Enhancing the user uptake of Land Cover / Land Use information derived from the integration of Copernicus services and national databases „InCoNaDa"

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IGiK

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IOŚ-PIB

Lodz University of Technology

EVERSIS

Aim: to improve the user uptake of Land Cover / Land Use (LCLU) information derived from the integration of Copernicus Land Monitoring Service (CLMS) and national databases.

Objectives:

- To develop a harmonised data model for LC/LU monitoring;
- To develop LC and LC change maps based on a time series of Sentinel-2 data using machine learning approaches;
- To examine the potential of CLMS for:
  - urban and spatial planning,
  - agricultural management,
  - environmental monitoring,
  - reporting GHG emissions and removals from LULUCF;
- To design and develop a web-based application enabling to query the LC/LU harmonised database, generate statistics and reports adjusted to the user needs in Poland;
- To verify the InCoNaDa application for the needs of spatial planning, environmental monitoring and LULUCF reporting.

InCoNaDa - consortium

- Instytut of Geodesy and Cartography - Centre of Applied Geomatics (IGIK) (project promotor)

- Norwegian Institute of Bioeconomy Research (NIBIO)

- Institute of Environmental Protection, National Research Institute (IOS) - National Centre for Emissions Management (KOBiZE)

- Łódź University of Technology (LUoT) - Institute of Architecture and Urban Planning

- Eversis Sp. z o.o.

Duration of the project 1.10.2020 – 30.04.2024

funded by the Norway Grants via the National Centre for Research and Development, programme 'Applied Research', the POLNOR 2019 Call.

InCoNaDa results – LC / LC change mapping

Land cover 2018, 2020 classification
- Viken county (Norway)
- Lódz province (Poland)

A time series of satellite Sentinel-2 data

Reference data: National databases

remote sensing

Article
Can a Hierarchical Classification of Sentinel-2 Data Improve Land Cover Mapping?

Adam Waśniewski [1,2,*], Agata Hościło [1] and Milena Chmielewska [1]

The impact of selection of reference samples and DEM on the accuracy of land cover classification based on Sentinel-2 data

Adam Waśniewski [a,b] , Agata Hościło [a], Linda Aune-Lundberg [c]

Developing an algorithm for land cover changes 2017 – 2021

- method developed using the Google Earth Engine (GEE) platform based on Sentinel-2 dataset

- on the annual bases for the period 2017-2021 over the study area:
  - Viken county (Norway)
 - Lódz province (Poland)

Google Earth Engine

EGU General Assembly 2023

Detection of land cover changes based on the Sentinel-2 multitemporal data on the GEE platform

Alicja Rynkiewicz[1], Agata Hoscilo[1], Milena Chmielewska[1], Aneta Lewandowska[1], Linda Aune-Lundberg[2], and Anne Nilsen[2]
[1]Institute of Geodesy and Cartography, Poland
[2]Norwegian Institute of Bioeconomy Research, Norway
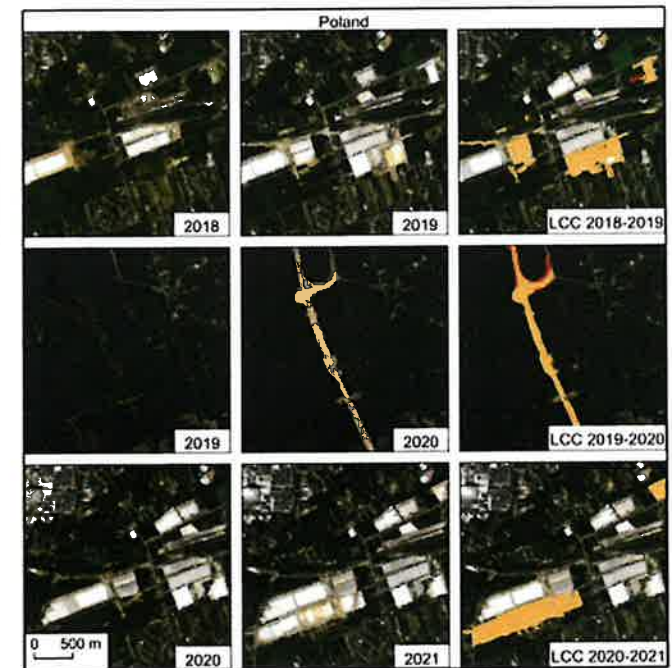
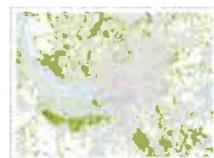# InCoNaDa – assessment of the potential of CLMS products

- Potential of **Small Woody Features (SWF)** and **Water&Wetness (WAW)** products for **agricultural landscape assessment** and defining **Ecological Focused Areas**

- Potential of **Water&Wetness (WAW)** for **environmental monitoring** and delineation of **wetland areas**

- Potential of **Riparian Zones (RZ)** and **Small Woody Features** for monitoring of **vegetation along water ways and streams**

- Potential of **Imperviousness** for **land uptake**

- Potential of **Grasslands (GRA)** for mapping **natural grasslands** in Norway

- Potential of CLMS products for **landscape audit** in Poland

(a)

Dry
Permanent water
Temporary water
Permanent wet
Temporary wet
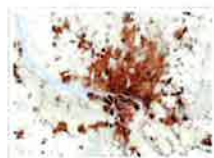
Imperviousness   **Forests**   **Grassland**   **Water & Wetness**   **Small Woody Features**
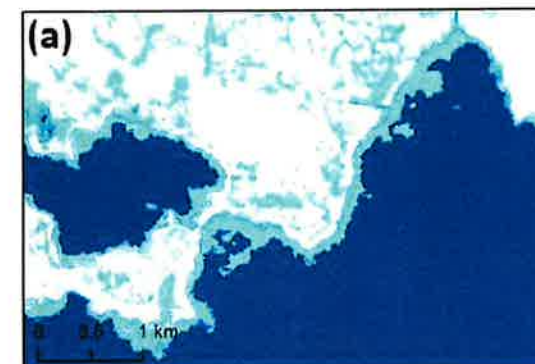
InCoNaDa – assessment of the potential of CLMS products

1) Report on the urban and spatial planning needs towards geospatial LC, LU and LU-change information in Poland and Norway
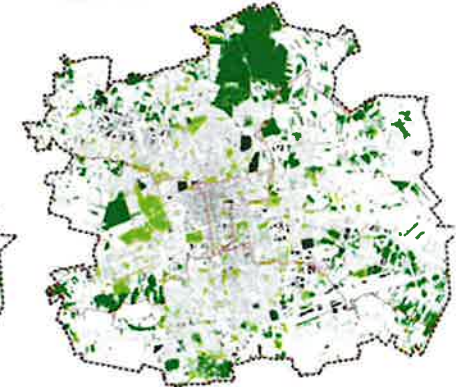
2) Potential of CLMS products for urban and spatial planning:

- Potential of HR Imperviousness (IMD) for the assessment of biologically active areas;

- Investigation of public access to green urban areas
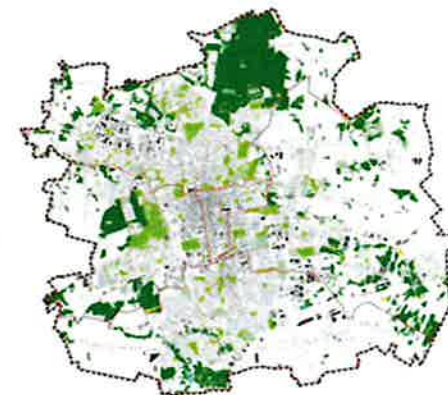
Urban Atlas 2018   *SUiKZP Łódź 2018*

14100: Green urban areas
14200: Sports and leisure facilities
31000: Forests
32000: Herbaceous vegetation associations
50000: Water

ZP Parks
ZN Uncontrolled greenery
LS Forests
LZ Trees
ZC Cementries
US Sport and leisure
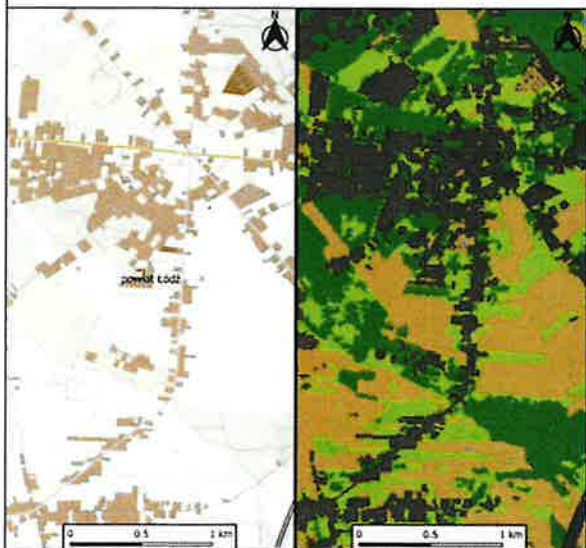ZD Allotment
W Water

Map showing the percentage of biologically active surface within the Warsaw districts.
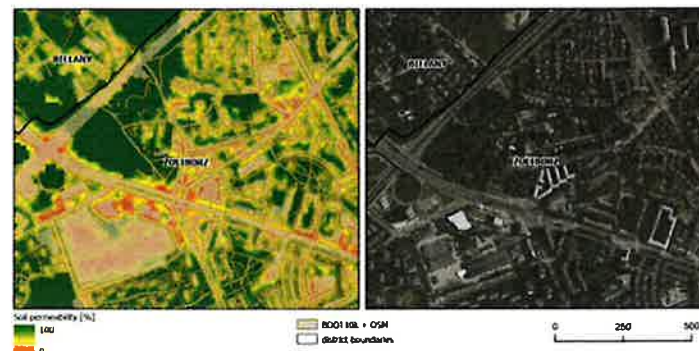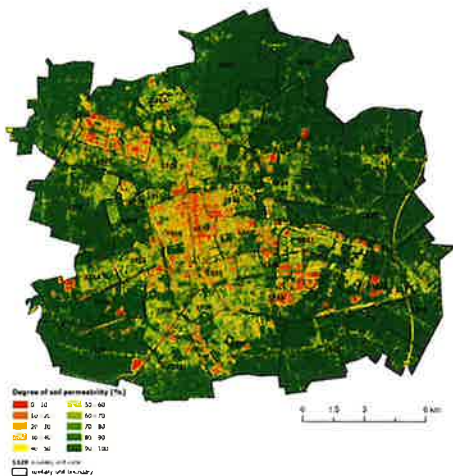
InCoNaDa – LCLUCF sector

Report containing information on the potential use of CLMS products for reporting GHG emissions and removals from LULUCF

COMPARISION OF THE BDOT10k VISUALISATION MAP (ON THE LEFT) WITH THE INCONADA LULUCF LEVEL 1 MAP (ON THE RIGHT)

DETAILS

Map is a part of a InCoNaDa project carried out by the Polish Norwegian Consortium. The source data are from 2018. Created by Center of Applied Geomatics, Institute of Geodesy and Cartography in Warsaw.

Warsaw 2022

LEGEND

LULUCF map elements:
- Settlements
- Water
- Forests
- Grasslands
- Wetlands
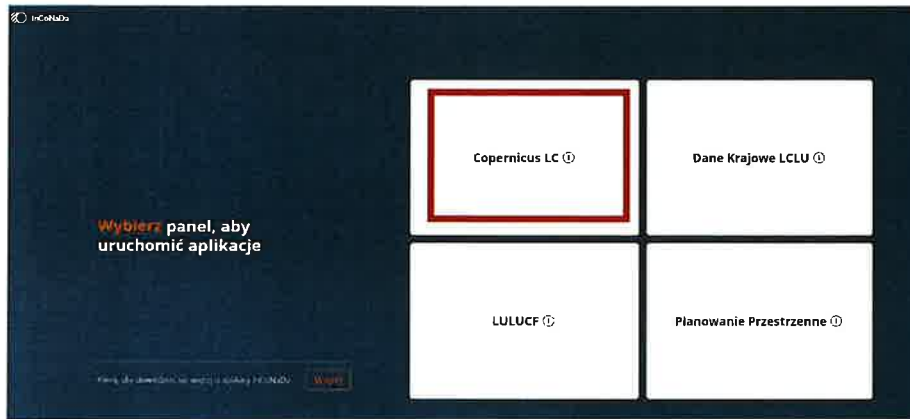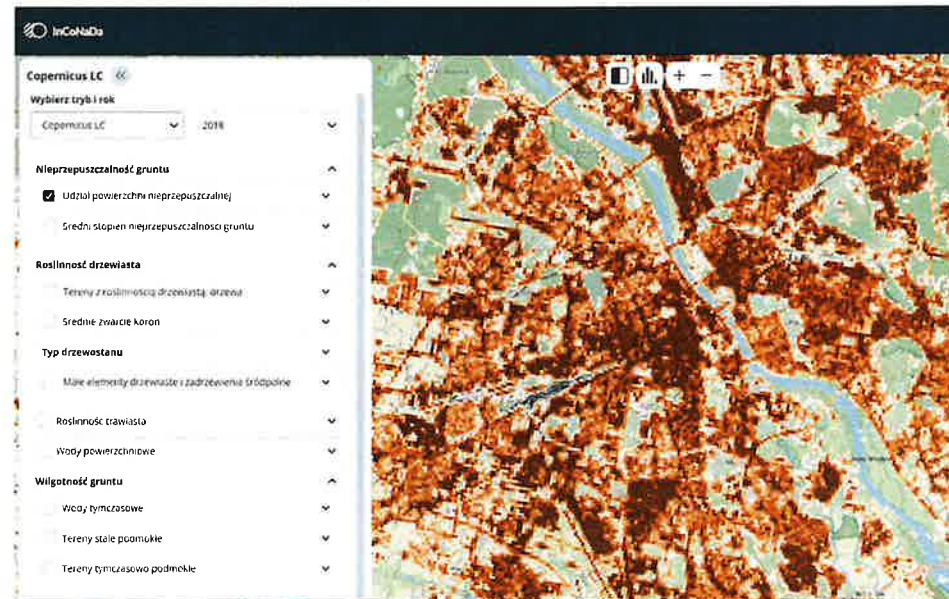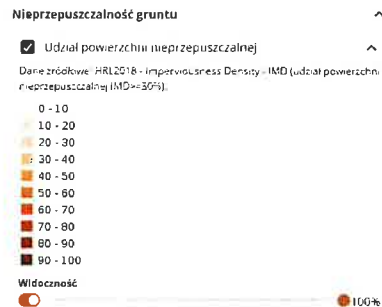- Otherlands
- Croplands
- Military training grounds

Figure 4. Comparison of aggregated results between areas data of GHG inventory of 2018 with the aggregated results of InCoNaDa 2018 areas data.

INCONADA LULUCF MAP
LEVEL 1

50   0   50   100 km

DETAILS

Map is a part of a InCoNaDa project carried out by the Polish - Norwegian Consortium. The source data are from 2018. Created by Center of Applied Geomatics, Institute of Geodesy and Cartography in Warsaw.

Warsaw 2022

LEGEND

LULUCF map elements:
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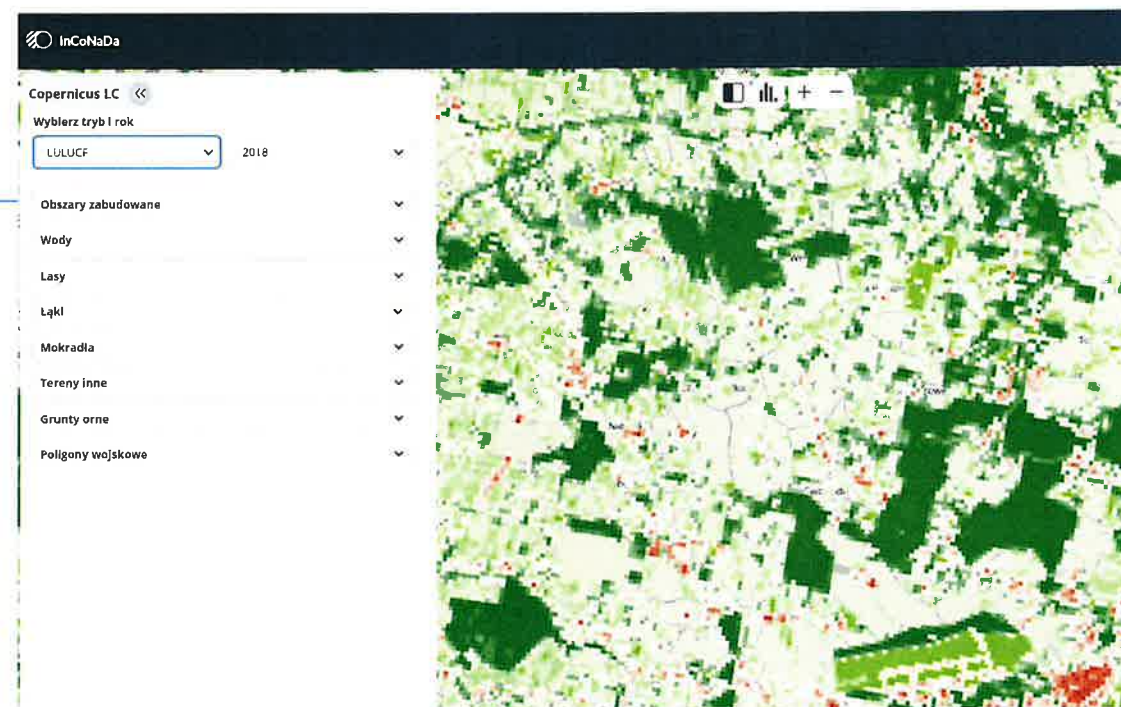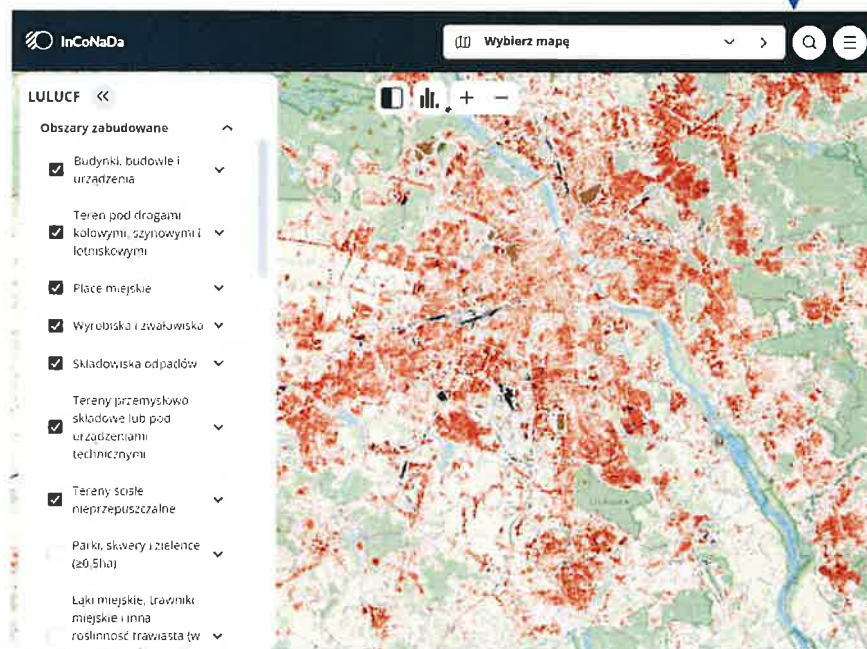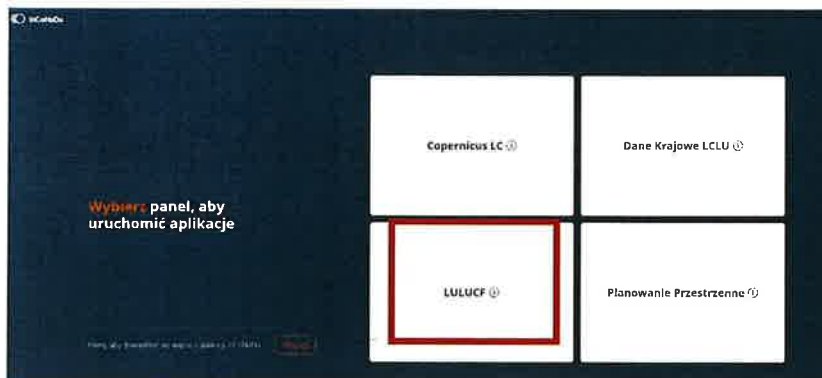- Military training grounds

Other elements:
- Polish border

Open Street Map Standard as a basemap
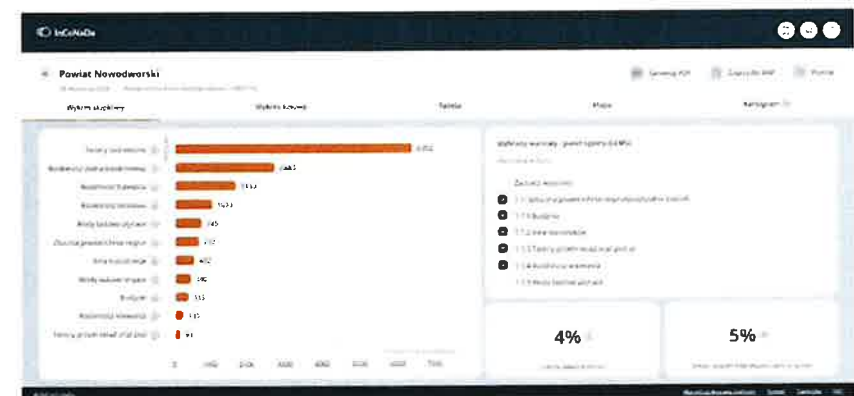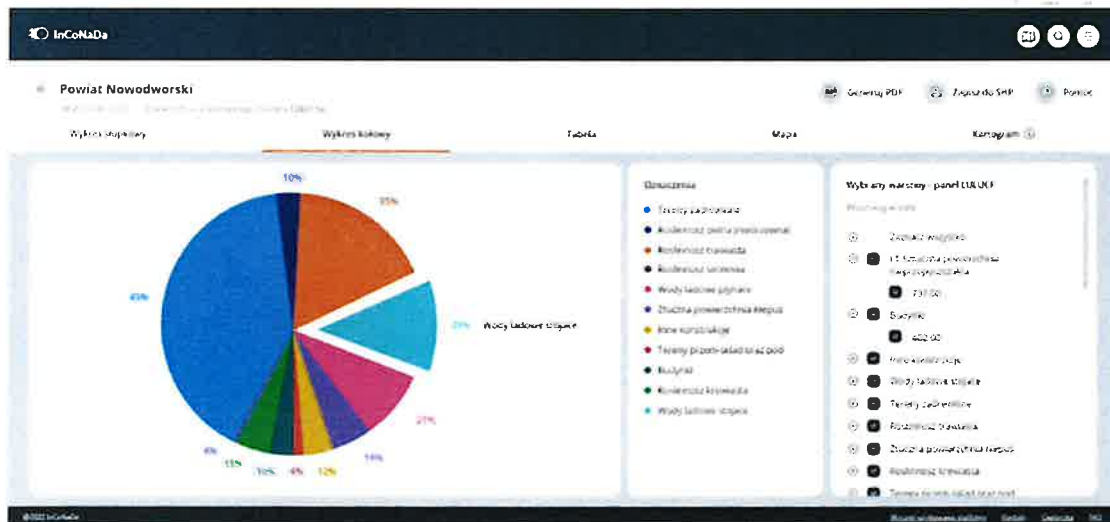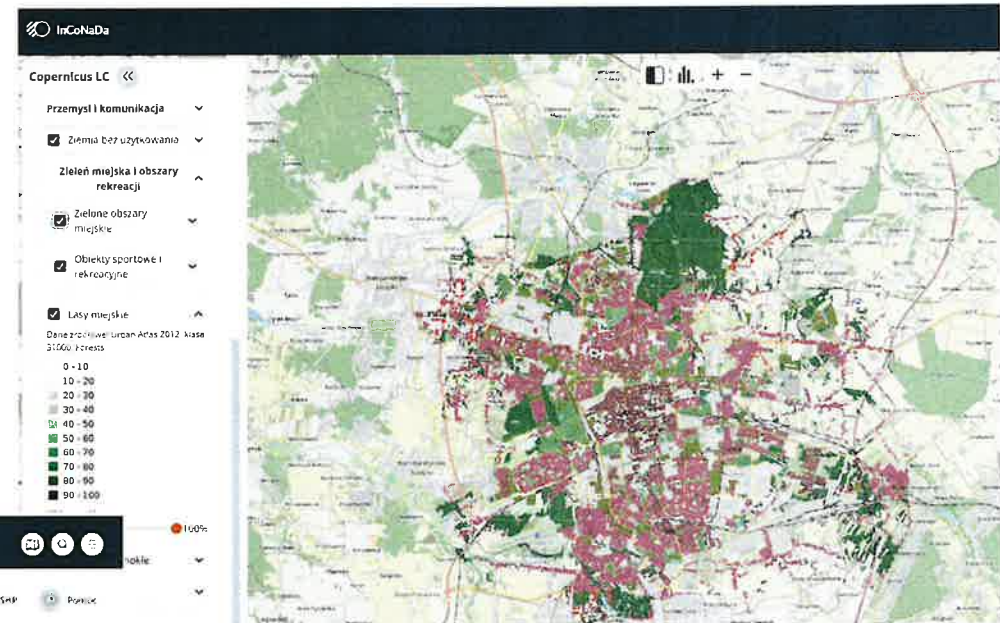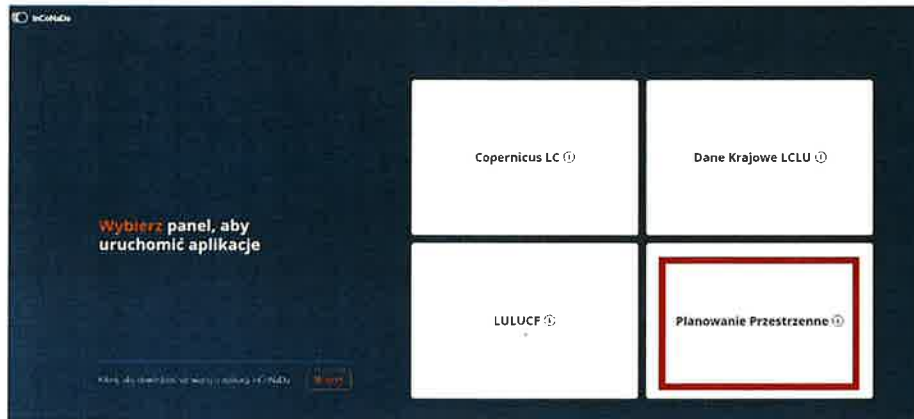
InCoNaDa – LCLU application

- Grided approach
- Mapping unit 100 x 100 m based on EUROSTAT grid (at country level)
- Mapping unit 10 x 10 m for spatial planners (study areas)
- % of LC/LU with each cell

InCoNaDa – LCLU application

InCoNaDa – LCLU application

Thank you for your attention

https://www.inconada.eu/

Norway grants

The National Centre for Research and Development

Norway grants

InCoNaDa Project

www.inconada.eu

The National Centre for Research and Development

ENHANCING THE USER UPTAKE OF LAND COVER / LAND USE INFORMATION DERIVED FROM THE INTEGRATION OF COPERNICUS SERVICES AND NATIONAL DATABASES

2nd InCoNaDa webinar

Tuesday, 17 October 2023, at 9:00 – 12:30

The webinar will be held on MS Teams. **Link to the event:** CLICK HERE

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