

Study on innovative sewerage development for unsewered areas

Whole term

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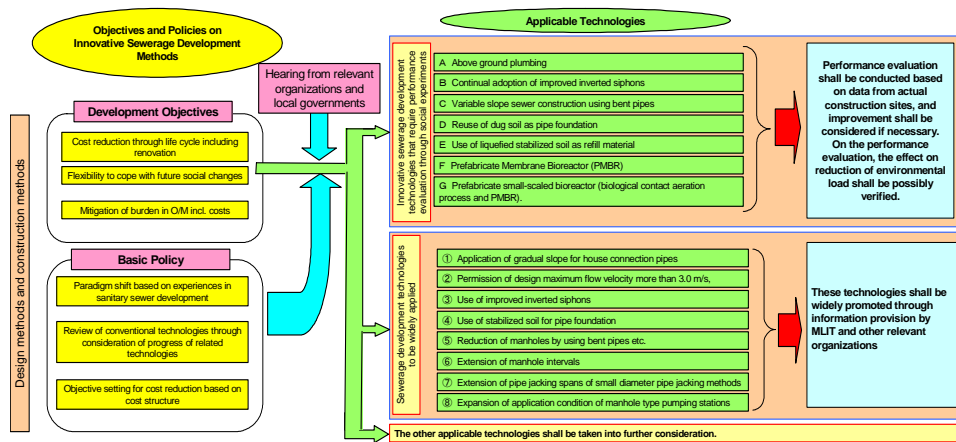
(Purpose)

In Japan, the coverage of sewered population reached a high of 69% at the end of FY 2006, namely, sewer development has progressed to a relatively high level in terms of the national average. However, there are still 24 million unsewered populations in the sewerage planning areas.

Generally, sewerage works require considerable amounts of initial costs and long-term construction periods. Therefore, under the current severe financial situation, cost reduction especially in sewer construction is one of the most important issues. In addition, considering current significant change of social conditions such as population decrease, countermeasures for unsewered areas require flexibility and cost effectiveness.

Under these circumstances, this study was conducted to develop innovative methods applicable for prompt sewerage development.

(Results)



(1) Outline study on effects of infiltration facilities

- Introduction of development methods that enable cost reduction through life cycle including renovation
- Introduction of development methods that enable flexibility to cope with future social changes
- Introduction of methods that mitigate burden such as costs in operation and maintenance

(2) Innovative sewerage development technologies that require performance evaluation through social experiments

- Above ground plumbing: Enables reduce construction costs and renovation costs regarding earthwork and paving work
- Prefabricate Membrane Bioreactor (PMBR): Enables reduction of costs and construction periods, and its transferable unit structure eases to cope with population change
- Other five kinds of countermeasures useful for prompt sewerage development selected as subjects of social experiments: Continual application of improved inverted siphons, variable slope sewer construction using bent pipes, reuse of dug soil as pipe foundation, use of liquefied stabilized soil as refill material, and prefabricate small-scaled bioreactor (biological contact aeration process and PMBR).

(3) Sewerage development technologies to be widely applied without performance evaluation

- Eight kinds of technologies were selected through consideration of applicability based on actual experiences of municipalities: Application of gradual slope for house connection pipes, permission of design maximum flow velocity more than 3.0 m/s, use of improved inverted siphons, use of stabilized soil for pipe foundation, reduction of manholes by using bent pipes etc., extension of manhole intervals, extension of pipe jacking spans of small diameter pipe jacking methods, and expansion of application condition of manhole type pumping stations.

(Summary)

The results of this year's research demonstrated the development objectives on innovative methods to address unsewered areas, seven innovative sewerage development technologies that require performance evaluation through social experiments, and eight development technologies to be promoted without performance evaluation. This study on innovative methods useful for prompt sewerage development shall be continued based on the latest knowledge along with the progress of technology.

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Key words

Cost reduction, Flexible sewerage development, Performance evaluation through social experiments