Various Sewerage Systems

Used water is treated by different types of wastewater treatment facilities that meet the specific needs in the region. For example, public sewerage systems are built mainly in urban areas, regional sewerage systems are implemented by prefectures, specific environmental protection sewerage systems help conserve the environment in resort areas, rural sewerage projects are needed for infrastructure improvement in rural and residential area development, and domestic wastewater treatment tank projects promote the installation of tanks at individual households. These systems and projects complement each other to protect water quality of the water bodies in Japan.

私たちが一度使った水を処理する排水処理施設には、都市を中心とした公共下水道事業や県を中心とした流域下水道、リゾート地などで環境保全に役立つ特定環境保全公共下水道、農村や住宅開発などの基盤整備で必要な農・漁業者集落排水事業、個別住宅の設置すべき合併処理浄化槽事業など、地域の特性に合ったさまざまなタイプの事業があります。これらは相互に補完し合いながら日本の水域を守っています。
Watershed Management Approach — Comprehensive Basin-wide Planning of Sewerage Systems

Comprehensive Watershed management approach is essential to preserve water quality in closed water bodies such as lakes and oceans and so on. When a basin situated in more than one prefecture, to meet Environmental Quality Standards for Water Pollution, the national government takes responsibility to allocate the amount of pollutant load to reduce. Based on the amount of the allocated pollution loads, the prefectures in the basin implement Comprehensive Basin-wide Planning of Sewerage Systems in order to decide the treatment areas and effluent water quality.

The Comprehensive Basin-wide Planning of Sewerage Systems was designated as a high-ranking plan among projects carried out by local authorities in 1970 when the Sewerage Law was revised. Comprehensive Basin-wide Planning Sewerage System is one of the major watershed management measures.

Allocation of Allowable Pollutant Loads among Prefectures

Effort by Prefecture A

[Map showing allocation of allowable pollutant loads among prefectures and effort by Prefecture A]
Effective Sewerage System Construction and Implementation Measures
効率的な下水道整備と事業実施方法

Public wastewater treatment works in Japan include the construction of public sewerage systems, rural sewerage projects, and domestic wastewater treatment tank projects. To select the most practical measure that fits local conditions, such as geographical features and population density, each prefecture designs a Prefectural Plan for Appropriate Wastewater Treatment ("Prefectural Plan").

Public Sewerage Systems
公共下水道

Public sewerage systems collect and treat wastewater discharged from every household through sewer pipes. These systems are managed by municipalities, mainly in urbanized areas. A system that includes a wastewater treatment plant is called an "independent public sewerage system," while a system that is connected to a regional sewerage system is called "public sewerage connected to a regional sewerage system."

Public sewerage systems that are implemented outside urbanized areas are specified as specific environmental protection sewerage systems, and systems that mainly treat wastewater from specified factories are called specific industrial waste control sewerage systems. These systems are differentiated from the public sewerage systems. 主として市街地の中で各家庭から排出される汚水を下水道管網により排除し、処理するために市町村が管理する下水道です。下水処理場を有するものを単独公共下水道、流域下水道に接続するもののを流域周辺公共下水道と呼んでいます。

なお、公共下水道のうち、市街化区域以外で行われるものを特定環境保全公共下水道といい、特定の事業活動による汚水が大半を占めるものを特定公共下水道として区別しています。
Regional Sewerage Systems
流域下水道

This system is constructed in an area that covers more than one municipality to protect water quality efficiently in lakes and oceans. In constructing a regional sewer system, the prefectural government builds trunk sewer pipes and a wastewater treatment plant while sewer pipes that collect wastewater from each household and businesses are installed by local authorities as “public sewerage connected to a regional sewerage system”. The prefecture and municipalities carry out the maintenance and management of each facility.

Comparison between Public Sewerage Systems and other Wastewater Treatment Systems
下水道とその他の汚水処理施設の比較

In addition to public sewerage systems, there are other types of wastewater treatment systems, including rural sewerage projects and domestic wastewater treatment tank projects. The total coverage rate of these three systems in fiscal 2000 was 71.2%. Depending on regional characteristics, the most suitable system for each area is selected to maximize efficiency. The coverage rate of flush toilets in fiscal 2000 was 90.8%. Coverage rate of flush toilets=number of people with a flush toilet (those with a domestic wastewater treatment tank excluded)/population in the treatment area.

<table>
<thead>
<tr>
<th>Type of System</th>
<th>Public sewerage system</th>
<th>Rural sewerage projects</th>
<th>Domestic wastewater treatment tank projects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Specific environmental protection public sewerage system</td>
<td>Agricultural and fishery communities inside an agricultural developing area designated by the Law Concerning the Improvement of Agricultural Developing Areas (including areas that are considered to be improved along with the concerned area).</td>
<td>Areas where a miscellaneous wastewater measure or another type of measure is necessary but not included in the area planned for a project plan authorized under Sewage Law.</td>
</tr>
<tr>
<td>1. Target area</td>
<td>Public sewerage system: Mainly urbanized areas. Specific environmental protection public sewerage system: Areas not designated as an urbanized area.</td>
<td>Agricultural and fishery communities inside an agricultural developing area designated by the Law Concerning the Improvement of Agricultural Developing Areas (including areas that are considered to be improved along with the concerned area).</td>
<td>Areas where a miscellaneous wastewater measure or another type of measure is necessary but not included in the area planned for a project plan authorized under Sewage Law.</td>
</tr>
<tr>
<td>2. Target population size</td>
<td>Public sewerage system: Not specified. Specific environmental protection public sewerage system: Between 1,000 and 10,000 (Less than 1,000 is also acceptable).</td>
<td>As a general rule, the number of households that would benefit should be above 20, and the population should be 1,000 or less.</td>
<td>Installed into individual households</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Coverage rate</td>
<td>62% 78.03 million people (2000 fiscal year)</td>
<td>2.0% 2.59 million people (2000 fiscal year)</td>
<td>7.2% 9.14 million people (including those who installed tanks privately)</td>
</tr>
<tr>
<td></td>
<td>7,803,000</td>
<td>292,000</td>
<td>914,500</td>
</tr>
</tbody>
</table>

Source: Sewage Works in Japan 2001
出典: 2001年日本の下水道
Partners who Support Sewage Works

National and prefectural governments, municipalities, and supporting and cooperating organizations make joint efforts in sewage works to meet the needs of the citizens. Each organization plays a role, such as passing laws and regulations, planning and constructing sewage systems, supplying construction and building materials, and conducting technical research and development or operation and maintenance of systems. The whole project is conducted organically.

- Ministry of Land, Infrastructure and Transport
  The national government passes the laws and regulations needed to carry out sewage works and designs the necessary frameworks, including working schemes and technical standards. In addition, the national government instructs and supervises the project operating bodies and conducts research and surveys for policy making.

- Project Operating Bodies
  Project operating bodies are usually prefectural or municipal governments. These public bodies construct and develop sewage systems using subsidies from the national government, municipal expenditure and local bonds. A sewerage service charge collected from local residents is used for the operation and maintenance of the sewage systems.

- Japan Sewage Works Association
  The association conducts surveys and research related to sewage systems, and various activities to make requests are also conducted by the association. The association provides support for the understanding and cooperation of citizens that are needed to promote sewage systems improvement.

- Japan Sewage Works Agency
  The agency provides technical support for the construction, maintenance, and management of fundamental facilities, such as wastewater treatment plants and pumping stations based on prefectural or municipal governments’ requests. The agency conducts experiments, research, and training sessions as well.

- Japan Institute of Wastewater Engineering Technology
  The Institute conducts R&D activities in the field of new technology, and carries out joint projects with the private sector. It also makes evaluations of promising technology developed by the private sector, as part of an attempt to promote the introduction of new technologies in sewage works.

- Private Sector
  The private sector supports sewage works in various fields, including consulting, civil engineering and construction, water treatment machinery, electric equipment, sewer pipe material development, operation and maintenance.
National and Local Governments Work Together to Promote Sewerage Systems Improvement

Local governments conduct sewage works in Japan. However, the construction of sewerage systems is often too costly for a local government to carry out, and urgent construction is important from a nationwide point of view. For these reasons, national government subsidies are provided to local governments for the construction of sewerage systems. In other words, construction costs are shared between national subsidies and the expenditure of local governments. National and local governments work together to build sewerage systems in Japan.

### Ratio of Government Subsidy for Sewage Works

<table>
<thead>
<tr>
<th>Types of sewerage system</th>
<th>Financial allocation</th>
<th>Related regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>National government (rate of subsidy)</td>
<td>Prefectural or municipal government</td>
</tr>
<tr>
<td>Public sewerage systems and specific environmental protection sewerage systems</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Regional sewerage systems</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Urban storm drainage systems</td>
<td>40</td>
<td>60</td>
</tr>
<tr>
<td>Specific industrial waste control sewerage systems</td>
<td>22</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td>(25)</td>
<td>(50)</td>
</tr>
<tr>
<td></td>
<td>(33)</td>
<td>(33)</td>
</tr>
</tbody>
</table>

Note: The figures in parentheses indicate the allocation rates for ongoing projects for specific industrial waste control sewerage system that started in 1970 or before. Numbers are rounded off to the decimal point.

Source: Sewage Works in Japan 2001

---

<table>
<thead>
<tr>
<th>主な国庫補助率</th>
<th>种類</th>
<th>負担区分</th>
<th>適用</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>国 (%)</td>
<td>郡道市町村 (%)</td>
<td>その他 (%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>適用</td>
</tr>
<tr>
<td>公共下水道及び特定環境保全公共下水道</td>
<td>50</td>
<td>50</td>
<td>45</td>
</tr>
<tr>
<td>流域下水道</td>
<td>50</td>
<td>50</td>
<td>33</td>
</tr>
<tr>
<td>都市下水道</td>
<td>40</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>特定公共下水道</td>
<td>22</td>
<td>44</td>
<td>33</td>
</tr>
</tbody>
</table>

注：特定公共下水道の（菅田村）は、1970年度以前からの経済事務に係る場合、小数点以下四捨五入

出所: 2001年度の下水道
Construction Cost of Sewerage Systems

Wastewater treatment plants

Sewer pipes, etc.

Cost of a local government's independent project

Cost of a project for national government subsidy

Maintenance and Management Cost of Sewerage Systems

As often stated, the real work of a sewage works starts when the construction of the facilities is finished. Sewerage maintenance costs include the maintenance and management costs of sewerage systems, operation and management costs (maintenance and management costs) of wastewater treatment plants, and bond issuance principal and interest payments of local bonds from the time of construction. These costs are covered by a sewage service charge collected from residential users and payment from the general accounts of the local government.

In 2000, the total amount of maintenance costs needed by local governments who already started servicing sewerage systems was 3,062.6 billion yen. The following chart gives a breakdown of costs.

Breakdown of Sewerage System Management Cost

Breakdown of Resources for Sewerage System Management Cost
Why here?
なんでこんなところで?

FASHION SHOW ON THE SEWERAGE CONSTRUCTION SITE
下水道再構築工事現場の防音ハウスがファッションショー会場に…!!

In any fashion show, designers send their message to stylish men and women throughout the world. Sending such a message from a sewerage construction site may sound no less mismatched than “Beauty and the Beast.” Contrary to popular thought, sewerage construction sites, which are highly soundproof—especially those in the Tokyo metropolitan area—have been the perfect site for fashion shows and exhibitions. We hope to boost the image of sewage works through such events in the future.

ファッションショーといえば、女性を美しく着飾る情報を発信するところ。そんな場所にファッションショーが開かれた。下水道工事の現場が選ばれました。美女と野獣という言葉が考えられますが、美女と下水道もミスマッチな感じがします。東京という大都市の下水道工事では、服飾業界の展示会も可能なくらい環境に配慮された防音ハウスの中でも行われています。流行の先端をいくイベントを活用し、下水道のイメージも向上させようという試みです。