

Geospatial Data in the 2020s Transformative Power and Pathways to Sustainability

Chair: Hartmut Müller
Rapporteur: Markus Schaffert
Panellists: Cemre Şahinkaya Özer
Marije Louwsma
Cemal Özgür Kıvılcım
Enrico Rispoli
Maria Scorza
Chryssy Potsiou



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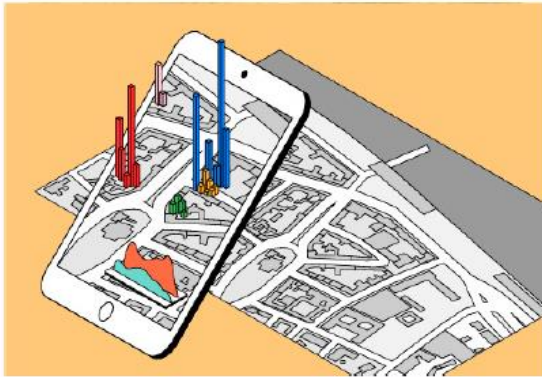


FIG Commission 3 – Spatial Information Management

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Authors from

- ✓ Commissions 3 and 8
- ✓ Young Surveyors Network
- ✓ Volunteer Community Surveyor Program

Geospatial data for

- ✓ spatial planning,
- ✓ health,
- ✓ diversity,
- ✓ volunteerism,
- ✓ Cadastre,
- ✓ property market





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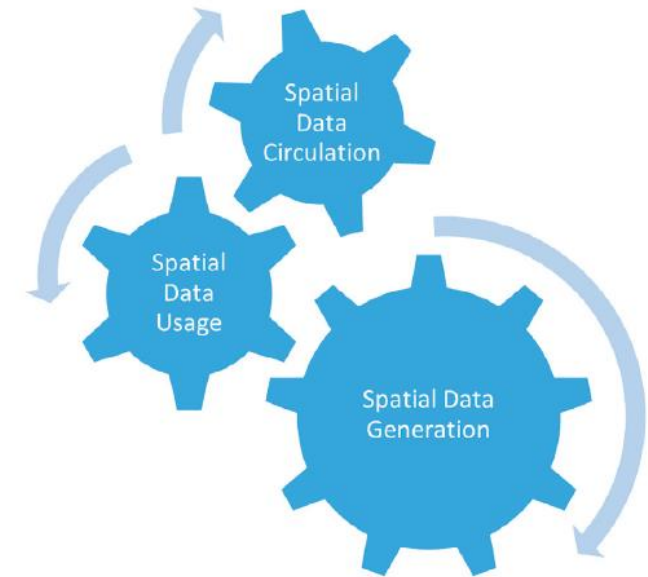
- 1 Introduction** Hartmut Müller
- 2 Chapter 1** Markus Schaffert
- 3 Chapter 2** Cemre Şahinkaya Özer
- 4 Chapter 3** Marije Louwsma
- 5 Chapter 5** Cemal Özgür Kıvılcım
- 6 Chapter 6** Chryssy Potsiou, Enrico Rispoli, Maria Scorza, Marije Louwsma
- 7 Chapter 7** Hartmut Müller



C1 – Geospatial Data and Sustainability – Setting the Frame

Authors: Markus Schaffert and Hartmut Müller

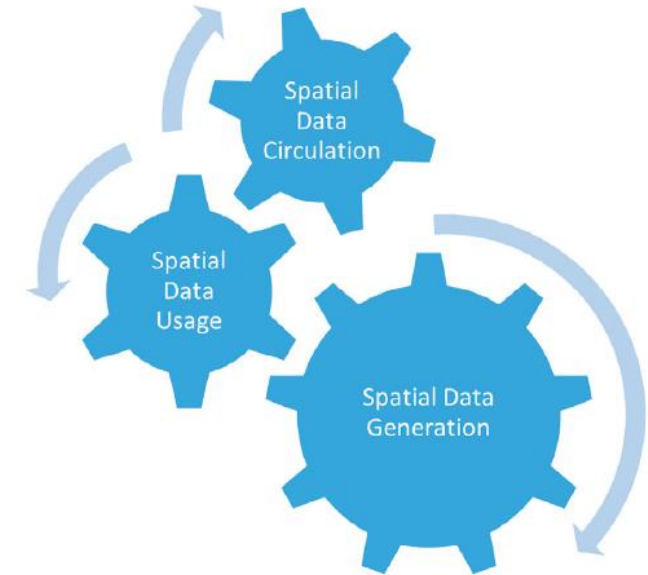
- Monitoring the SDGs requires data innovations, greater data availability and, essentially, a “data revolution” (cf. UN 2014)
- Handling the complex crises of the 2020s and paving sustainable pathways in a world in transition require even more than that
- *Data monitoring* is only one function of data contributing to sustainability, *data circulation* and *data generation* are two other functions that are not equally recognised in the debate on sustainable development



The triad of spatial data functions for sustainable development.

Key take-aways

- Spatial data: a key ingredient for sustainability transitions (by providing *spatial data usage*, *spatial data circulation* and *spatial data generation*)
- Spatial data availability will not automatically lead to improved decision-making
- *Use Cases showing pathway to sustainable futures (and the role of spatial data herein) are required*
- *Furthermore, obstacles need to be tackled and overcome (data quality, empowerment, availability)*
- *Data → Information → Knowledge: This books provides use cases and best practise examples, on how to use spatial data / information for a sustainable future*



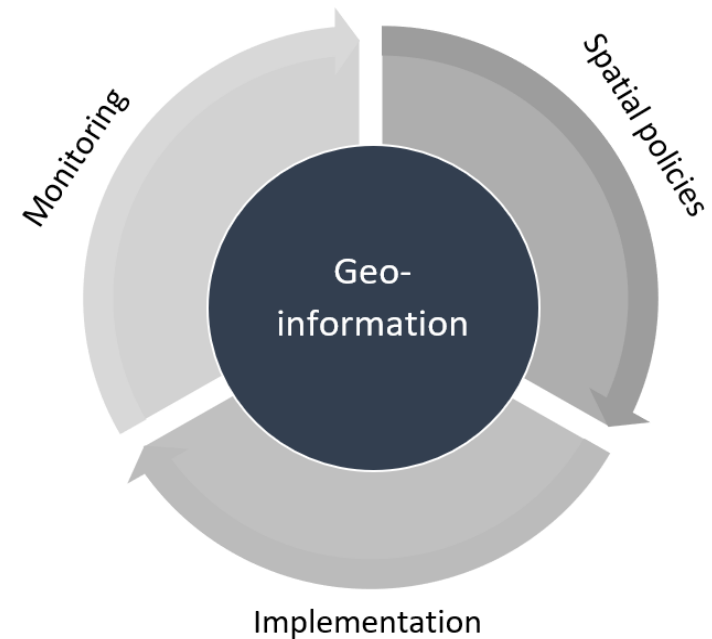
The triad of spatial data functions for sustainable development.

C2 – The Nexus of Spatial Planning and Geospatial Information

Authors: Marije Louwsma (Netherlands) and Cemre Şahinkaya Özer (Turkey)

The role of geospatial information in the spatial planning cycle

- the development of spatial policies and plans
- the implementation of these policies and plans
- monitoring and evaluation



C2 – The Nexus of Spatial Planning and Geospatial Information

Authors: Marije Louwsma and Cemre Şahinkaya Özer

Spatial policies and plans

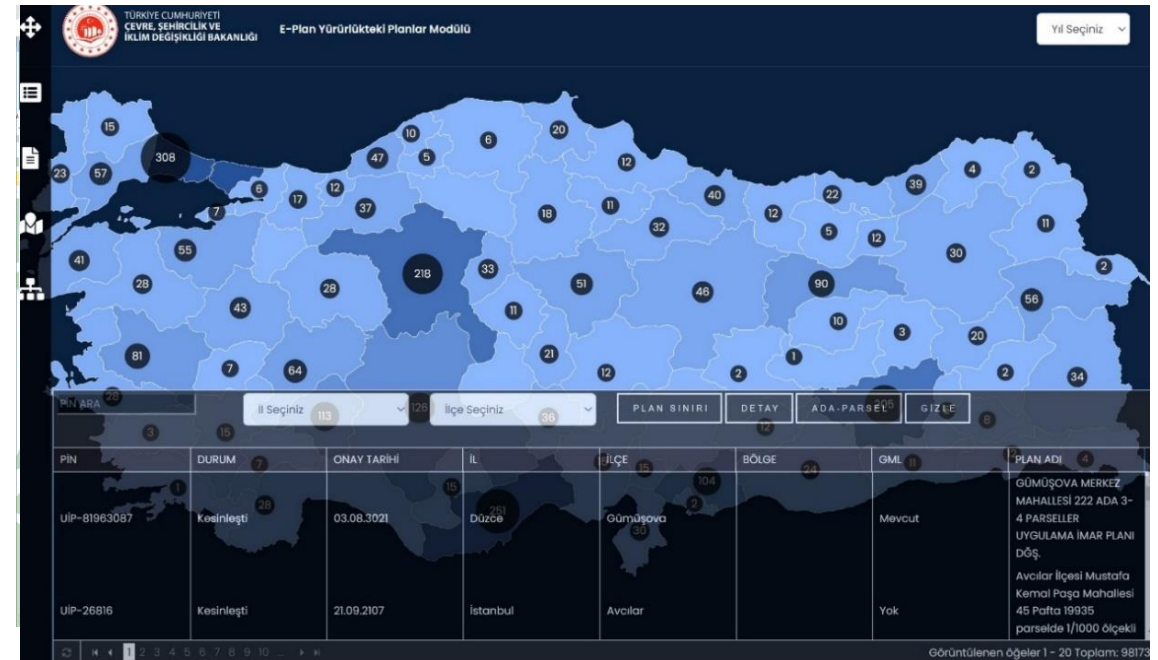
- geospatial information
- suitability and feasibility studies
- multi-criteria analyses
- environmental impact assessments & water impact assessments
- social cost-benefit analyses

Implementation

- examples from the Netherlands and Turkey

Monitoring

- to enforce the rules and regulations
- to assess the impact of spatial plans and planning interventions.



The system that serves the development plans on all the cities in Turkey

C2 – The Nexus of Spatial Planning and Geospatial Information

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Spatial policies and plans

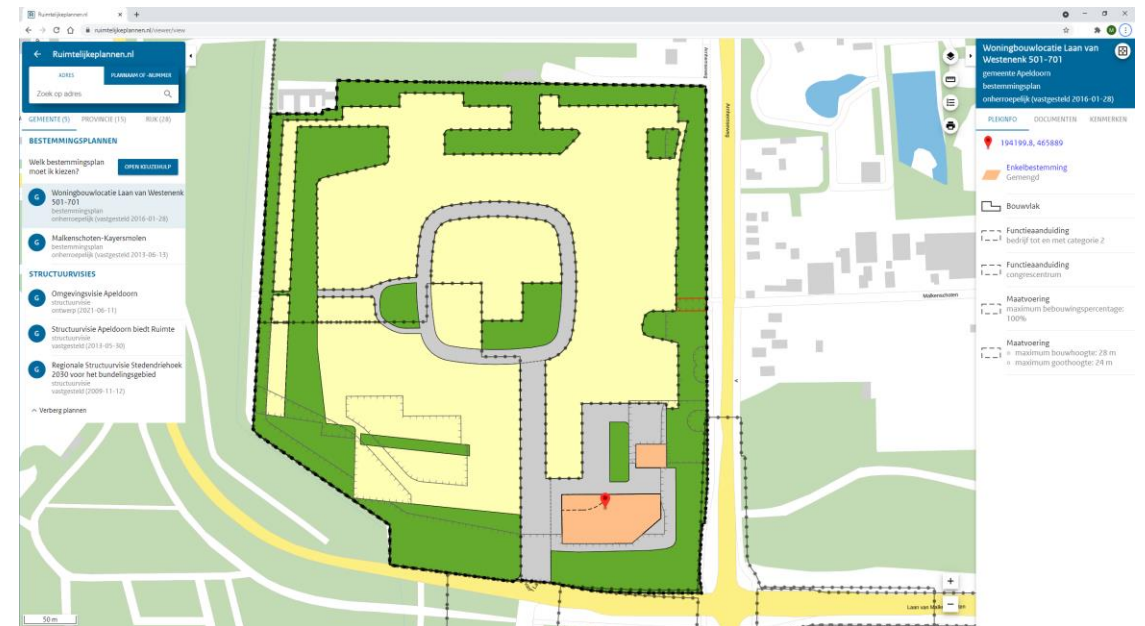
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Online platform in the Netherlands to search for spatial plans

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Conclusions and outlook

- **More examples** can be given on how geospatial data can play a role in spatial planning **as new software enables new applications...**
- Since **geodata** becoming more **commonly used outside the geospatial field**, this will all contribute to **further integration** of geospatial data and its applications in spatial planning processes i.e. use of **drones, 3D models** and **digital twins to visualize spatial plans** and their impact, **mobiles devices** in participatory planning, or online public **participation** ('smartification').
- **Time will tell** which innovations will be adopted by both the public and professionals in the field of spatial planning...

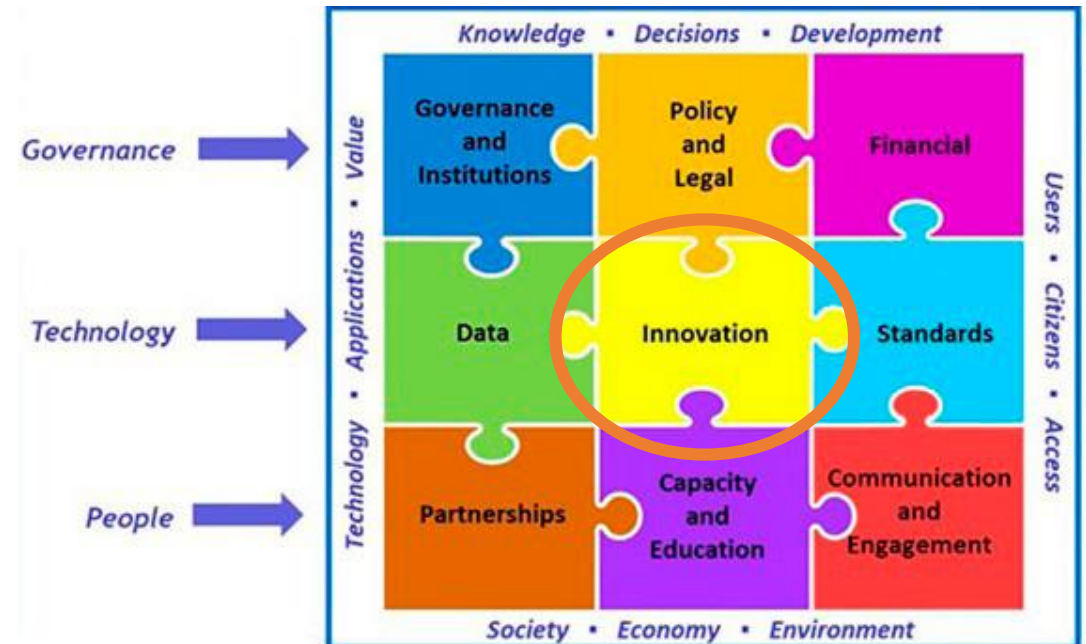
C3 – The spatial dimension of health

Towards an integrated geospatial information management for public sector health data in the EU – The Covid-19 pandemic seen through the lens of IGIF

Authors: Hartmut Müller and Marije Louwsma

Case study:

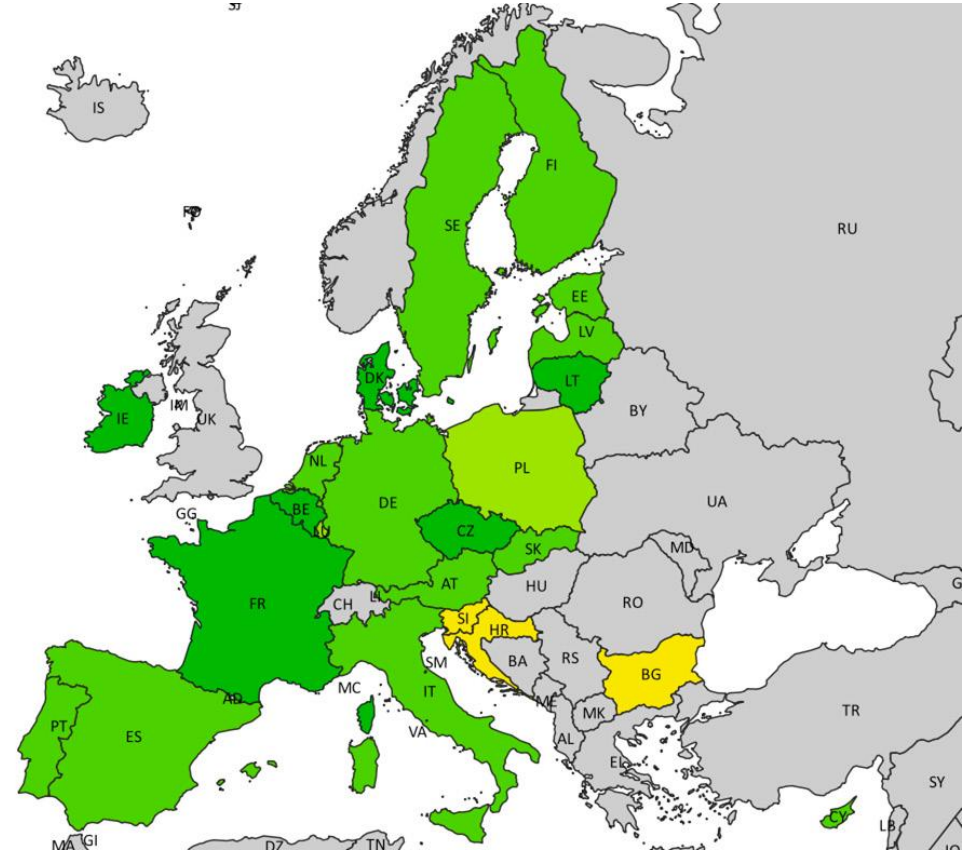
- How were the challenges posed by the COVID-19 pandemic managed by Member States in the European Union (EU) regarding the use of geospatial data and tools?
- Pathway 5 – innovation – used as lens for analysis
- Technology maturity index ranging from analogue mapping to integrated geospatial information management



Key take-aways

- INSPIRE framework in place
- Nomenclature of Territorial Units for Statistics in place
- Criteria related to maturity index
- Health domain new to geospatial data

- Most dashboards would rank maturity level 3 or 4, including maps, graphs, statistics, and metadata, but no dynamic information displays
- Reliability and timeliness of reporting proved difficult in beginning
- Need for unambiguous definitions



C5 – Participation and Spatial Empowerment

eVolunteering and Engaging Young Surveyors in the 2020s

Authors: Claire Buxton (Canada), Cemal Özgür Kivilcim (Turkey), Roshni Sharma (Australia), Tom Kitto (Canada), Cemre Şahinkaya Özer (Turkey)





Where we came from

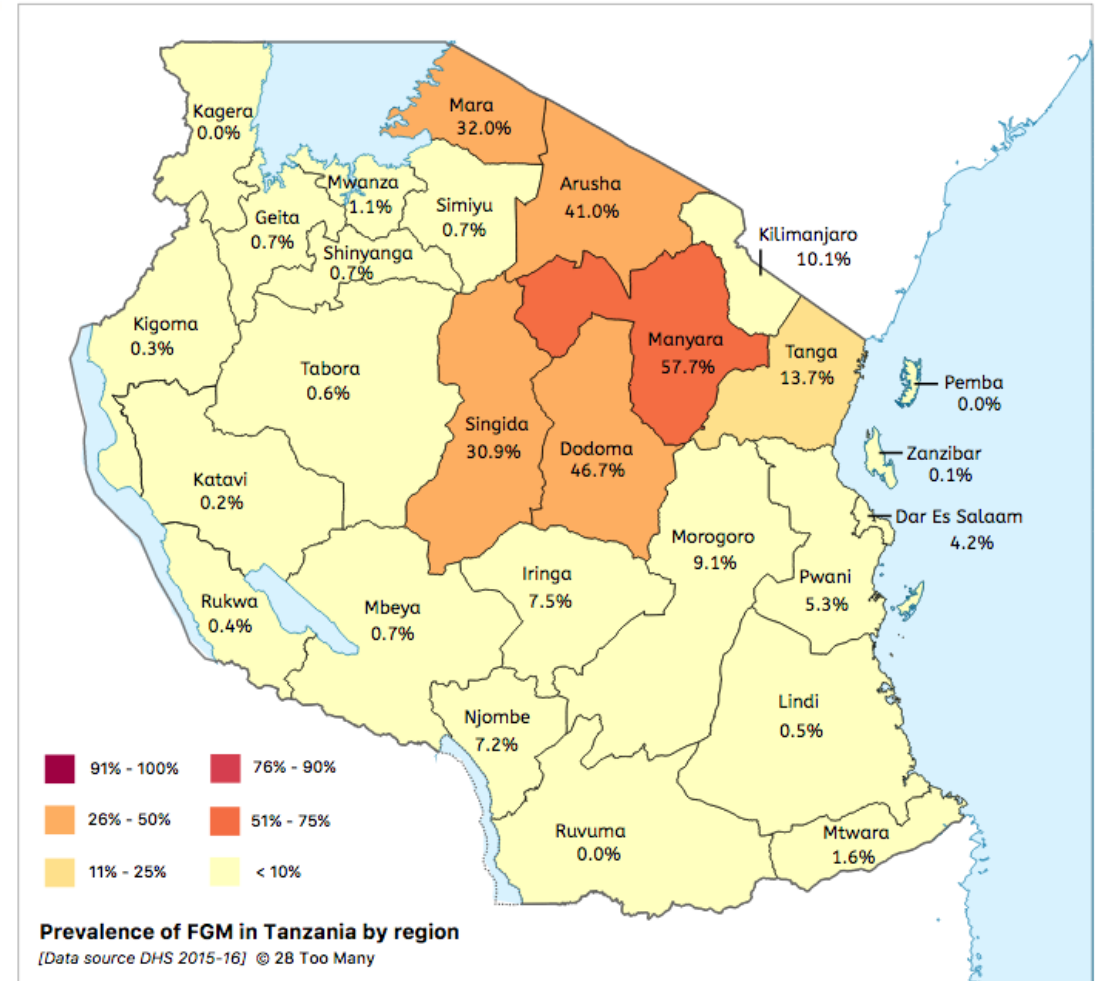
- Volunteer Geographic Information

Whats the challenge

- Major drivers of humanitarian disaster

What can we do?

- Solutions and Case studies
- Firewater and Tanzania





Trending countries, cities and topics of the OpenStreetMap #world

Overall 415 contributors made 87,775 map edits in 74 countries in the last 60 min
(Percentage of organised editors: 34%)



Desire

Need

Connect

C6: The Role of Land Administration Data in the Real Estate Sector

*Authors: Chryssy Potsiou (Greece), Marije Louwsma (Netherlands),
Enrico Rispoli, Maria G. Scorza (Italy)*



Highlights *Prof Chryssy A Potsiou, NTUA Greece chryssy.potsiou@gmail.com*

For many years land registries and cadasters (inventories of land that supported registration) provided information about the evidence of ownership of rights in land and supported property taxation and property markets

1980s: the era of automation. Digital systems developed at different speeds & usually on different technical platforms. Administrative and technical reforms; multipurpose cadaster ; NSDIs.

UNECE

Scenario Study on Future Land
Administration in the UNECE Region

The beginning of the **digital divide**

1990s: the major economic & political change initiated the largest land reform in human history (denationalization, restitution of rights, title provision, registration).

The **efficiency divide**

2000s: UN Millennium Development Goals. FFPLA in providing secure land rights at scale.

2015: UN Agenda 2030. LA & other geospatial information in support of all SDGs

2020s: The world's rapid “digital transformation” & the parallel evolution of BIM, 3d city models, cadaster 4.0, IoT, DT., smart cities, SDG 11...UNECE scenarios on future LA?



Key takeaways: The “effectiveness divide” between the developed and the less developed LAMs in the European region and the impact on property markets

Over 13 % of the UNECE adult population feel insecure about their land and housing property — more than 130 million people

To improve effectiveness of LAMs and thus support national economies and SDGs, countries that face the phenomenon of Informal Settlements were encouraged to initiate formalization projects & build back better

How countries prepare for future disasters is vital. UNECE has published the Post Covid-19 Recovery Action Plan for Informal Settlements in the UNECE region

The 2022 War: will the “effectiveness divide” among LAM systems within the UNECE region increase?

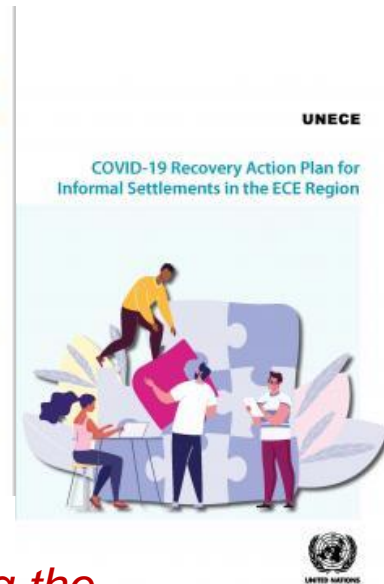


FIG must continue strengthening the capacity of national and local governments to address the needs of the most vulnerable

C6 – The role of Land Administration in the Real Estate Sector

Authors: Chryssy Potsiou, Marije Louwsma, Enrico Rispoli, Maria Scorza

Case study Netherlands

- The role of geospatial information in property markets – use cases in the Netherlands
- Cadastres can have multiple roles in developed land and property markets; e.g. monitoring land and real estate markets

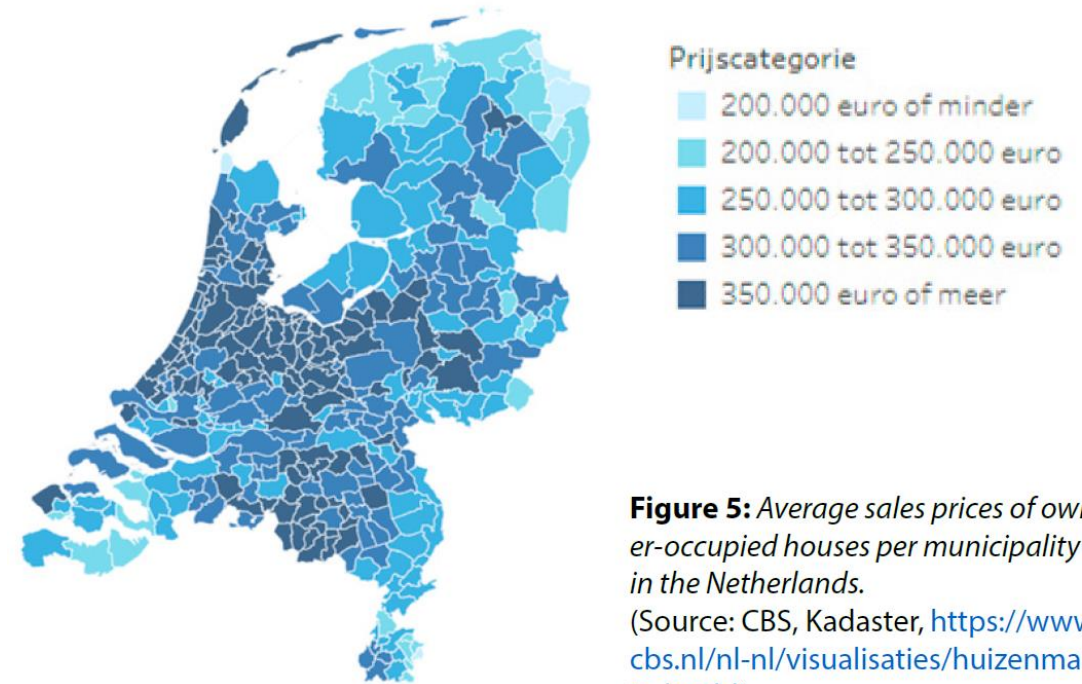


Figure 5: Average sales prices of owner-occupied houses per municipality in the Netherlands.
(Source: CBS, Kadaster, <https://www.cbs.nl/nl-nl/visualisaties/huizenmarkt-in-beeld>)



Key findings

- Moving beyond traditional role of cadasters
- A digital LAM system in SDI setting allows for:
 - Monitoring real estate market in dashboards
 - In-depth spatial and statistical analysis of real estate market (housing and land)

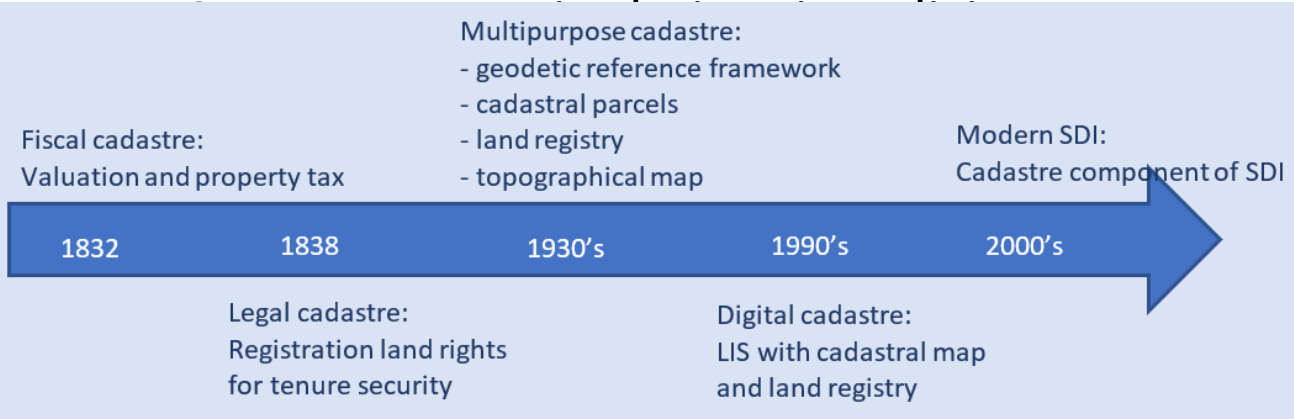


Figure 5.5 Overview of historical development of Dutch cadastre

number of residences

number of residences
Homes by age buyer
Homes by province
price index
Purchase price
Mortgages
Execution Auctions
Building plots
Agricultural land
Number of ships
Year comparison
Explanation of use of the Real Estate Dashboard
Explanation of the figures in the real estate dashboard

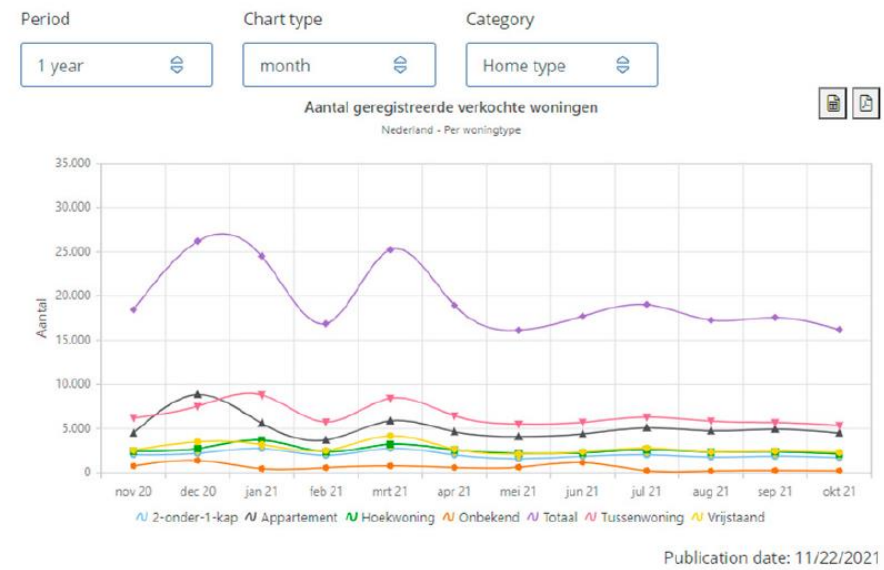


Figure 6: Dashboard of the Dutch cadastre, land registry and mapping agency with access to various bits of information about the real estate and land market, such as the number of transactions per housing type.

(Source: <https://www.kadaster.nl/zakelijk/vastgoedinformatie/vastgoedcijfers/vastgoeddashboard/aantal-woningen>)

C6 – The role of Land Administration in the Real Estate Sector

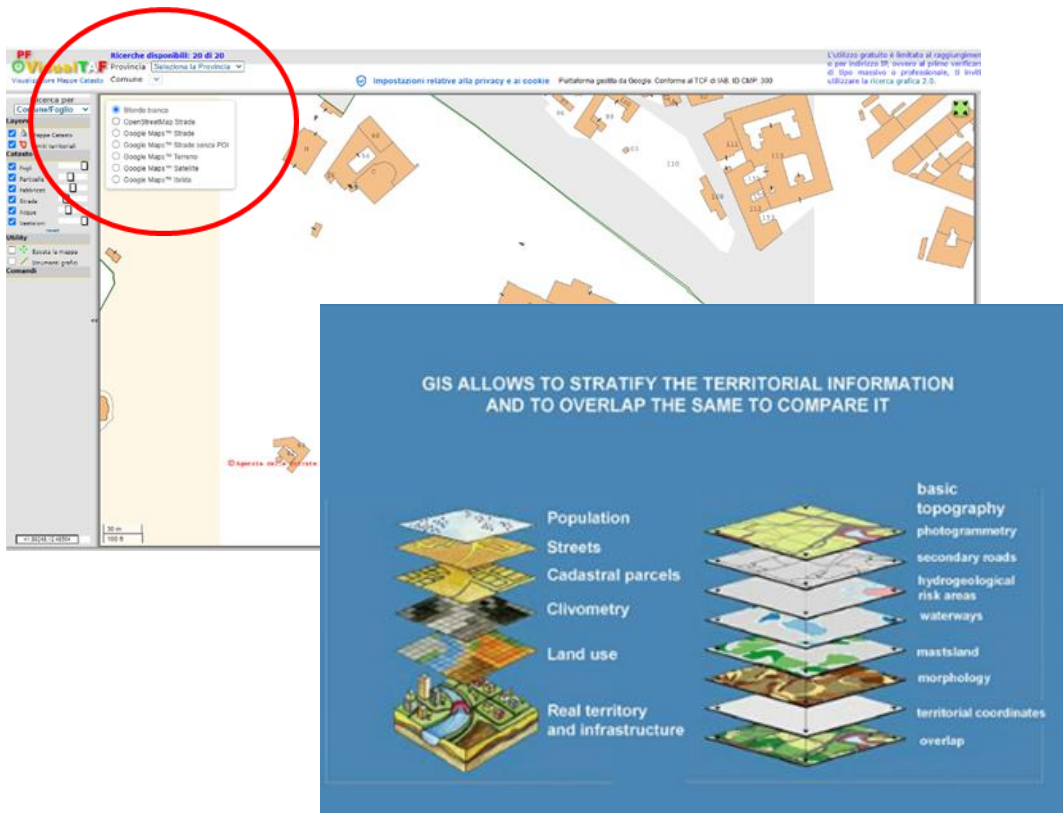
Authors: Chryssy Potsiou, Marije Louwsma, Enrico Rispoli, Maria G. Scorza

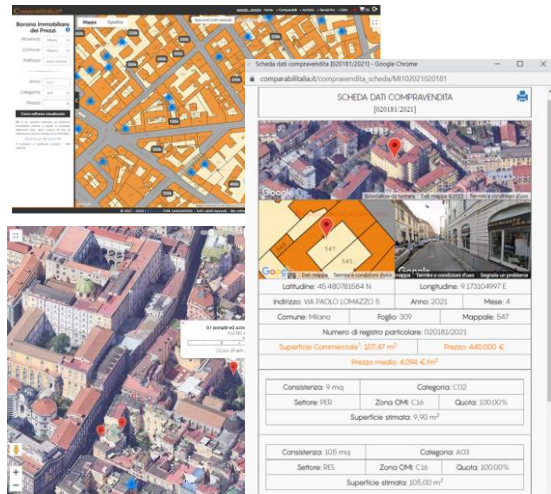
Cadastral Information System

In Italy, a considerable amount of information concerning the territory is connected to the computerized systems of the advanced digital cadastres.

In fact, through the Cadastre it will be possible to consult the distinct territorial information existing in the various sectoral platforms and concerning the whole country.

It ensures that, with a few clicks, it is possible for anyone in Italy to access various databases





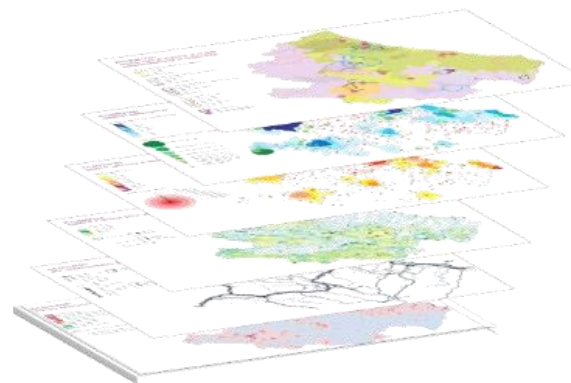
The Real Estate Price Exchange

The strategic-operational tools, including the real estate database, support professionals and in particular real estate valuers in their professional research, facilitating the retrieval of data and market information necessary for the preparation of a valuation report. With the Real Estate Price Exchange it is possible to quickly identify geo-referenced sales prices and other information connected to it, such as: year of sale, month of sale, transferred share, consistency, cadastral category and Real Estate Market Observatory area.



The “ghost houses”

At the moment over 90% of the buildings have been formalized. The “ghost houses” operation revealed over 1.2 million real estate units not known to the Land Registry, 2/3 of those units were declared by the owners within the deadline.

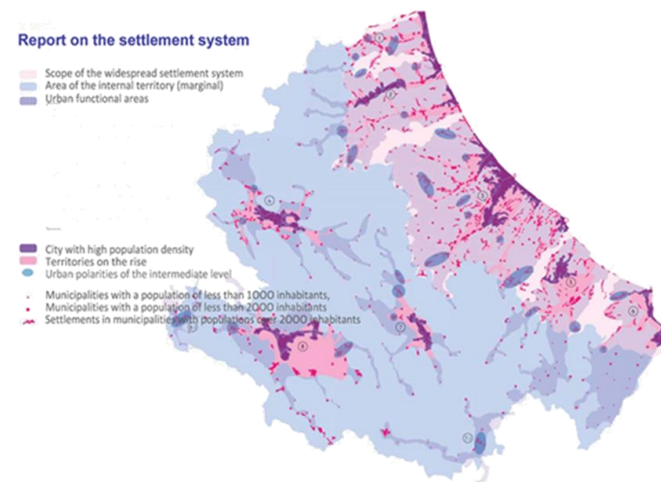


Conclusions

The propensity of the real estate market traced on the territory outlines the places where interest is concentrated but should be used in the best possible way, as a reference point to trigger the appropriate development or rebalancing mechanisms in favor of economically marginal areas.

Territorial development

The management of GIS is also a tool for the design and implementation of policies to balance territorial development, taking into account the interests of consumers as a necessary component of the economic well-being of the territory and a primary factor in the profitability of investments.





C7 – Discussion and Conclusions

Geospatial Information in the 2020s – paving the way to sustainability ?

Authors: Markus Schaffert and Hartmut Müller

Turning the question mark ?

into exclamation marks !!!

10 Key Takeaways



Geospatial information in the 2020s – paving the way to sustainability

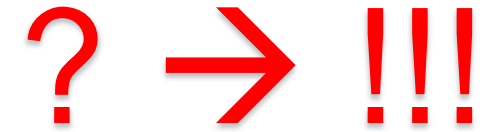
10 Key takeaways, no 1 to 5



1. Identify and close data gaps
2. Strengthen public-private-partnerships for data capture
3. Make authoritative datasets easily available and accessible
4. Generate innovative data products by data fusion
5. Integrate geospatial information into user-specific business processes

Geospatial information in the 2020s – paving the way to sustainability

10 Key takeaways, no 6 to 10



6. Integrate geospatial information into pathways to sustainability
7. Address multi-dimensional quality aspects
8. Find the balance between data protection and knowledge generation
9. Find the balance between data empowerment and establishment
10. Improve geospatial data literacy

