7.6 Utility and Government services

Definition:

(INSPIRE, 2007) Includes utility facilities such as sewage, waste management, energy supply and water supply, administrative and social governmental services such as public administrations, civil protection sites, schools and hospitals.

Description:

A very broad INSPIRE theme including different kinds of objects:

Utility services/networks: Physical construction for transport of defined products: These may include pipelines for transport of oil, gas, water, sewage or other pipelines. Transmission lines may include electrical, phone, cable-TV or other networks. Transmission lines for both land and at sea/water (bottom) is important. All kinds of transmission systems have nodes and are linked to facilities for production and treatment of different kinds of products. Despite being heavily interlinked, the themes in INSPIRE are treated separately – the production and treatment facilties are treated mainly in the theme production and industrial facilities. Transmission systems may be of different kinds;

- **Oil and gas pipelines**: Major lines from oil and gas fields/extraction areas and storage sites. Important production and treatment facilities of such resources is linked to a such a transport network, such as nuclear power stations, power stations, transformer stations and oil tanks. GISCO, Energy/ industry authorities, Companies
- **Water pipelines**: Location of water pipelines – large and local network. Large transmission lines are of interest here. Linked to production facilities for water for consumption/processes. Irrigation lines treated separately under agricultural facilities. Water supply institutions, Utilities/ health
- **Sewage pipelines**: Sewage network, linked to sewerage facilities. Major lines of interest here. Utilities
- **Transmission lines- electrical**: Data set showing larger transmission lines for electricity, both at land and sea. The location of lines is important knowledge for the energy sector itself, land use planners, construction, fisheries for sea cables. Parts of the information important in low flight hindrance databases. Large: national energy/industry institutions. Local authorities, Companies
- **Transmission lines-phone/ data/cable-TV**: Location of phone/ data: Rough data needed in land planning. Important transmission nodes, e.g. antennas, may be seen as part of the network. The cables placement can conflict other natural resource utilization activities, e.g. fisheries. Technical data accuracy for local level Companies

Rough pipeline and utility service databases exist at European level, e.g. GISCO database with scale 1: 1.000.000. Data within countries is non-homogenous. There are examples of national portals warning on construction, distributing maps/data on location of pipelines. At local and regional level the responsibility of government offices or different operators/ firms. In some countries there are national portals for information about cables etc in construction work.

Waste treatment facilities and waste storage:
It is important to identify the environmental protection facilities with unique identifiers. The data component category coincides with economic/statistical categories (NACE/SERIEE). Location by geographical point, by address or in some cases as area.

- **Controlled waste treatment sites for non-hazardous waste at land:** geographical location of official or regulated facilities for waste treatment and storage; Included in the spatial component category "environmental protection facilities"
    - storage sites at land - landfills
    - incinerators
    - other treatment facilities

  Information on kind of treatment, kind of substances treated, capacity, percentage biodegradable waste, energy recovery from incinerators and landfills

- **Controlled waste treatment facilities for hazardous waste at land:** geographical location of official or regulated facilities for treatment and storage of hazardous waste; Included in the spatial component category "environmental protection facilities". Reported according to SEVESO II Directive. Distinction between
    - thermal treatment,
    - landfills
    - nuclear waste treatment and storage
    - and other treatment for hazardous waste (e.g. chemical),
    - other treatment facilities

  Information about kind of treatment, kind of substances treated, capacity (and potential risks).

- **Regulated areas for dumping of waste at sea:** Areas at sea for dumping of waste, e.g. ships, oil drilling platforms, industrial waste, military waste. OSPAR Permits on marine dumping. Reporting per contracting party and site (?) waste category, number of permits issued, tonnes licensed and contracting party. Important in environmental management and management of biological resources at sea. . Submission of data for the Annual OSPAR Report on Dumping of wastes at Sea from OSPAR Convention for the protection of the marine environment of the north-east Atlantic. The anticipated delivery authorities could be sea management/ marine/ waste/ environmental authorities, OSPAR. Included in the spatial data component "area regulation".

  Does also include nuclear waste. Example is Russian dumping sites: Official sources states a total of 0.45 PBq of liquid radioactive material has been dumped in the Barents Sea and 0.32 PBq in the Kara Sea. Most of the solid radioactive waste has been dumped along the east coast of Novaja Zemlya and the open Kara Sea. Some material on existing sites and amounts are available.

- **Illegal or non-controlled dumping of waste - sea and land.** Illegal landfills/"wildfills" on land areas are common, but policies are directed to reduce the number of such storage of waste. It is important in local waste management and pollution control to locate such illegal land fills, in order to carry out targeted actions. Non-controlled areas at sea where waste is recorded is also important, this can be shipwrecks, industrial waste, military waste, cars. OSPAR Permits on marine dumping.

- **Mining waste:** Mining waste is a special kind of waste. The residues from mining can contain a low content of metals or minerals not being economically extractable, but leaching can cause contamination of soil and water. The tailings of mining activities are usually located near the site of extraction. In management and assessment of mining waste there are needs for spatial data such as location of mines and tailings, water catchments, river network, water and sea, soil.

- **Sewage sludge: generation, sewage pipelines network and sewage treatment facilities:** Is treated as a group here:
    - Sewerage/wastewater treatment facilities, Information on capacity, kind of treatment, category of recipient.
    - Sewage networks treated under the data component: utilities.
    - Sewage sludge spread to agricultural lands - regulated "permission zones"
    - Sewage sludge spread - agricultural lands and soil deposits suitability mapping

Environmental. protection facilities
The theme does also include a specific kind of facilities: Environmental protection facilities include a series communal or private facilities of sewage/ wastewater treatment sites, waste treatment facilities (e.g. incineration , landfills), anti-noise constructions facilities, protection facilities against natural hazards (slide walls, flood walls etc). It is important to identify the environmental protection facilities with unique identifiers. The data component category coincides with economic/statistical categories (NACE/SERIEE). Location by geographical point, by address or in some cases as area.

Examples

- **Waste treatment and disposal site - hazardous waste:** Waste treatment plants location for hazardous waste. Major distinction between hazardous and non-hazardous waste. Distinction between thermal treatment, landfills and other treatment for hazardous waste (chemical/ radioactive),. incineration, landfills and other treatment for non-hazardous waste. Information about kind of treatment, kind of substances treated, capacity (and potential risks). Waste Directive (Directive 75/442/EEC), Mining Waste Directive (Directive 2006/21/EC), SEVESO II, WFD, MS to DG ENV
- **Sewage/ wastewater treatment site:** Wastewater treatment facilities, Information on capacity, kind of treatment, category of recipient. Sewage networks treated under the data component: utilities. WFD, MS to DG ENV, local authorities. Facilities defined in Directive 91/271/ECC (urban waste water) / industrial waste may be part of this general category of Sewage/wastewater treatment site.

Natural hazards protection facilities: Any kind of facilities or constructions protecting against natural hazards, e.g. land slide walls, flood walls etc). Hydrographic services, civil security, local authorities.

- **Anti-noise constructions:** Constructions/walls or other facilities for limiting the spread of noise from road, rail and air traffic, industrial or other noise. For industrial includes modification at the source. Workplace protection excluded. 6EAP

Administrative and social governmental services such as public administrations, civil protection, sites, schools, hospitals. The kinds of sites are commonly presented in governmental and municipal portals and map system as "point of interest"-data, and may be point-based location of a variety of categories of municipal and governmental services and social infrastructure.

- police stations,
- fire fighter stations
- hospitals
- health care centres
- care centres for the elderly
- schools and kindergartens
- renovation/ waste delivery sites
- government and municipal offices

Scope and use examples:

Land use planning. Risk planning/ management. Foreseen development of Seveso II Directive to treat transmission lines as possible technological hazards, the Seveso Directive is of major importance in regulating management of risk. Access to utility data as needed in environmental impact assessment, to be carried out when planning of larger transmission lines for electricity or pipelines. Existing and planning transmission lines should be available for general land use planning. Detailed network data needed in construction.

Information about environmental protection facilities is to be used in evaluation of policies, indicator development and generally on reporting of environmental issues. Statistics linked to the protection facilities can be linked to a location. There is a need for such information if spatial analysis of anthropogenic pressure on river basins. At local level important in land use planning, management of water, coastal areas, natural and technological risks.

Administrative and governmental service information is being used by the citizen and public information systems, in government and municipal management actions and in planning. The navigation databases used in cars commonly include such information.

Community policies:

A community Strategy for Waste Management was initially adopted by the European Commission in 1989 followed by the 1996 Review of the Community Strategy for Waste Management. The 6 Environmental Action plan is the latest document from the Community, with expected developments on “Thematic strategy on the Sustainable Use of Natural Resources”.

Waste management is linked to two issues: preventing waste generation and sustainable management of waste: re-use and recovery (recycling), optimisation of final disposal and regulation of transport. The 6EAP gives a high priority to waste prevention, and to achieving a de-coupling of resource use from economic growth through significantly improved resource efficiency, dematerialisation of the economy and waste prevention. Other policy areas are linked to waste policies, e.g. policies on climate change, air, urban, soil and water (WFD).

- Seveso II, EIS Environmental Impact Assessment, Waste, EAP

Important feature types and attributes:

Objects in networks could both include transmission lines and nodes being pump stations etc. Major production and treatment sites is treated in the theme Production and industrial facilities.

Pipeline – oil, gas, heat

- category of content
- segment id
- capacity, max
- average volume
- diameter
- pressure regime
- construction system
- date of construction
- responsible organization

Sewage system network

- segment id
- capacity, max
- average volume
- construction system, including e.g. material used for building the network (cast iron, cement …)
- altitude
- date of construction
- responsible organization

Water supply system network

- segment id
- capacity, max
- average volume
- construction system, including e.g. material used for building the network (cast iron, cement …)
- date of construction
- responsible organization

Electricity transmission lines

- segment id
- capacity, max
- average volume
- construction system
- date of construction
- responsible organization

Transmission network for different kind of data/ signals

- segment id
- category of object (feature type) e.g. antennas, base-stations, relay-antennas, cables etc
- category of data/signal, e.g. radio, data, mobile, TV
- date of construction
- responsible organization

Environmental protection facility

- category of object (feature type)
- type of treatment/service
- description, capacity, construction etc
- name
- date of construction
- responsible organization

Public/governmental services/ facility (point)

- category of service/facility
- name
- Id
- information
- link to web site

If measurement values are to be given, a registration attribute may be added, with information in sub-attributes such as

- registration authority
- registration regime
- registration parameter
- value

- registration date, time

Overlaps and links with other themes

Water supply and sewage might overlap with themes

- Hydrography
- Buildings
- Land use
- Environmental monitoring facilities (like treatment plants/pumping stations)
- Production and industrial facilities
- Energy resources

Reference documents:

CSI – Piemonte: SIRI Conceptual Schema

European Commission: Mining Waste Directive (Directive 2006/21/EC)

European Commission: Urban Waste Water Directive (Directive 91/271/ECC)

European Commission: Waste Directive (Directive 75/442/EEC)

INTESA-GIS: 1n1007_1-2 - Specifiche per la realizzazione dei data base topografici di interesse generale. Il catalogo degli oggetti (v.3_3). (Italy)

LabNets: Subsoil network Laboratory: Mapping specifications of the technological networks.

Norwegian feature catalogue and standards, incluing UML models. Contain Utility. Oil and gas pipelines are described in the Petroleum model. URL:
http://www.statkart.no/sosi/UMLfullmodell/Ledningsnett/Ledningsnett.htm,
http://www.statkart.no/sosi/UMLfullmodell/Petroleum/Petroleum.htm English version by spring 2008.

RAVI: NEN3610 - Basic scheme for geo-information - Terms, definitions, relations and general rules for the interchange of information of spatial objects related to the earth's surface (The Netherlands)

Regione Emilia-Romagna: Data Base Topografico alle grandi scale (1:1.000 - 1:2.000 - 1:5.000)

CSI – Piemonte: SIRI Conceptual Schema