Towards sustainable spatial planning -

harmonisation of spatial data for the land use case study in Poland

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INSPIRE – Geospatial World Forum 2015
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UNEP/GRID-Warsaw Centre

established in 1991 within the framework of the United Nations Environment Programme as part of the Global Resource Information Database network

embedded into implementation of the UNEP mission related to

- **protection of the environment**
- **sustainable management of natural resources of the Earth**

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UNEP/GRID-Warsaw mission

fostering use of geoinformation and remote sensing in:

- environmental management,
- spatial planning,
- biodiversity protection,
- climate change mitigation,
- capacity building and environmental education.

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Partnerships and Memberships

- Member of the UN System as the Polish node of the UNEP-initiated GRID (Global Resource Information Database) network
- Member of European Citizen Science Association (ECSA)
- National Centre of Excellence, digital-earth.eu network
- Member of the Geographical Information Systems International Group (GISIG)
- Supporting member of the Polish Association for the Spatial Information (PASI)
- Member of the ICA/ Open Source Geospatial Foundation (ICA OSGeo) Labs
- GLOBE Program – national coordinator
- Member of the Partnership for Climate initiative in Poland
- **Partnership with public administration, local governments, scientific institutions as well as business organizations**

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Spatial planning as a step towards sustainable development

- Management of space, aimed at efficient management of the environment is an important step towards sustainable development
- The efficiency of spatial management is largely determined by
  - the availability of data, particularly environment data,
  - information on existing land use, social and economic demands
  - the availability and access to consistent spatial plans, both at the municipality and the region level.

7th EAP

The 7th Environment Action Programme (EAP) - guide for European environment policy until 2020, sets out a vision:

> *In 2050, we live well, within the planet's ecological limits. Our prosperity and healthy environment stem from an innovative, circular economy where nothing is wasted and where natural resources are managed sustainably, and biodiversity is protected, valued and restored in ways that enhance our society's resilience. Our low-carbon growth has long been decoupled from resource use, setting the pace for a safe and sustainable global society.*

Three key objectives:

- to protect, conserve and enhance the Union's natural capital
- to turn the Union into a **resource-efficient**, green, and competitive low-carbon **economy**
- to **safeguard** the Union's citizens from **environment-related pressures** and risks to health and wellbeing

INSPIRE Directive

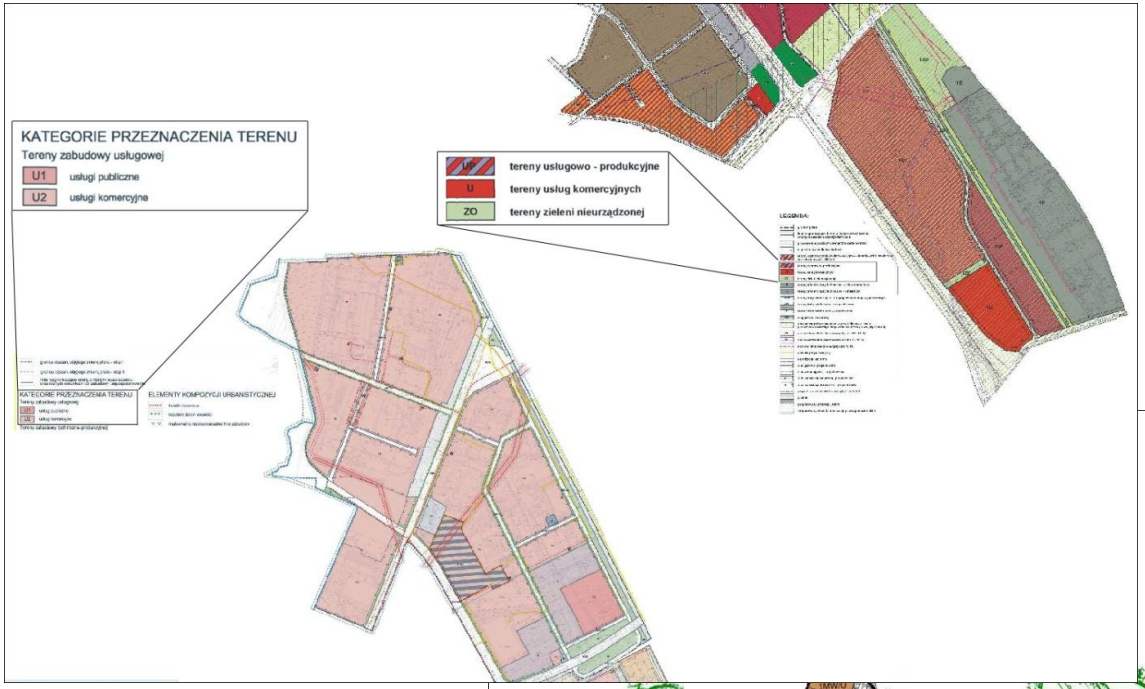
INSPIRE Directive 2007/2/WE dated on 14 March 2007

- rules for the establishment of the Infrastructure for Spatial Information in the European Community,
  - brings broad access to spatial data in Europe,
  - opens up new possibilities.
- Member States are required to make available data sets related to one or several of the Annexes in Directive 2007/2/EC and the corresponding spatial data services in conformity with the technical arrangements for the interoperability and, where practicable, harmonisation of spatial data sets and services

INSPIRE Directive

- Wide **access to spatial data and geoinformation technology** changed significantly approach to the methodology and practice of environmental management.
- New opportunities generate new requirements:
  - data harmonisation
  - capacity building.
- **Geoparticipatory environmental management** as an opportunity and a challenge.

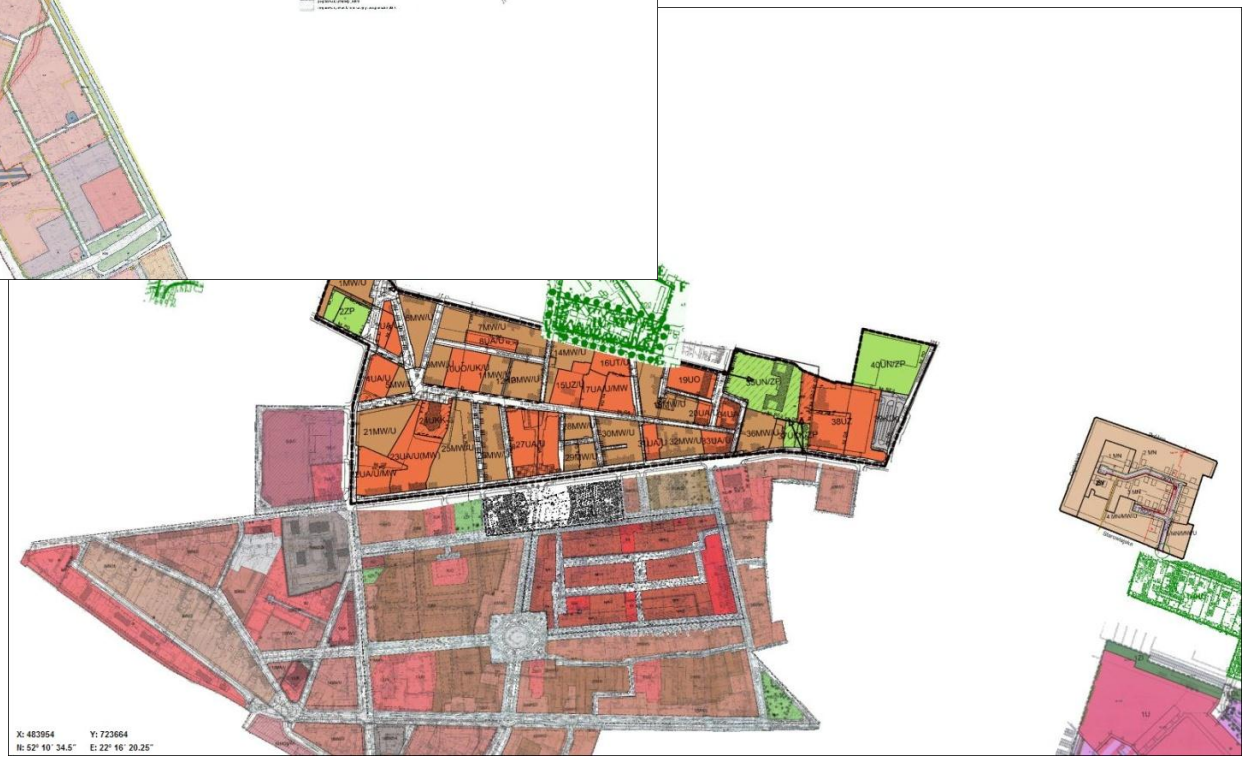
Current state



data inconsistency

lack of interoperability

lack the common use of data



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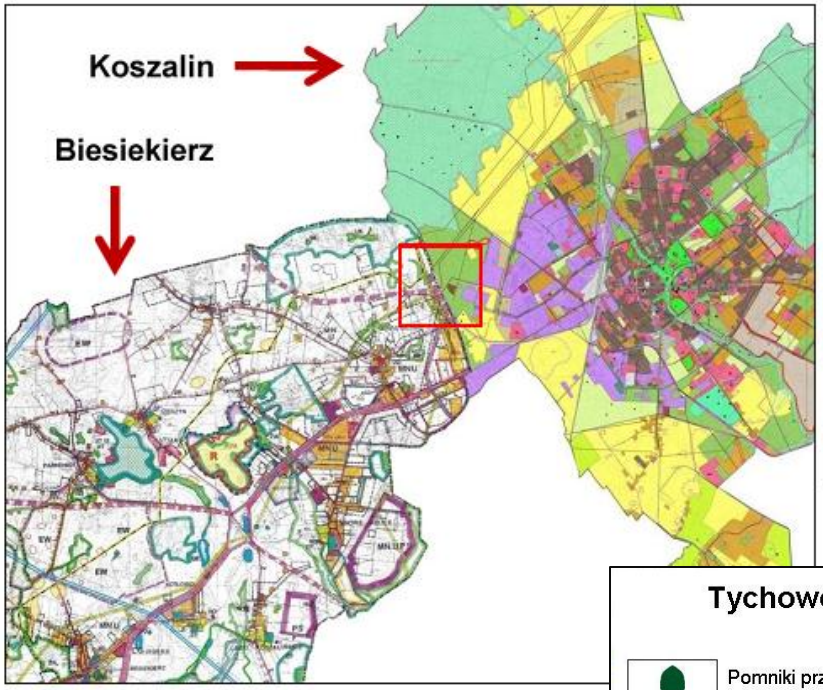
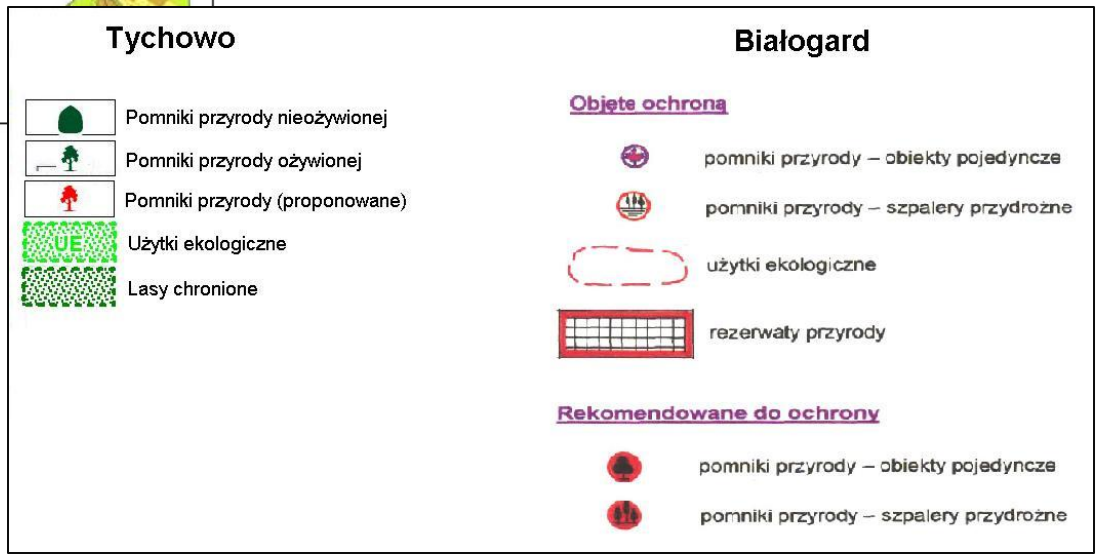
Do we really need harmonization in spatial planning?





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INSPIRE theme Land use (Annex III)

- Development of coherent, harmonized land use database - task of EU governments
- Defined as *Territory characterised according to its current and future planned functional dimension or socio-economic purpose (e.g. residential, industrial, commercial, agricultural, forestry, recreational).*
- Land use is one of the most important
  - strengthening ecological resilience,
  - holding the soil degradation,
  - boosting resource-efficiency.

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INSPIRE - Infrastructure for Spatial Information in Europe

Interoperability and harmonization

INSPIRE approach:

- across spatial data themes - requirements for:
  - common data types,
  - the identification of spatial objects, metadata for interoperability,
  - generic network model
  - and other concepts and rules that apply to all spatial data themes.
- within one spatial data theme
  - use the classifications and definitions of spatial objects,
  - their key attributes and association roles,
  - data types, value domains and specific rules that apply to individual spatial data theme.

Land use - pilot study in Poland

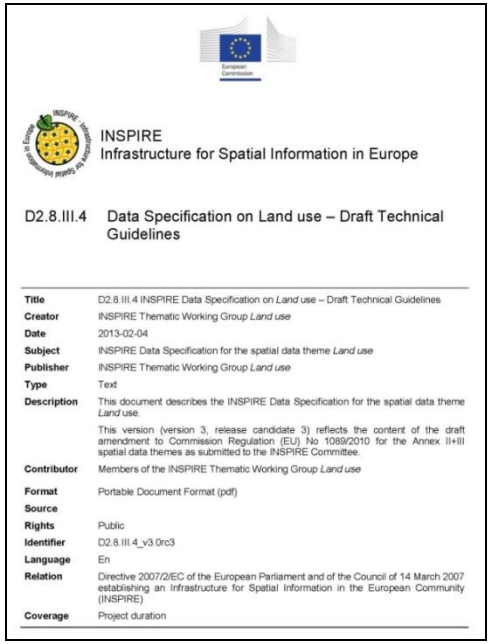
- request of the Polish Ministry of Infrastructure and Development
- the task - development of the **Strategy for data harmonization** on the level of local spatial plans, based on the pilot study in municipalities, focused on harmonization of spatial data sets, metadata and spatial data services
- steps:
  - the identification, acquisition, processing land use plans into spatial data sets
  - harmonization of these data sets in accordance with the implementing rules and data specifications for the land use, including development of rules for mapping the national classification to HILUCS
  - development of the Strategy for data (Land use theme) harmonization at the national level

Data specification as a starting point

D2.8.III.4 Data specification on Land use – technical guidelines published in December 2013 developed by the Thematic Working Group (TWG) LU

Data specification – set of rules and guidelines for the implementation of the provisions laid down in the Implementing Rule for spatial data sets and services of the INSPIRE Directive.

It also includes additional requirements and recommendations that, although not included in the Implementing Rule, are relevant to guarantee or to increase data interoperability.



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D2.8.III.4 Data Specification on Land use – Draft Technical Guidelines

Title	D2.8.III.4 INSPIRE Data Specification on *Land use* – Draft Technical Guidelines
Creator	INSPIRE Thematic Working Group *Land use*
Date	2013-02-04
Subject	INSPIRE Data Specification for the spatial data theme *Land use*
Publisher	INSPIRE Thematic Working Group *Land use*
Type	Text
Description	This document describes the INSPIRE Data Specification for the spatial data theme *Land use*. This version (version 3, release candidate 3) reflects the content of the draft amendment to Commission Regulation (EU) No 1089/2010 for the Annex II+III spatial data themes as submitted to the INSPIRE Committee.
Contributor	Members of the INSPIRE Thematic Working Group *Land use*
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Relation	Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE)
Coverage	Project duration

Land use theme

- Definition: the use and functions of a territory and it is description of land in terms of its socio-economic and ecological purpose.
- *Land use* theme is split in two different types:
  - the Existing Land Use which objectively depicts the use and functions of a territory as it has been and effectively still is in real life
  - the **Planned Land Use** which corresponds to spatial plans, defined by spatial planning authorities, depicting the possible utilization of the land in the future.
- Two types of classification systems are supported
  - the (obligatory) Hierarchical INSPIRE Land Use Classification System which is a multi-level, classification system that will apply to the existing and planned land use;
  - the (optional) specific classification system in use in a member state

Planned Land Use (PLU)

PLU conceptual schema corresponds to a dataset that corresponds to a spatial planning document

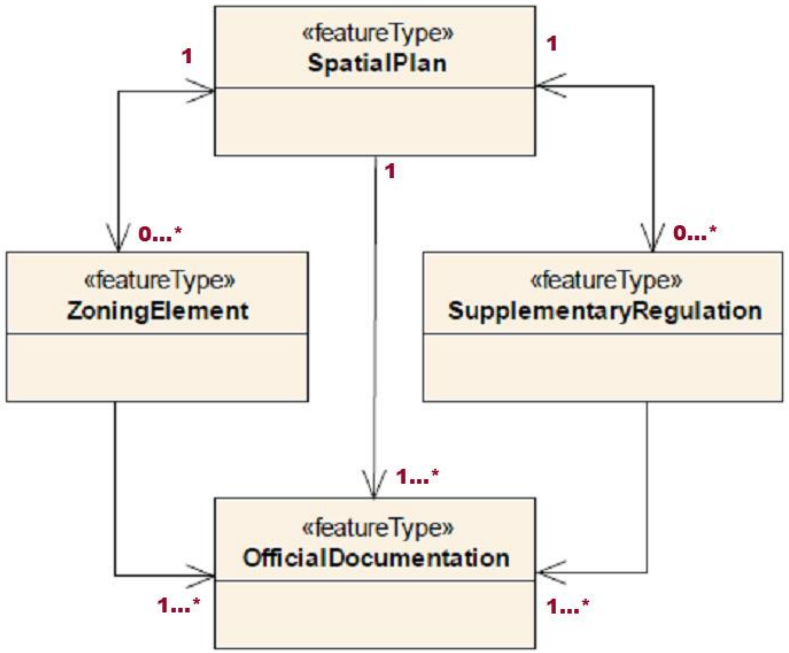
Feature types:

SpatialPlan

ZoningElement

SupplementaryRegulation

OfficialDocumentation



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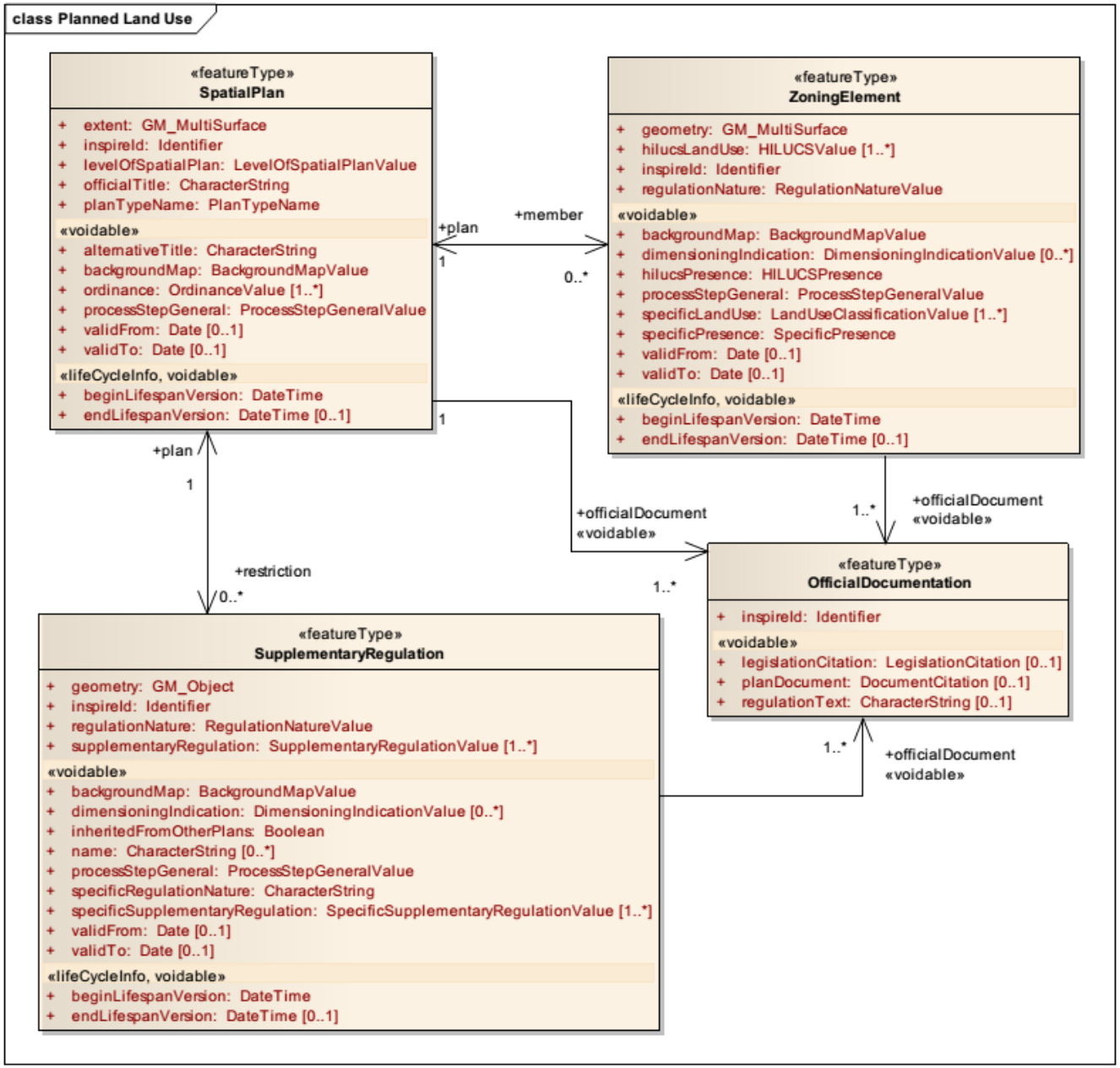
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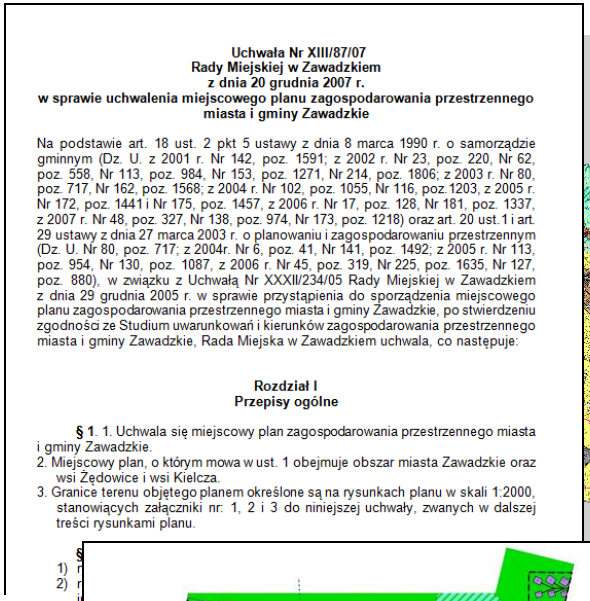
+ endLifespanVersion: DateTime [0..1]

Spatial object types (1)

SpatialPlan

A set of documents that indicates a strategic direction for the development of a given geographic area, states the policies, priorities, programmes and land allocations that will implement the strategic direction and influences the distribution of people and activities in spaces of various scales.

OfficialDocumentation



Uchwała Nr XIII/87/07
Rady Miejskiej w Zawadzkiem
z dnia 20 grudnia 2007 r.
w sprawie uchwalenia miejscowego planu zagospodarowania przestrzennego miasta i gminy Zawadzkie

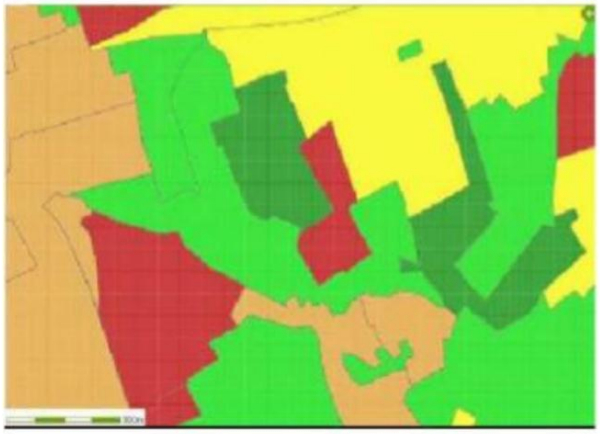
Na podstawie art. 18 ust. 2 pkt 5 ustawy z dnia 8 marca 1990 r. o samorządzie gminnym (Dz. U. z 2001 r. Nr 142, poz. 1591; z 2002 r. Nr 23, poz. 220, Nr 62, poz. 558, Nr 113, poz. 984, Nr 153, poz. 1271, Nr 214, poz. 1806; z 2003 r. Nr 80, poz. 717, Nr 162, poz. 1568; z 2004 r. Nr 102, poz. 1055, Nr 116, poz.1203, z 2005 r. Nr 172, poz. 1441 i Nr 175, poz. 1457, z 2006 r. Nr 17, poz. 128, Nr 181, poz. 1337, z 2007 r. Nr 48, poz. 327, Nr 138, poz. 974, Nr 173, poz. 1218) oraz art. 20 ust.1 i art. 29 ustawy z dnia 27 marca 2003 r. o planowaniu i zagospodarowaniu przestrzennym (Dz. U. Nr 80, poz. 717; z 2004r. Nr 6, poz. 41, Nr 141, poz. 1492; z 2005 r. Nr 113, poz. 954, Nr 130, poz. 1087, z 2006 r. Nr 45, poz. 319, Nr 225, poz. 1635, Nr 127, poz. 880), w związku z Uchwałą Nr XXXII/234/05 Rady Miejskiej w Zawadzkiem z dnia 29 grudnia 2005 r. w sprawie przystąpienia do sporządzenia miejscowego planu zagospodarowania przestrzennego miasta i gminy Zawadzkie, po stwierdzeniu zgodności ze Studium uwarunkowań i kierunków zagospodarowania przestrzennego miasta i gminy Zawadzkie, Rada Miejska w Zawadzkiem uchwala, co następuje:

Rozdział I
Przepisy ogólne

§ 1. 1. Uchwala się miejscowy plan zagospodarowania przestrzennego miasta i gminy Zawadzkie.
2. Miejscowy plan, o którym mowa w ust. 1 obejmuje obszar miasta Zawadzkie oraz wsi Zędowice i wsi Kielcza.
3. Granice terenu objętego planem określone są na rysunkach planu w skali 1:2000, stanowiących załączniki nr: 1, 2 i 3 do niniejszej uchwały, zwanych w dalszej treści rysunkami planu.

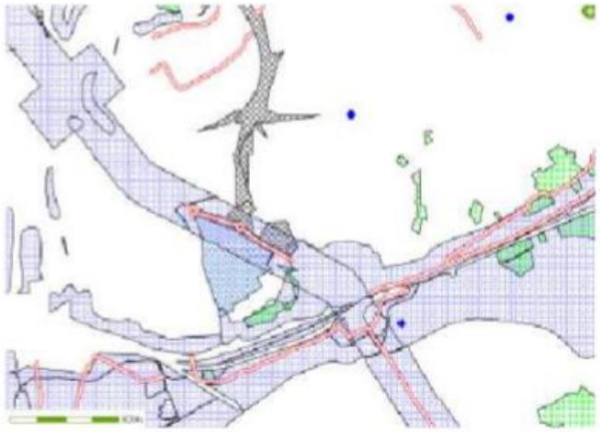
Spatial object types (2)

ZoningElement



A spatial object which is homogeneous regarding the permitted uses of land based on zoning which separate one set of land uses from another

SupplementaryRegulation



A spatial object (point, line or polygon) of a spatial plan that provides supplementary information and/or limitation of the use of land/water necessary for spatial planning reasons or to formalise external rules defined in legal text

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Harmonisation process – steps

I. Preparation of spatial data sets

II. Harmonisation of spatial data sets

III. Dissemination of harmonised data

RULES FOR ATTRIBUTES MAPPING

Local plan – Ustronie commune

HILUCS classification

Hierarchical **I**NSPIRE **L**and **U**se **C**lassification **S**ystem

- New multi-level, classification system that applies to both the existing and planned land use
- List of land use categories to be used in INSPIRE *Land Use* and agreed at the European level.
- Any *Land Use* data sets shall assign to each polygon, pixel or location a land use type from the HILUCS at the most appropriate and detailed level of the hierarchy

1_PrimaryProduction

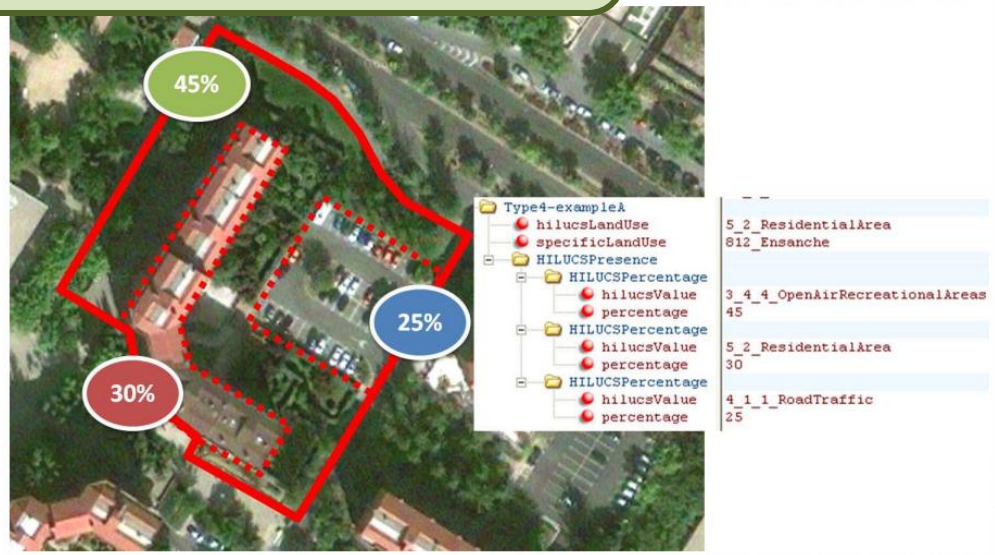
1_1_Agriculture

1_1_1_CommercialAgriculturalProduction

HILUCS classification

1. Primary Production
2. Secondary Production
3. Tertiary Production
4. Transport Networks Logistics And Utilities
5. Residential Use
6. Other Uses

National classification	HILUCS
residential areas	5_1_PermanentResidentialUse
areas of sport and recreational services	3_4_3_SportsInfrastructure 3_4_4_OpenAirRecreationalAreas 3_4_5_OtherRecreationalServices
protective forests areas	1_2_Forestry 6_3_1_LandAreasNotInOtherEconomicUse



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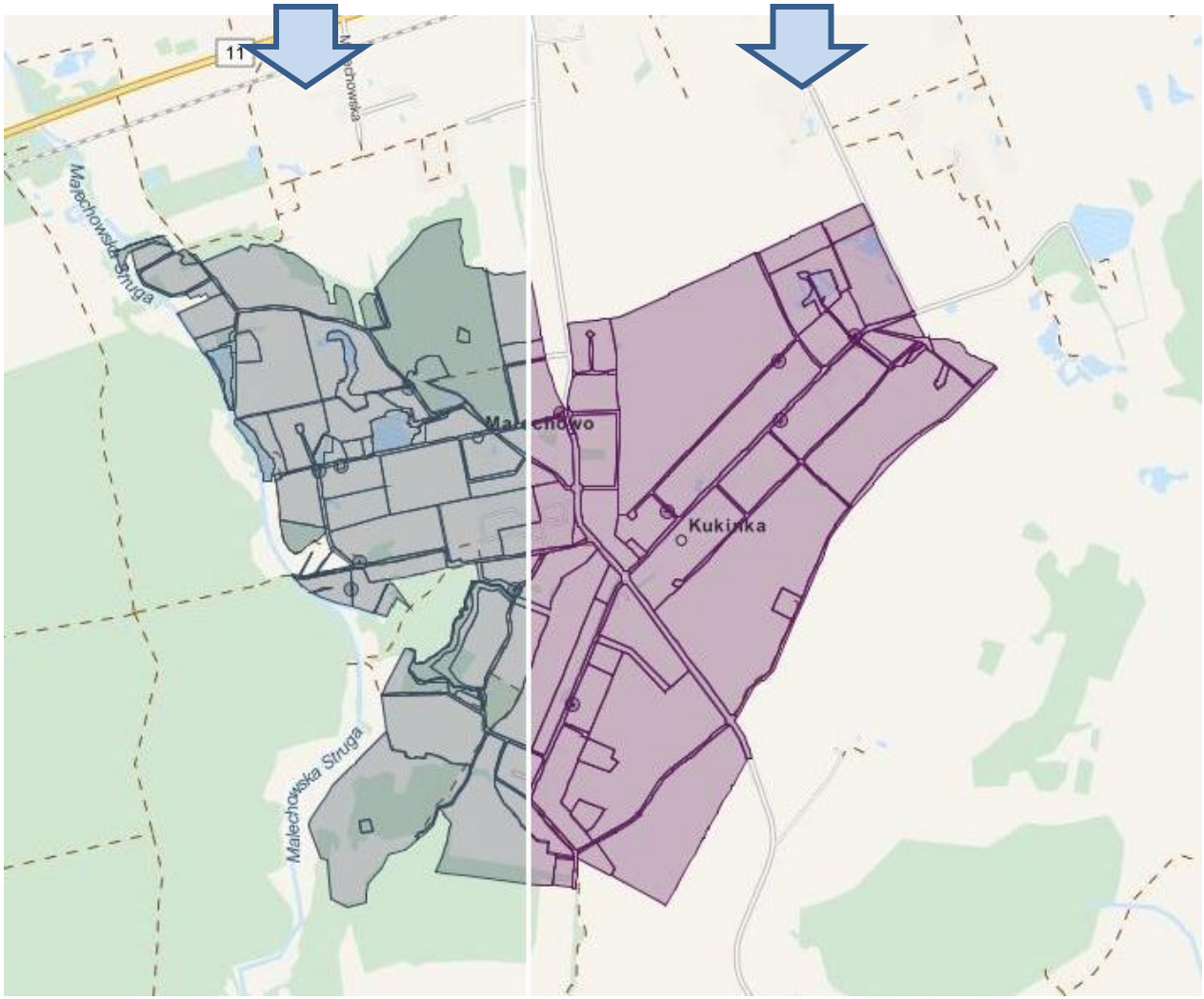
SOURCE DATA – AFTER HARMONISATION (GEOMETRY)

BEFORE

AFTER



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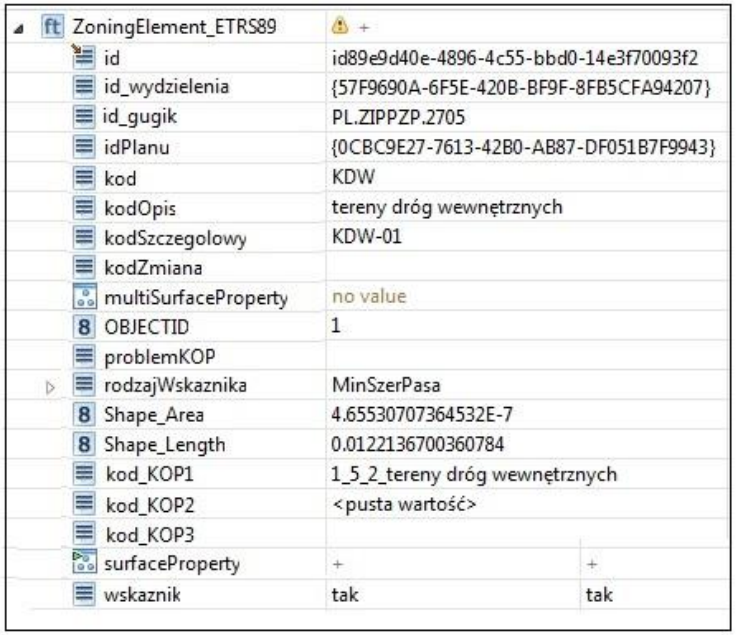
SOURCE DATA – AFTER MAPPING (ATRIBUTES)

BEFORE



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kodOpis	tereny dróg wewnętrznych	
kodSzczegolowy	KDW-01	
kodZmiana		
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problemKOP		
rodzajWskaznika	MinSzerPasa	
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Shape_Length	0.0122136700360784	
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kod_KOP3		
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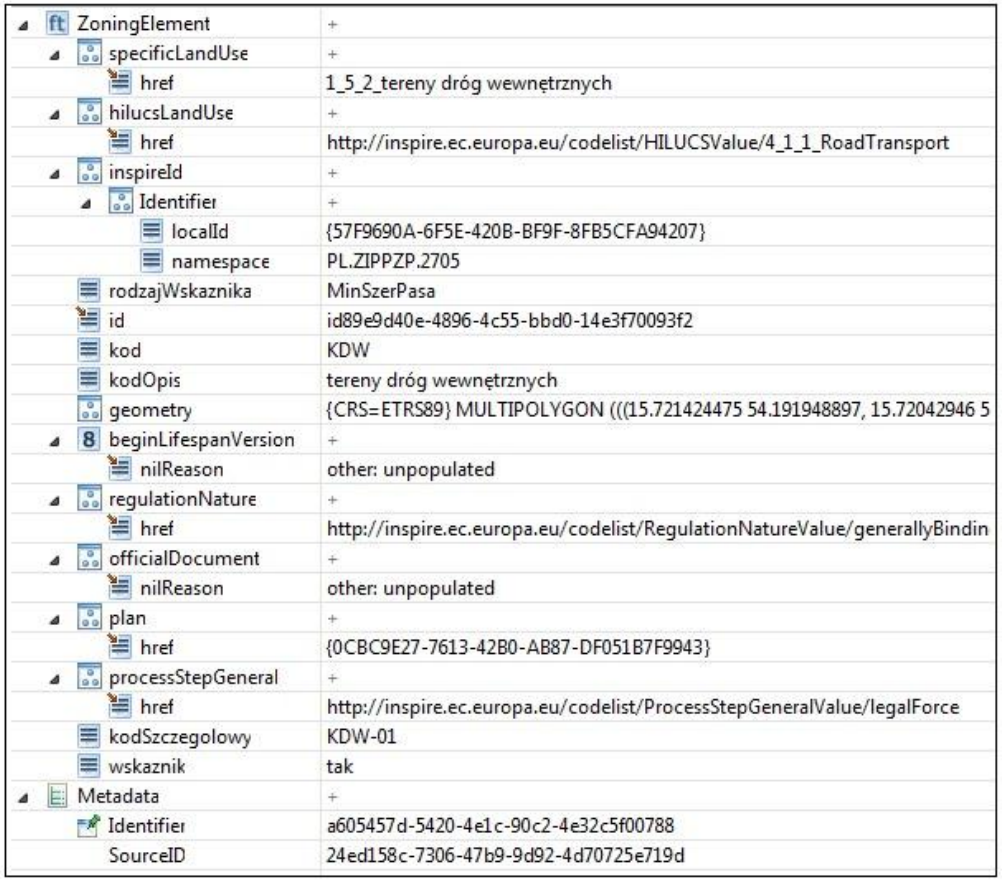
wskaznik	tak	tak

AFTER



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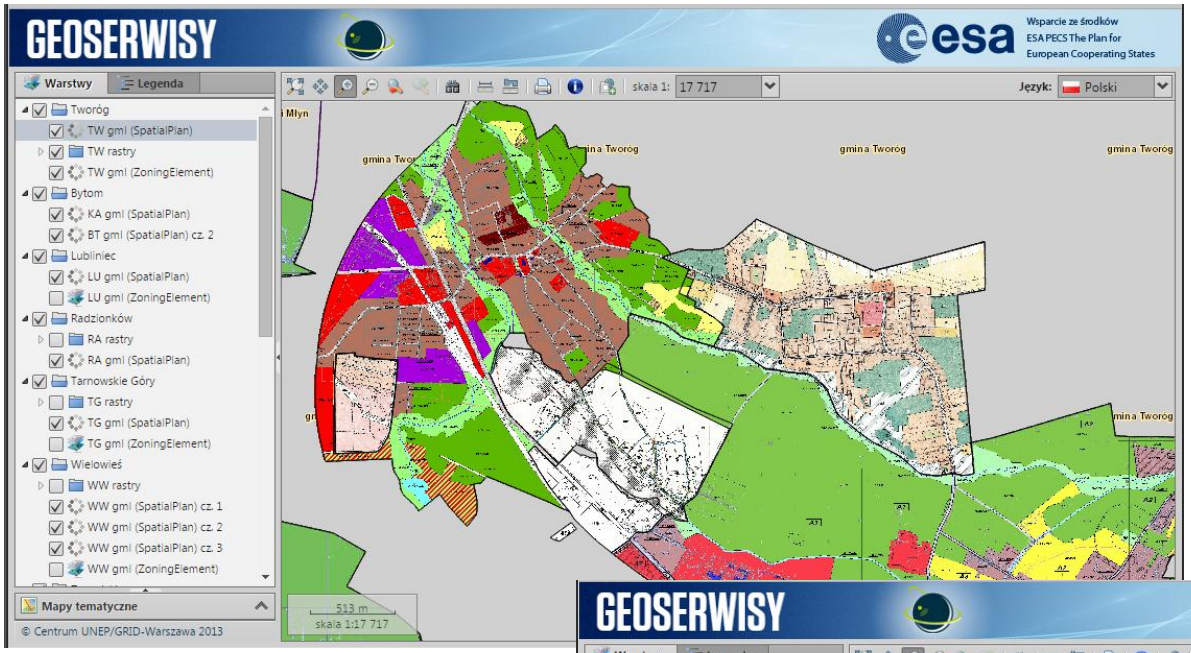
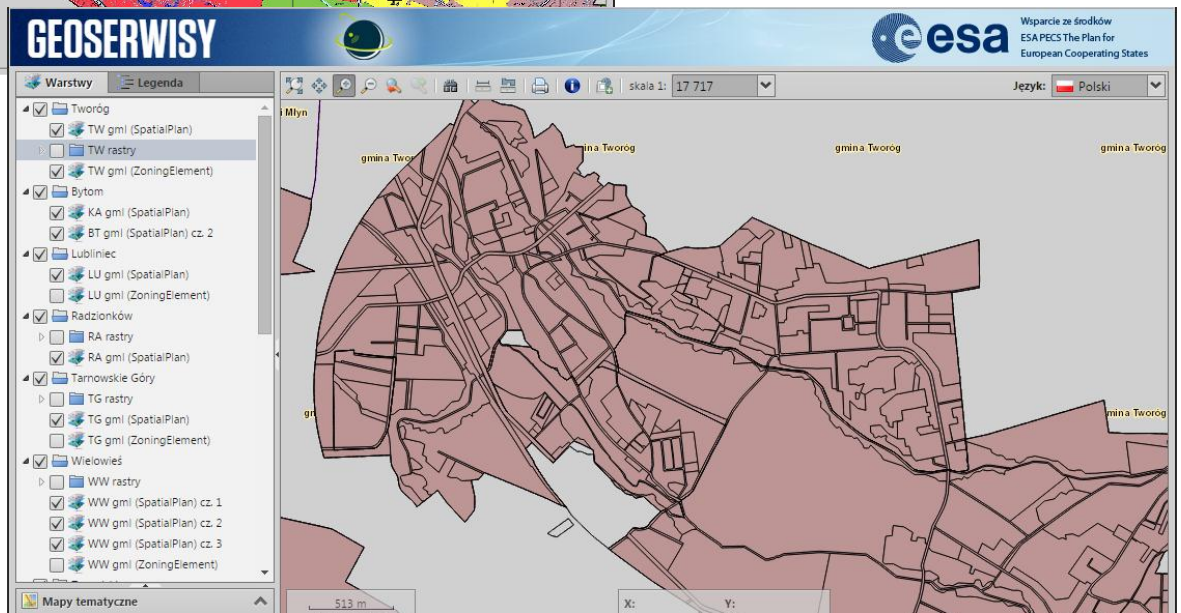
MPZP – gmina Ustronie Morskie

III. Making data sets available





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Results, conclusions

- consistency and the possibility of joint use of data from different sources for:
  - rational and effective management of space
- easier land use (spatial plan) data interpretation (staff offices, as well as citizens)
- increasing access to information on spatial planning
- fulfillment of obligations arising from the adoption of the INSPIRE directive in Poland

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Conclusions

The **efficient spatial planning based on harmonised data** is a chance to fulfill the outcomes related to the first key objective of the 7th Environment Action Programme (EAP) - **to protect, conserve and enhance the Union's natural capital :**

- environmental considerations should be integrated into planning decisions relating to land use so that they are made more sustainable, with a view to making progress towards the objective of "no net land take", by 2050.

Thank you for your attention!

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