countries shows that the higher income groups have already made considerable investments in their water supplies which they are unwilling to abandon if the new supplies are not superior in service level. Projects that meet basic needs only through stand pipes will not be acceptable to them.

Most authorities are required to plan for the needs of all users, including the poor. Schemes that prove financially unviable can either be subsidised or shelved.

If they are subsidised then service levels acceptable to high income groups are a direct subsidy to them paid out of state taxes or from cross subsidies from wealthier schemes. If the projects are left to the private design of the high income groups then these will inevitably appropriate existing water sources denying access to the poor.

Flexible design and the staged upgrading of service level may produce schemes that are equitable and financially viable. Many small-urban schemes, however, will inevitably require subsidies.

In this case the task of the planning team is to minimise subsidy levels whilst maximising service levels. Planners should remember that they can approach small-urban planning from both the top and the bottom. For the smaller systems below the critical economic mass the rural approach of upgrading point sources is a useful one to consider.