



This project is funded by the European Union

## ENI SEIS II East

Implementation of the Shared Environmental Information System (SEIS) principles and practices in the ENP East region

# Regional Conference on the outcome of the CLC-Pilot project, potential benefits and way forward in ENI-East countries

## *Ukraine*

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*Dmytro Averin (SEIS assistant)*



# 1. Steps of implementing the CLC-pilot

**2018 Images** – ESA Sentinel-2 satellites: 03 May 2017, 20 July 2017, 8 October 2017, 08 April 2018, 02 June 2018. Good quality cloud-free multi-temporal imagery.

**2005 Images** – US Landsat-5 satellite: 10 Apr 2005, 31 July 2005, 03 May 2005, 08 & 25 Sept 2005.

**Pilot area** was selected nearby capital of Ukraine because of many predicted changes.

**Reference data** included topographic map of Ukraine scale 1:50000, time series images on Google Earth App and local geo-tagged photos.



# 1. Steps of implementing the CLC-pilot

**Mapping methodology** based on main principles of CORINE Land Cover project. The methodology is in conformity with the Technical Guidelines issued by the ETC.

**National team:** Sergiy Zibtsev, Oleksii Petrov, Iryna Zibtseva and Iryna Melnyk

**1st training:** 25 - 27 September 2018 . ETC/ULS experts together with Ukrainian National Team members agreed on the pilot area and the CLC methodology was discussed.

**2nd training:** 17 - 19 September 2019. ETC/ULS experts together with Ukrainian National Team members discussed the verification of the CLC2018 map. The principles of mapping were introduced.

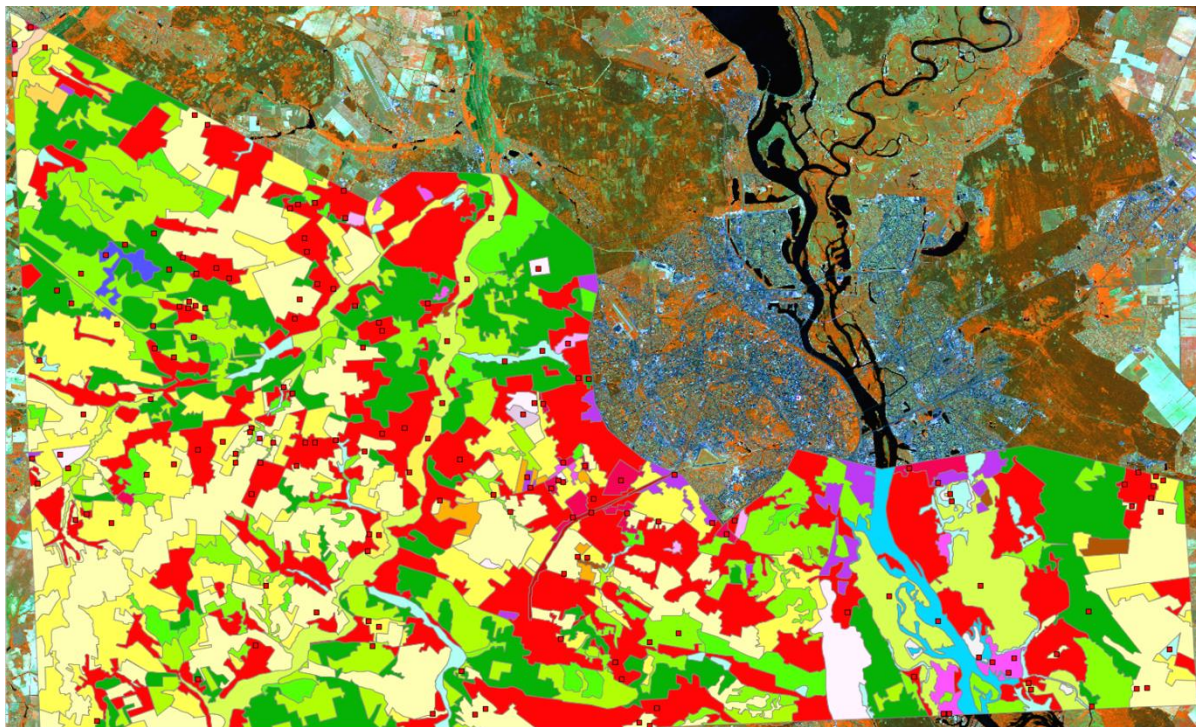
**Software:** InterChange software (V4.0.5.3) was used for creation and revision of CLC2018 and mapping of changes. An ArcGIS Add-on was used to derive CLC2005 by ETC/ULS.

**Internal quality control** was made on each step of creation and revision by national team.

**External quality control** (two remote verifications) was provided by ETC/ULS.



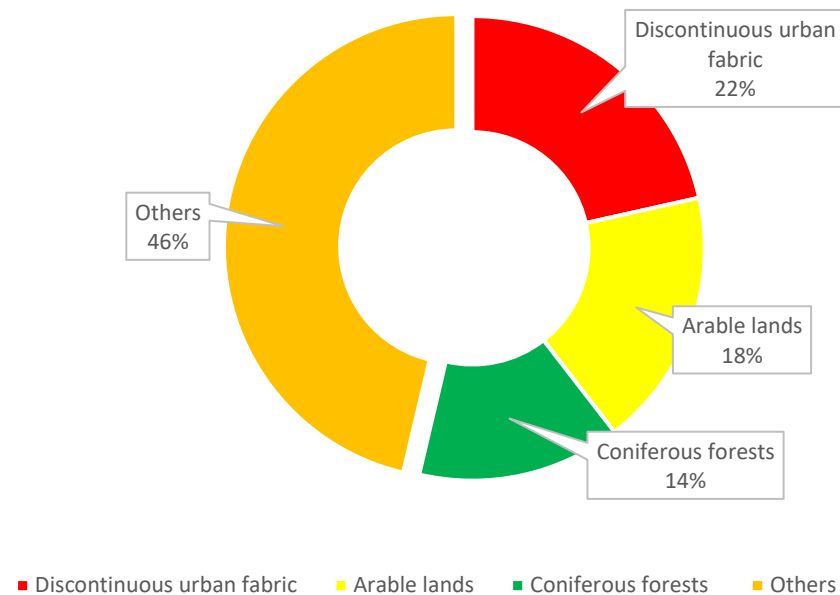
## 2. Main results of the CLC-pilot



CLC2018 map of the pilot area submitted for 1st verification by the Ukrainian National Team



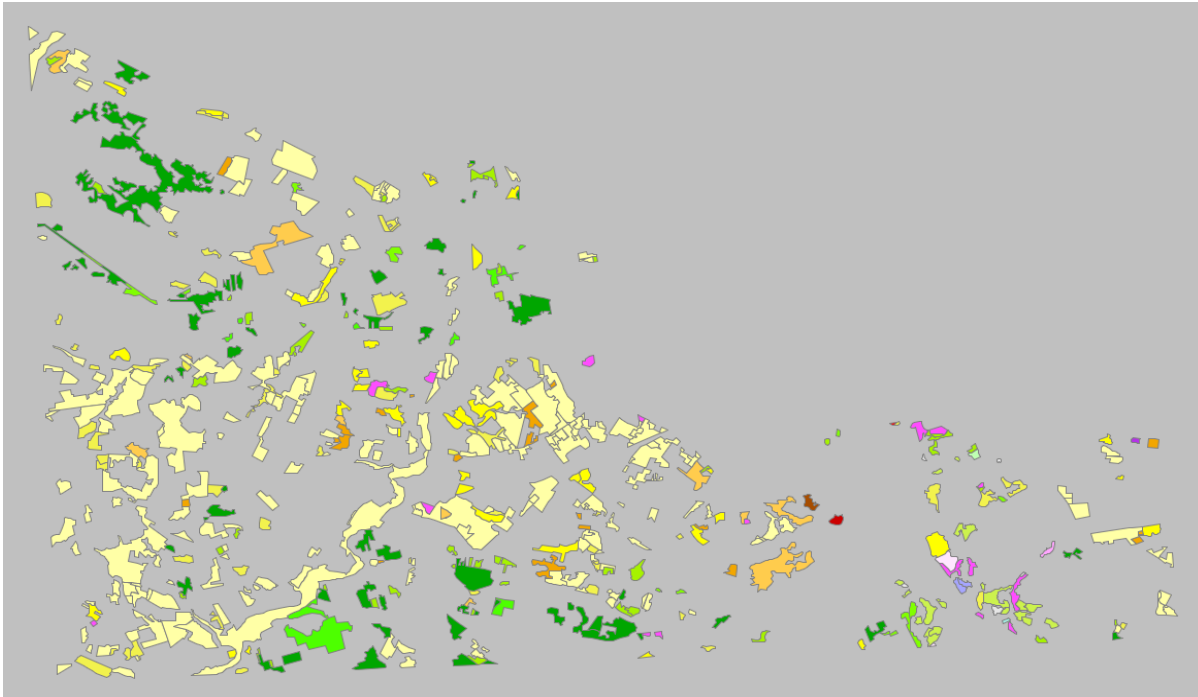
The largest categories



Discontinuous urban fabric (112) is the largest category (21.5 % of total area), followed by arable lands (18.02%) and coniferous forests (14.16 %).

Pastures include the largest number of polygons (109), followed by discontinuous urban fabric (104) and coniferous forests (87).

## 2. Main results of the CLC-pilot



CLC-changes (2005-2018) map of pilot area

Altogether 523 CLC change polygons, representing 92 different change types were delineated.

**18.82 percent of total area of the pilot area changed between 2005 and 2018.**

Considering all 25 possible level-1 changes (including internal changes) three change types provide more than 90 % of all changes:

- internal changes between semi-natural classes;
- internal changes between agriculture classes;
- increase of the area of semi-natural classes at the expense of agricultural classes.

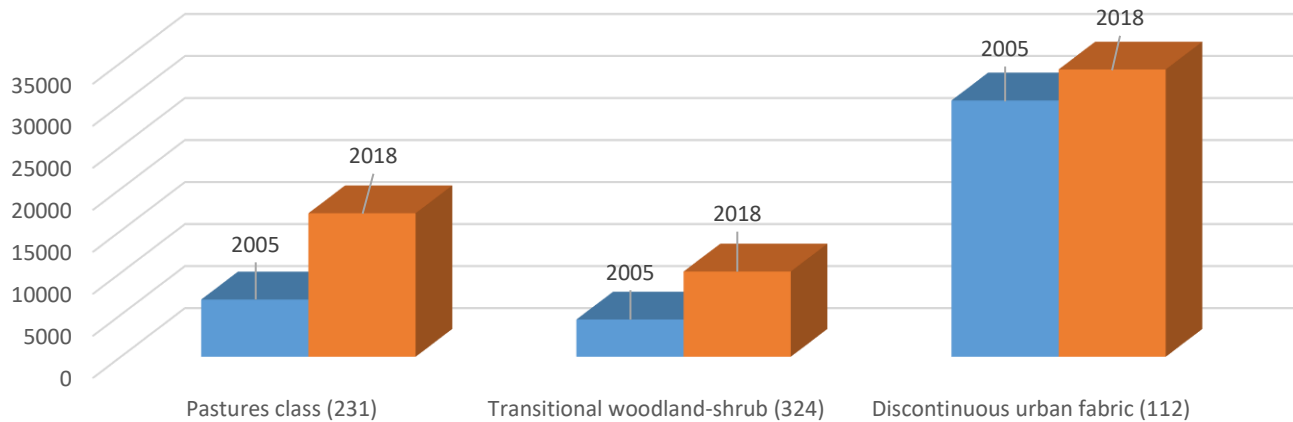
Five additional level-1 changes (together with the three largest ones) provide 99% of all changes:

- loss of agricultural land to artificial surfaces;
- conversion of semi-natural areas to agricultural land;
- conversion of wetlands to water;
- new wetlands on former agricultural land;
- conversion of semi-natural areas to wetlands

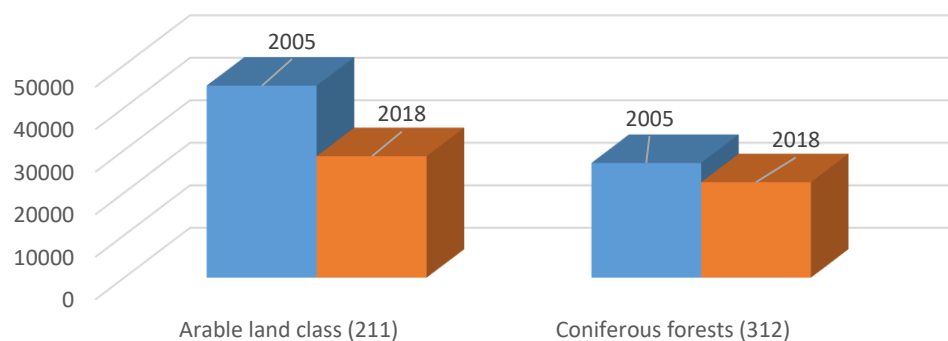


## 2. Main results of the CLC-pilot

Changes in area of classes



Changes in area of classes



### Comparison of CLC 2005 and CLC 2018

Comparing % changes of class areas, the **largest increase** is observed in Pastures class (231) followed by transitional woodland-shrub (324) and discontinuous urban fabric (112).

The **largest decrease** is observed in arable land class (211), followed by coniferous forests (312).

Most dynamic classes are transitional woodland-shrub (324), pastures (231) and arable land (211).

On the other hand, rivers (511), Road and rail networks and associated land (122) and mixed forests (313) did not show any change.



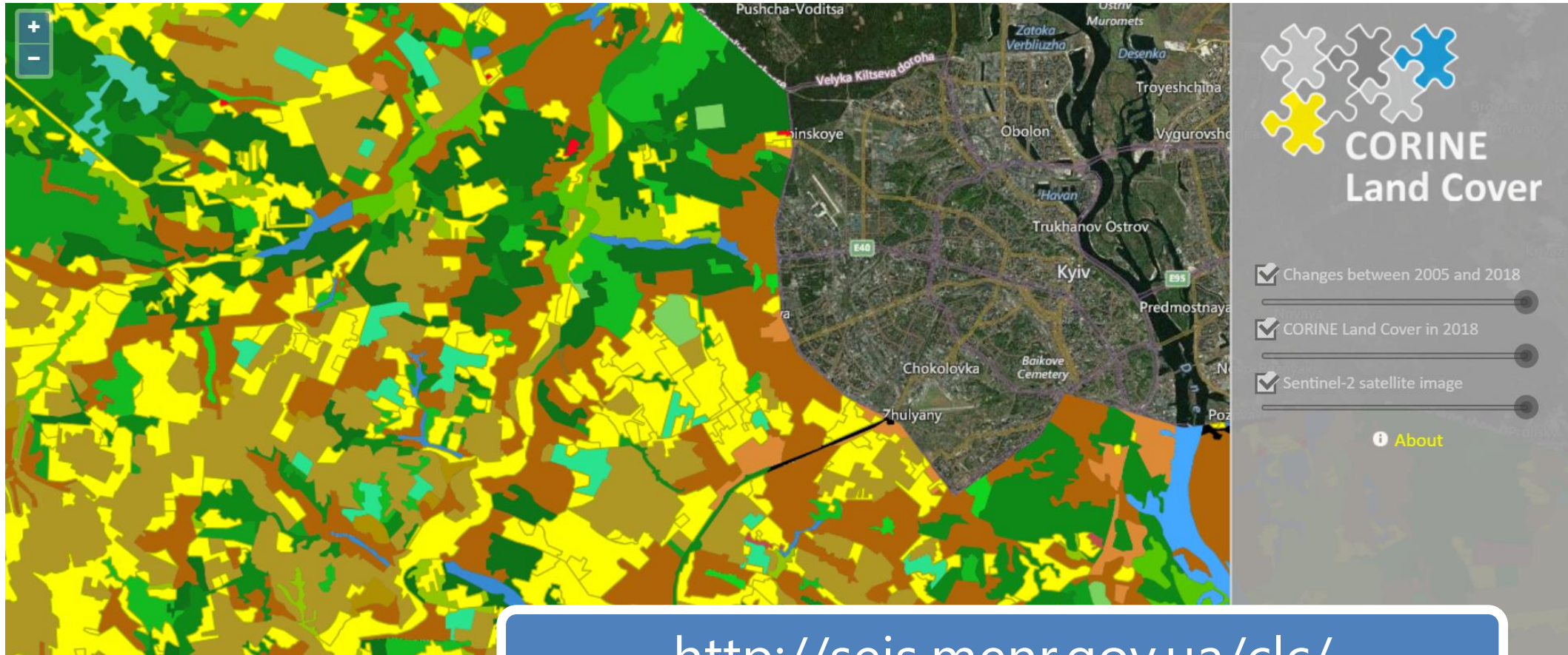
# 3. Difficulties encountered in realising the CLC-pilot

- It was the first experience of NT in preparing CLC layers.
- NT had lack of fresh orthophotos over the pilot area, (nevertheless access could be solved with more extensive implementation of CLC)



# 4. Visibility and communication

CORINE Land Cover portal was developed and posted on a server of the Ministry of Environment Protection and Natural Resources



<http://seis.menr.gov.ua/clc/>





# 4. Visibility and communication

CLC events are available on the ‘SEIS Ukraine’ portal and the Ministry website



Home Contacts

## The second CORINE Land Cover training was held in Kyiv

19.09.2019

With the support of the European Environment Agency and the Ministry of Energy and Environmental Protection of Ukraine, practical training on the implementation of the CORINE Land Cover methodology in Ukraine was held on September 17–19 in Kyiv.

The training was organized as part of the implementation of the EU funded project “Implementation of the Shared Environmental Information System (SEIS) principles and practices in the ENP East region” (ENI SEIS II East). Representatives of the Ministry of Energy and Environmental Protection of Ukraine and other institutions and organizations took part in the event.

Participants had the opportunity to share experiences of using the CORINE Land Cover methodology for a environmental issues, to discuss the further implementation of the pilot project for the suburbs of Kyiv, and to perform practical exercises using the InterChange tool.



## SOER 2015

The Ukrainian environment – state and outlook 2015



A comprehensive assessment of the Ukrainian environment's state, trends and prospects



<http://seis.menr.gov.ua/>



# 4. Visibility and communication




CLC events are widely covered on the “SEIS Ukraine” Facebook page






 **SEIS Ukraine** · 19 сентября 2019 г. · отредактировано · 






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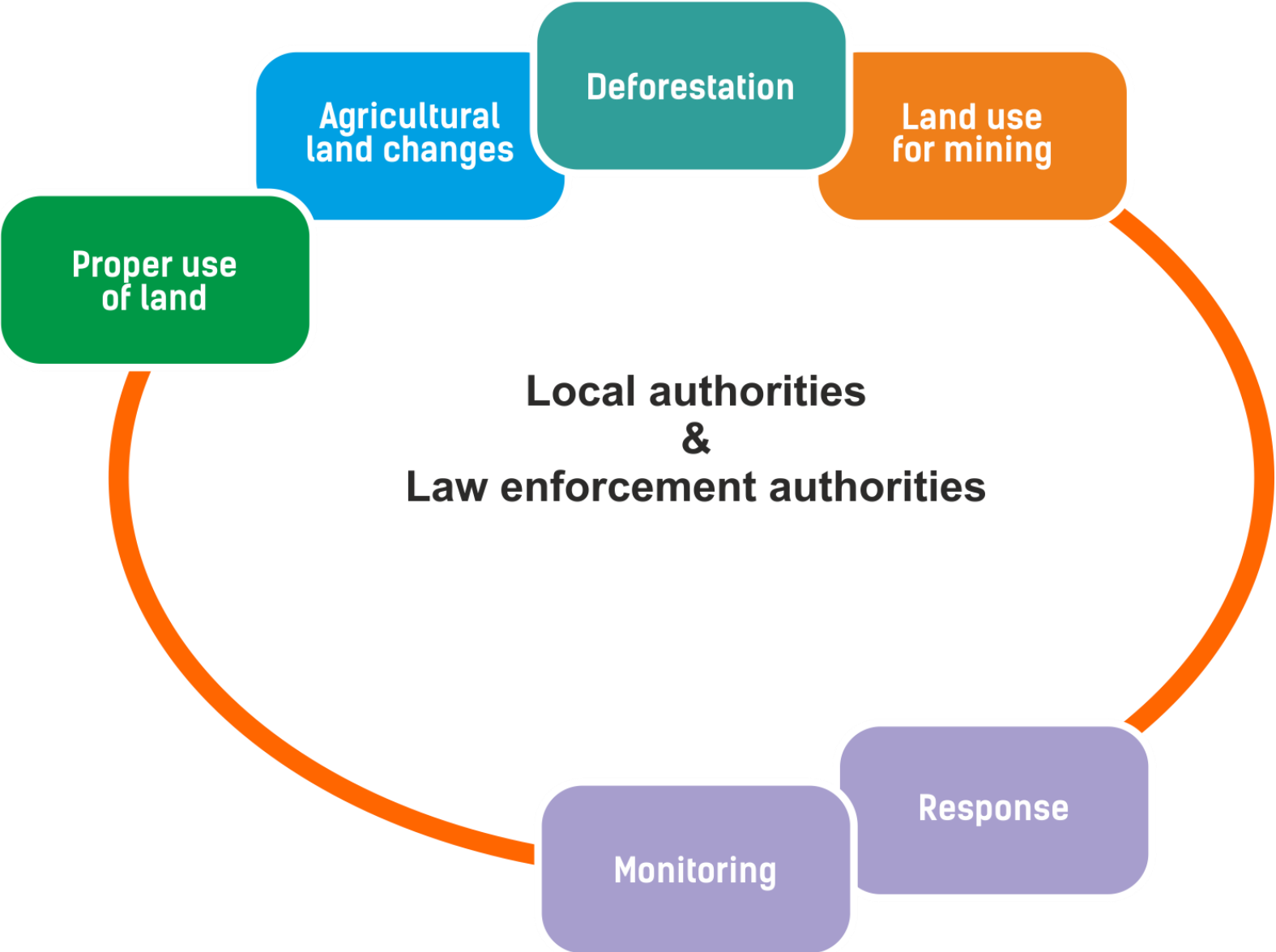
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# 5. Potential use of CLC in Ukraine



# 5. Potential use of CLC in Ukraine



# 6. Plans for continuation of CLC mapping

## Implementation of pilot projects:

- 1. Desolation assessment of "Oleshkivski pisky"*
  - 2. Assessment of forest changes in the Carpathian region*
  - 3. Assessment of land cover changes in eastern Ukraine*
- &**
- 4. CLC mapping for the whole territory of Ukraine*

