



**Andrei ISAC**

# Major results of the SEA Pilot Project for the Master Plan of Orhei Town

Experience and lessons learned from the SEA pilot  
project for the Master Plan of the Orhei Town in the  
Republic of Moldova

Chisinau, 17 June 2015

# SEA Environmental Report

The development of this SEA Environmental Report was carried out within the Orhei Pilot Project, which started in June 2014 and it is based on the following provisions of the UNECE Protocol on SEA:

- For plans and programmes subject to strategic environmental assessment, each Party shall ensure that an environmental report is prepared.
- The environmental report shall identify, describe and evaluate the likely significant environmental, including health, effects of implementing the plan or programme and its reasonable alternatives.



## Major environmental problems identified:

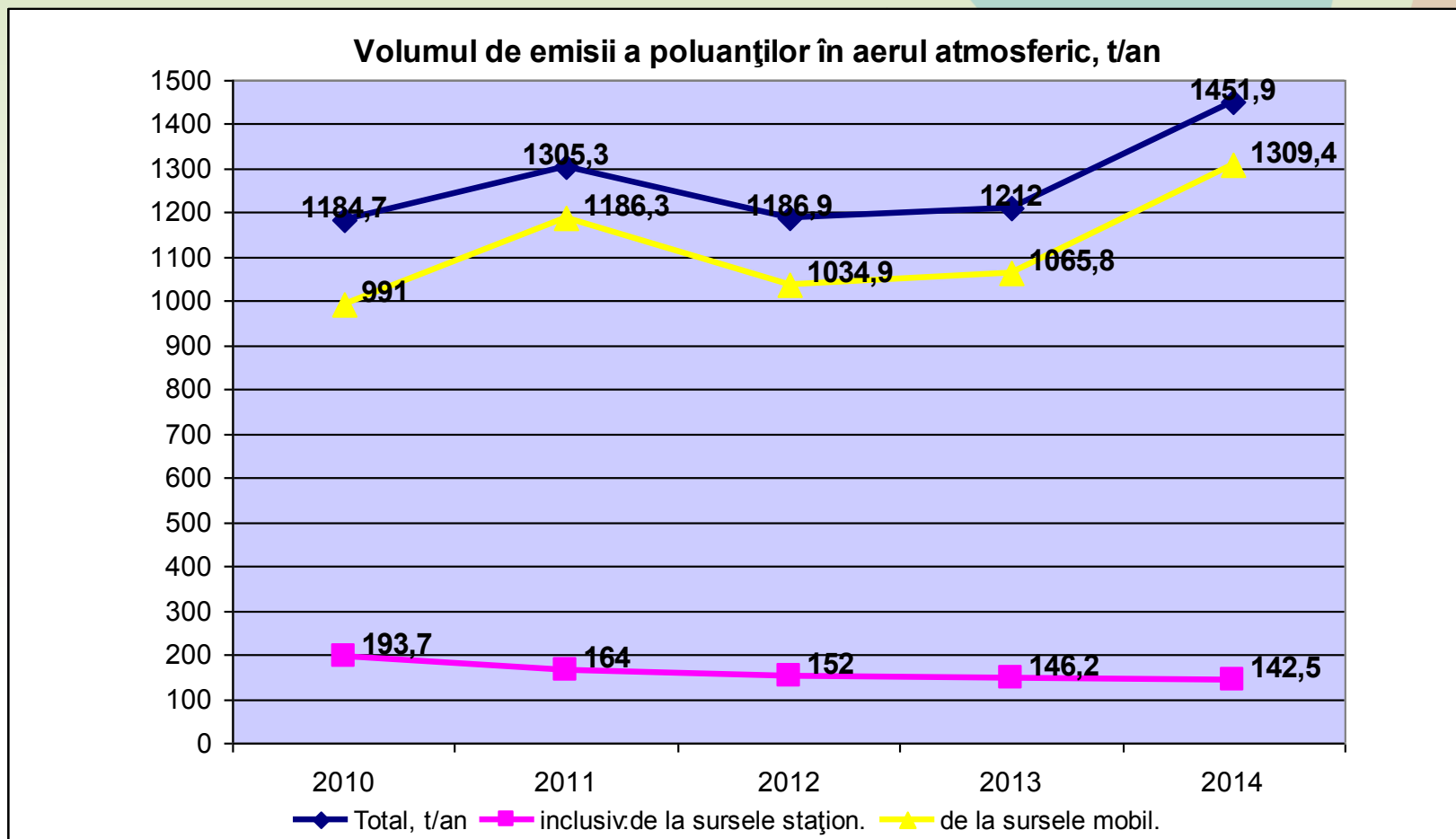
- Impact on the atmospheric air
- Water resources quality and pollution
- Land degradation
- Waste management
- Biodiversity conservation



# Impact on the atmospheric air

- stationary source emissions constitute 146,2 tons per year- 12 %,
- mobile sources of emissions constitute 1065,8 tons per year- 88 %
- no air quality monitoring stations
- specific problems: national highway road crossing the city; specific smell from WWTP, landfill and breeding of pigs; open stone mines (dust)

# Impact on the atmospheric air





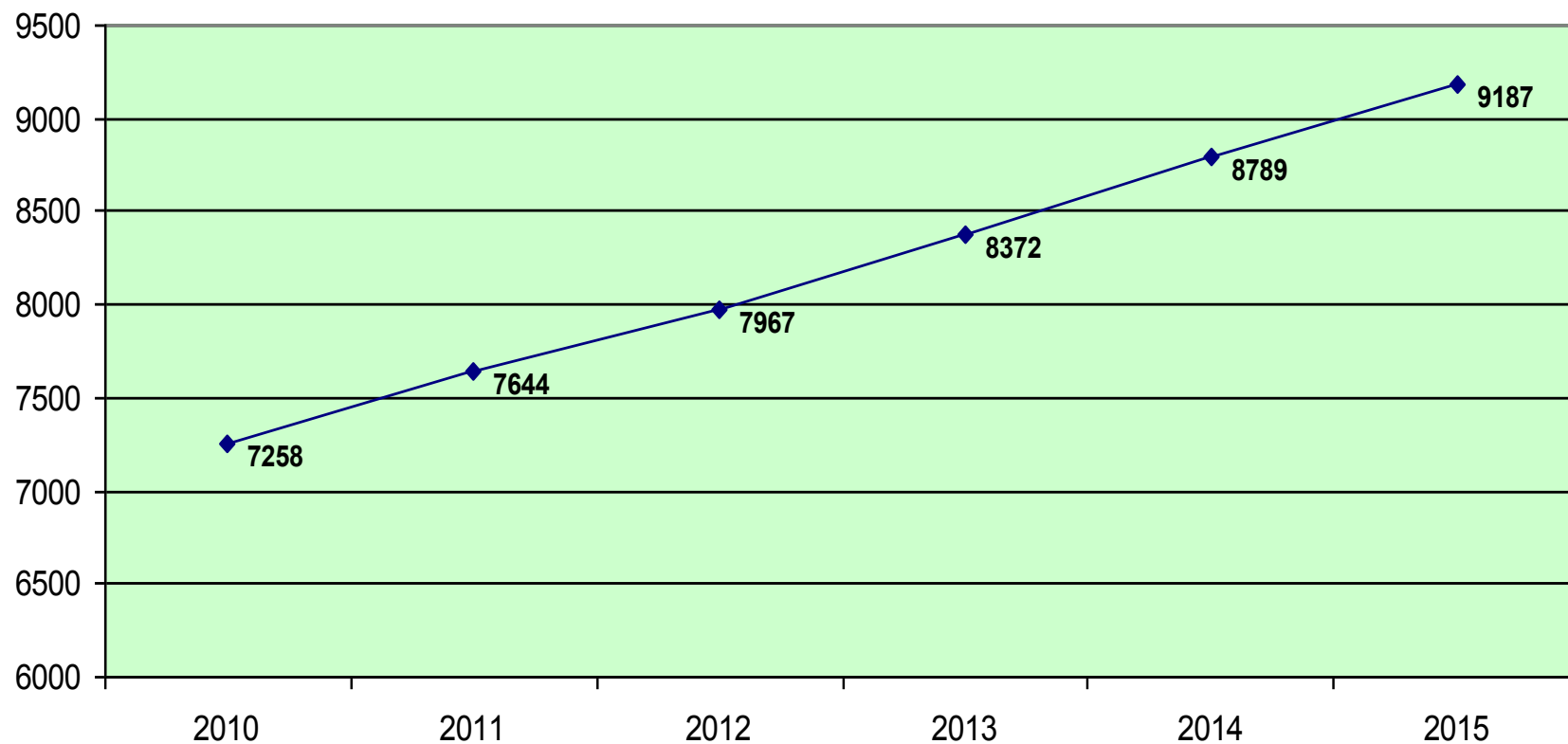
# Impact on the atmospheric air



*Photo: Central Street of the city and parking. National highway crossing the city*

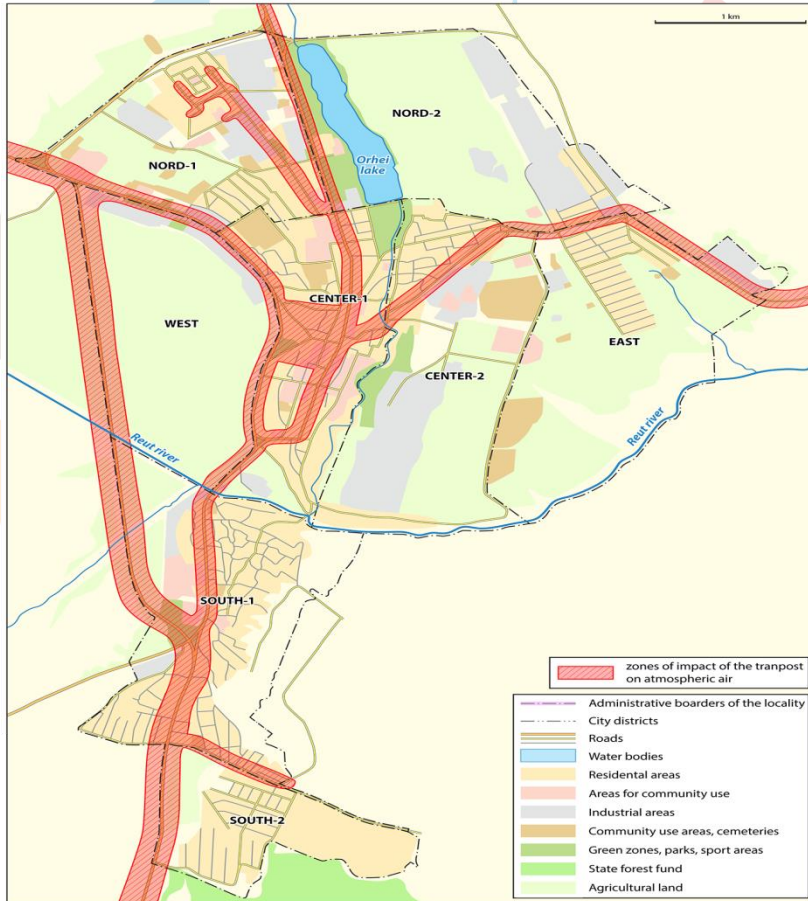
# Impact on the atmospheric air

Mijloacele de transport înmatriculate în or. Orhei, unități

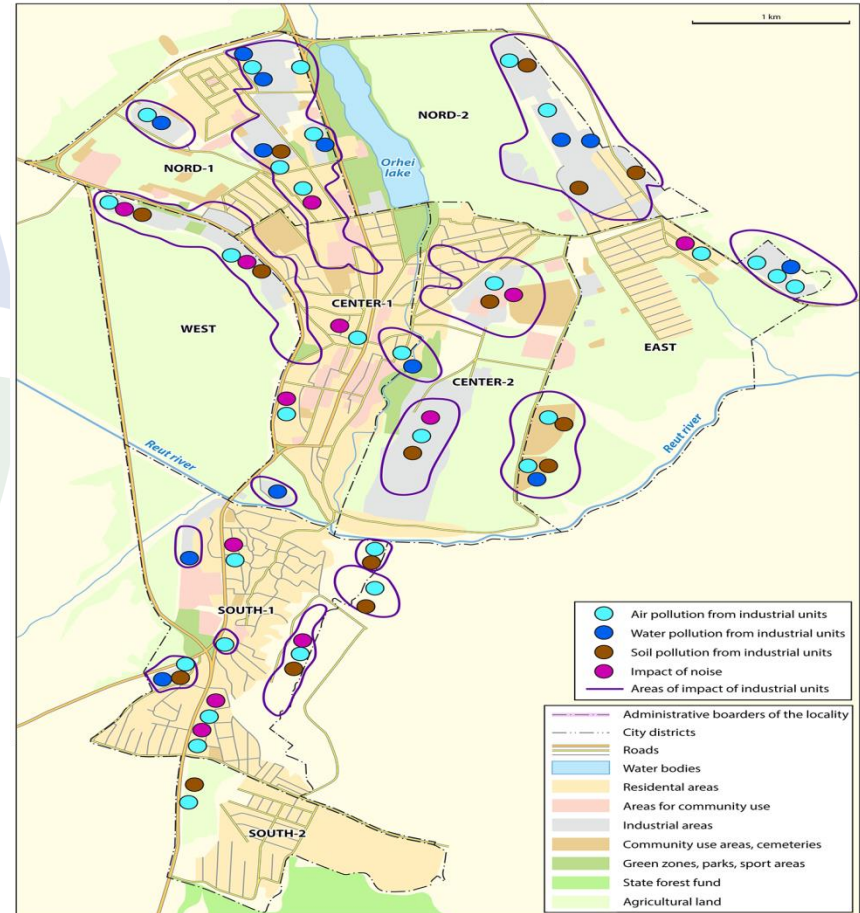




## Impact on the atmospheric air



Map on impact of transport



Map on impact of industrial activities





# Water resources quality and pollution

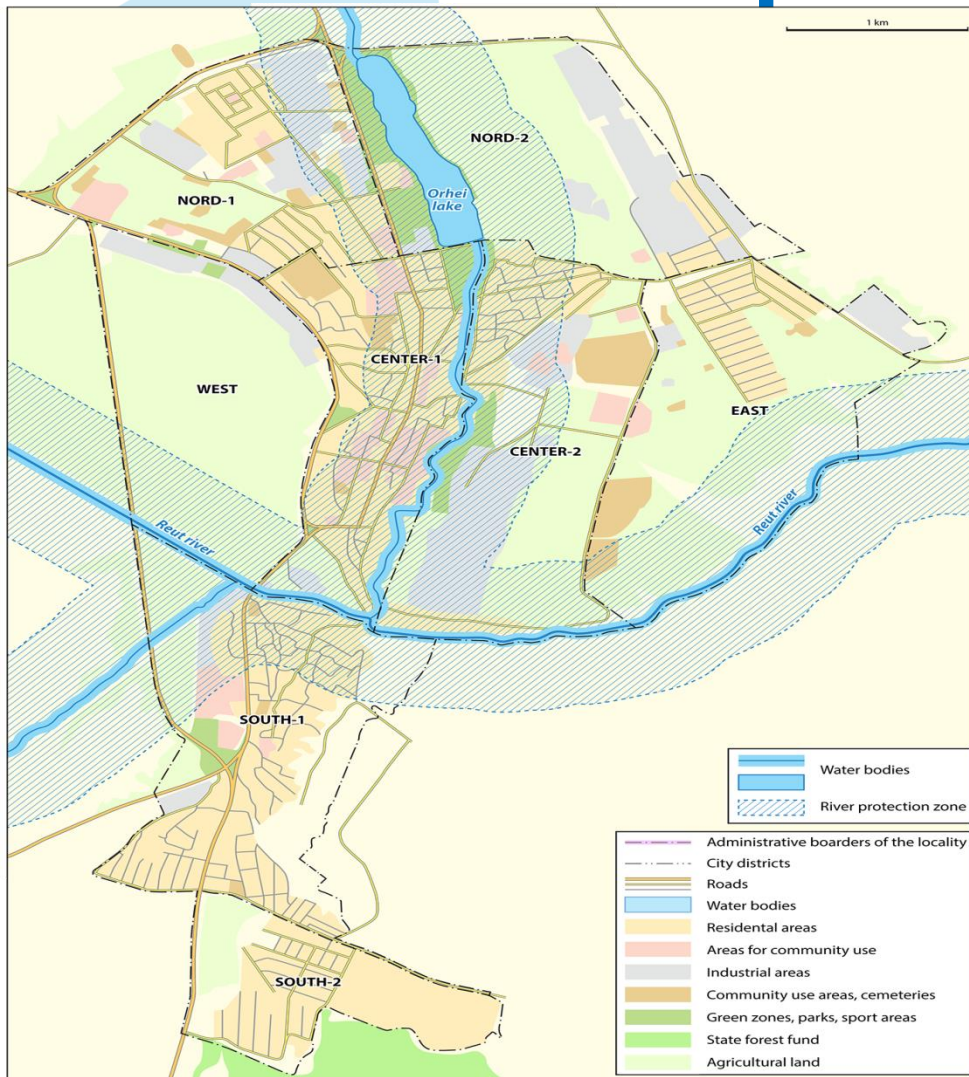


Photo: Raut river, city lake

Photo: Ivanos river, Raut at the exit of city

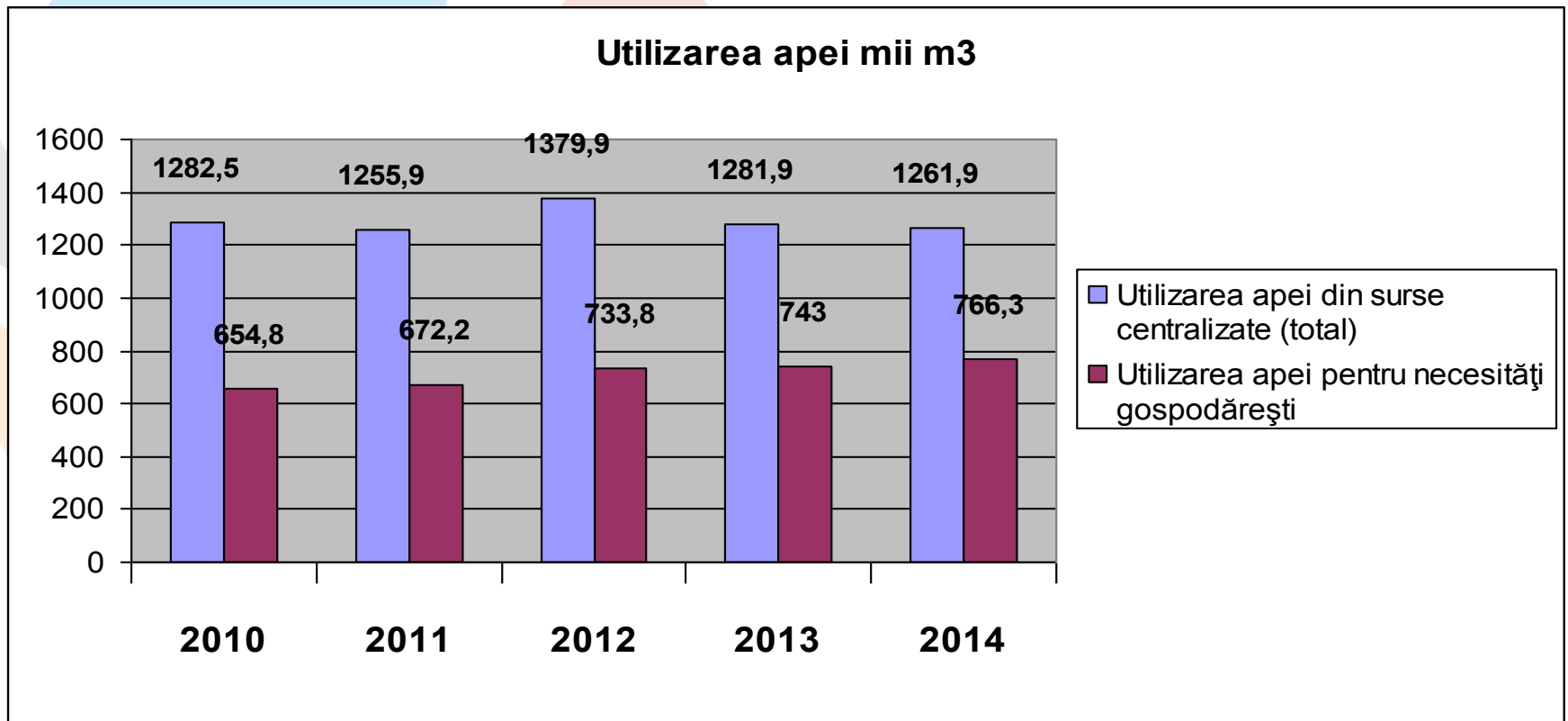


# Water resources quality and pollution





# Water resources quality and pollution



Water use, mln m3 per year



# Water resources quality and pollution



Pollution sources

Old and new WWTP



# Water resources quality and pollution

4 major problems can be emphasized:

- surface water pollution
- lack of rain water collection system
- limited development of the sewerage system
- improper work of the old waste water treatment plant



## Land degradation

Key problems of the city in this field:

- Land slides and erosion
- Flooded territories
- Territories affected by economic activities



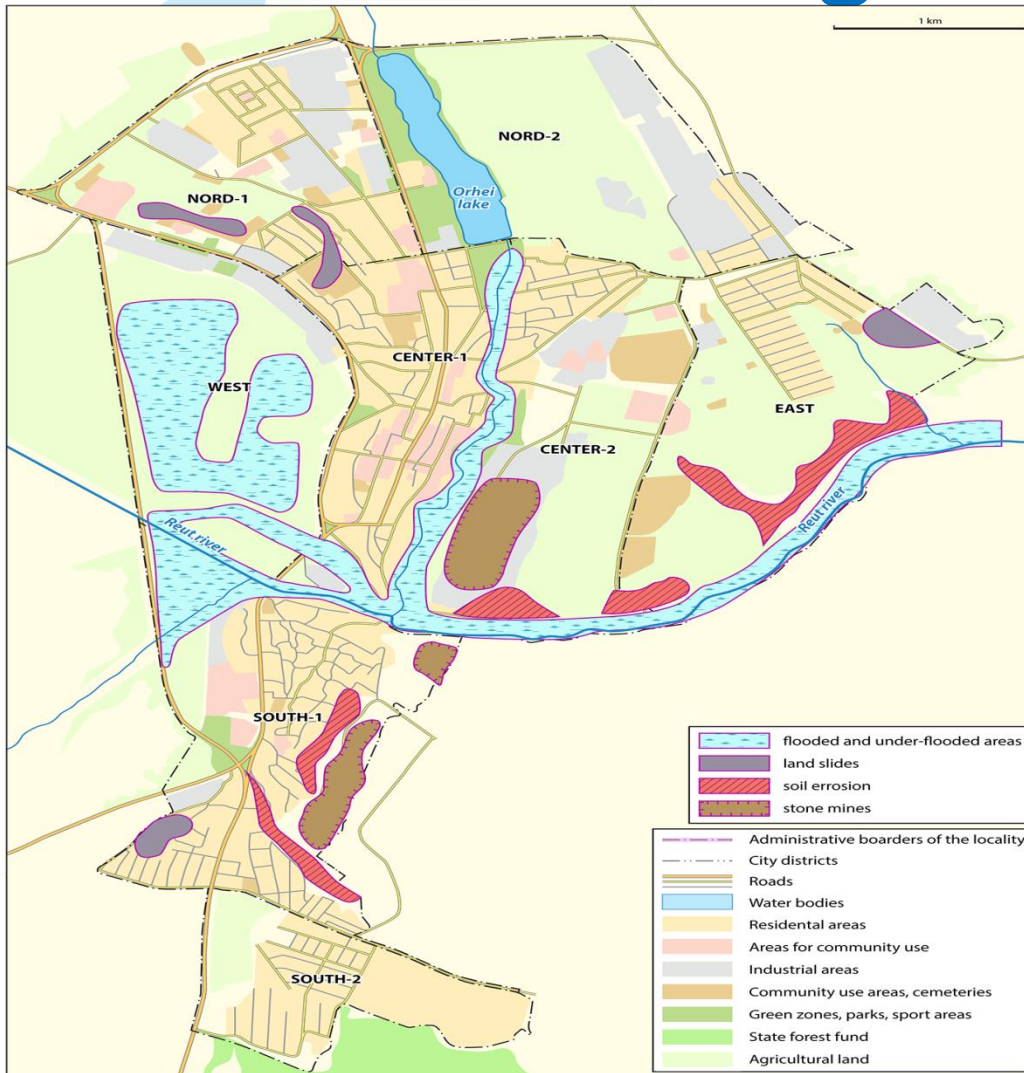
# Land degradation



Photo: land slides



# Land degradation







# Land degradation



Photo: open stone mines



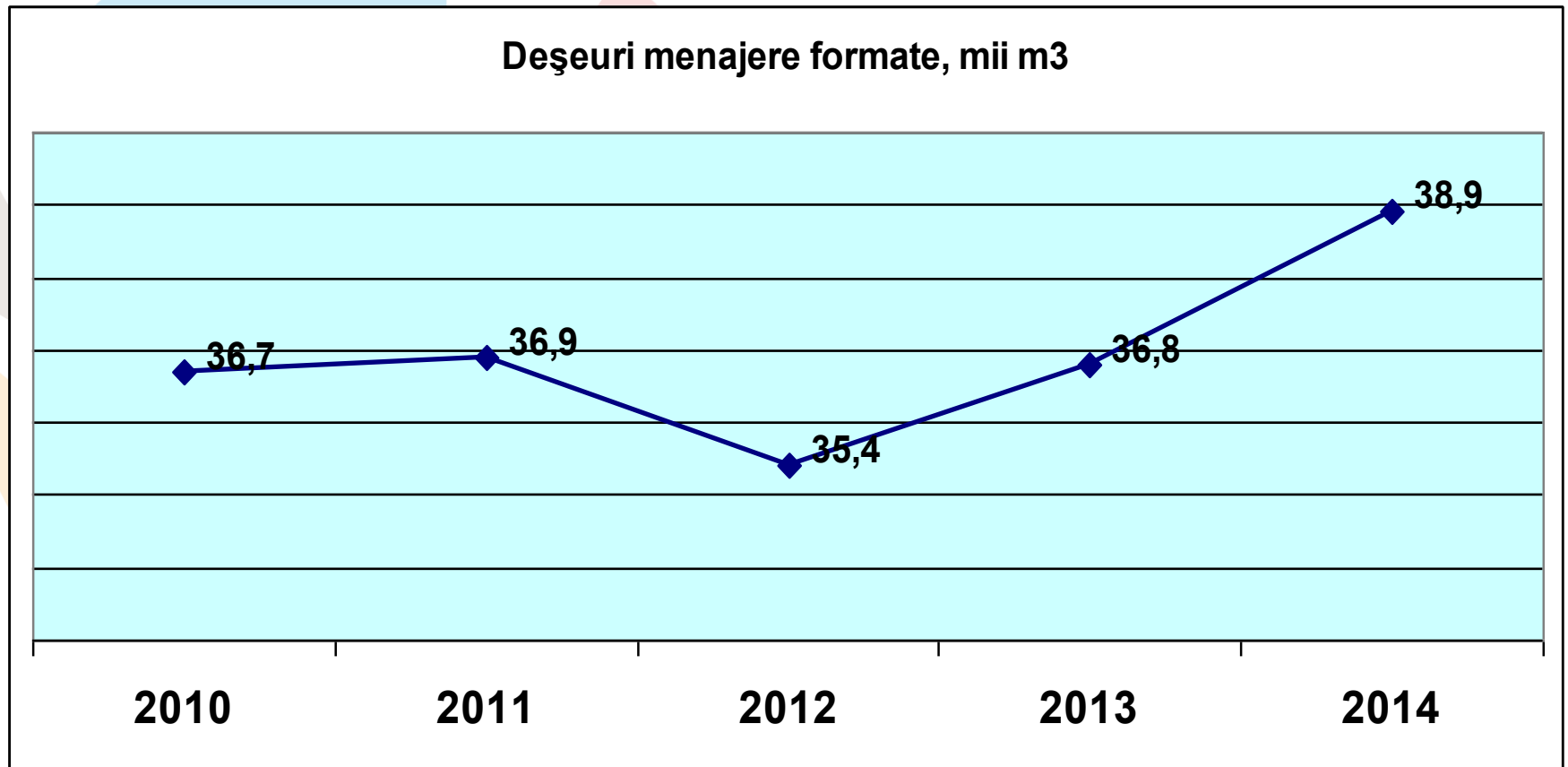
## Waste management

Major problems could be mentioned:

- Lack of an overall system of evidence of the generation, recycling and elimination of wastes
- Absence of a modern landfill and of an operational system of separation of municipal wastes for recycling, based on regional principles
- Presence of small illegal dump sites and pollution of green areas and rivers with wastes
- Limited implementation of technologies for industrial, agricultural and animal wastes collection and treatment.



# Waste management



Volume of municipal wastes, thousand m3 per year



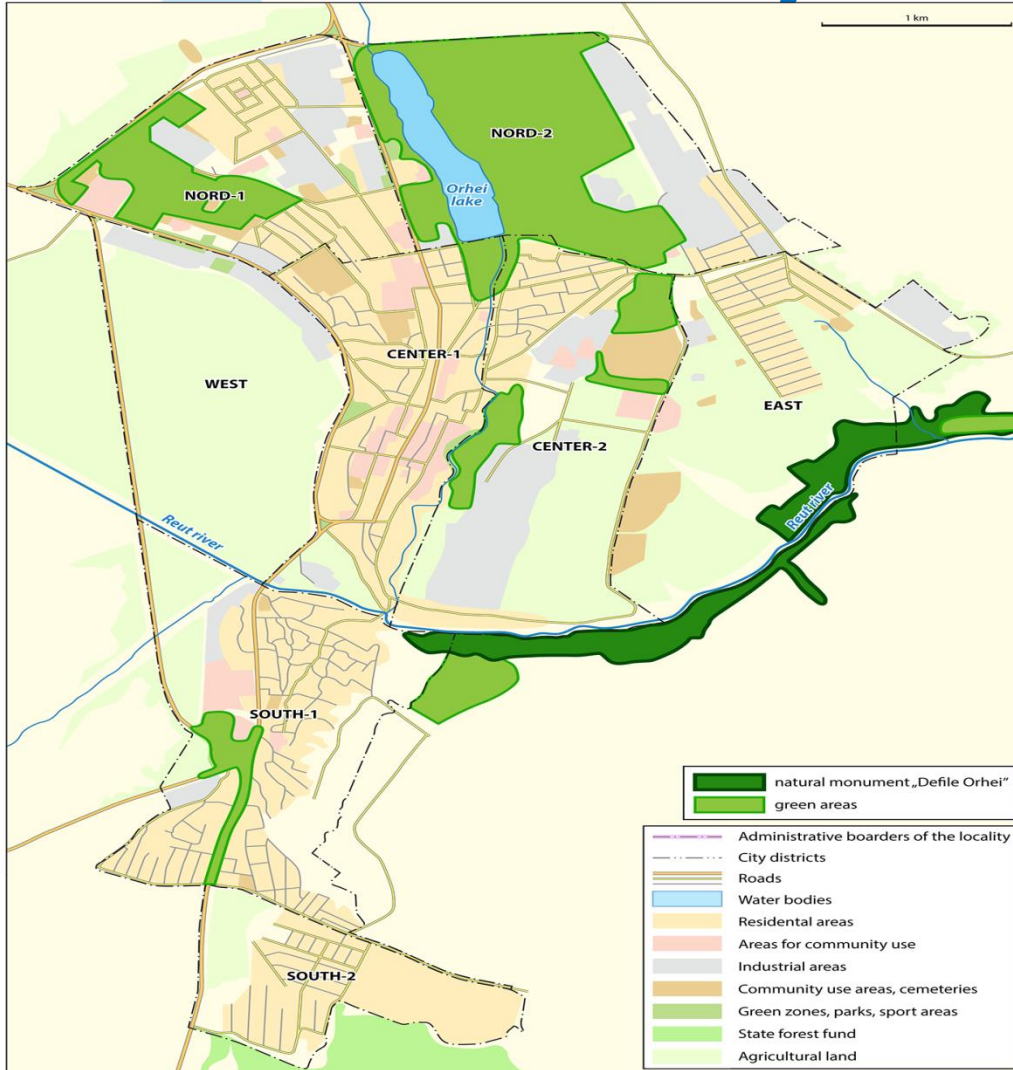
# Waste management



Photo: waste collection, landfill, illegal dump, separation station



# Biodiversity conservation





# Biodiversity conservation



Photo: green areas



# Biodiversity conservation

The Nature and  
Paleontological  
Monument

„Defileul Orhei”,  
100 ha on the  
banks of the  
Raut River



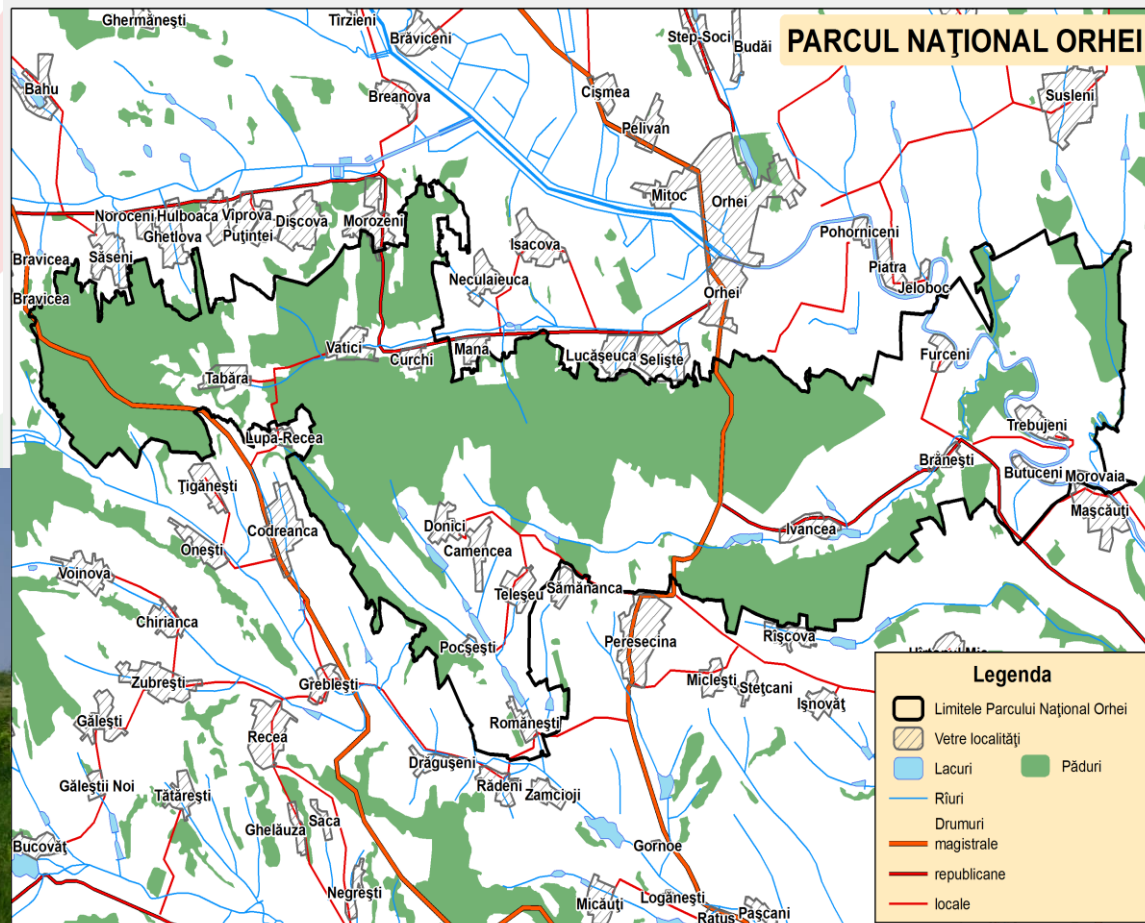


# Biodiversity conservation

National Park Orhei

Established 2013

33792,09 ha





# EaPGREEN

Partnership for Environment and Growth



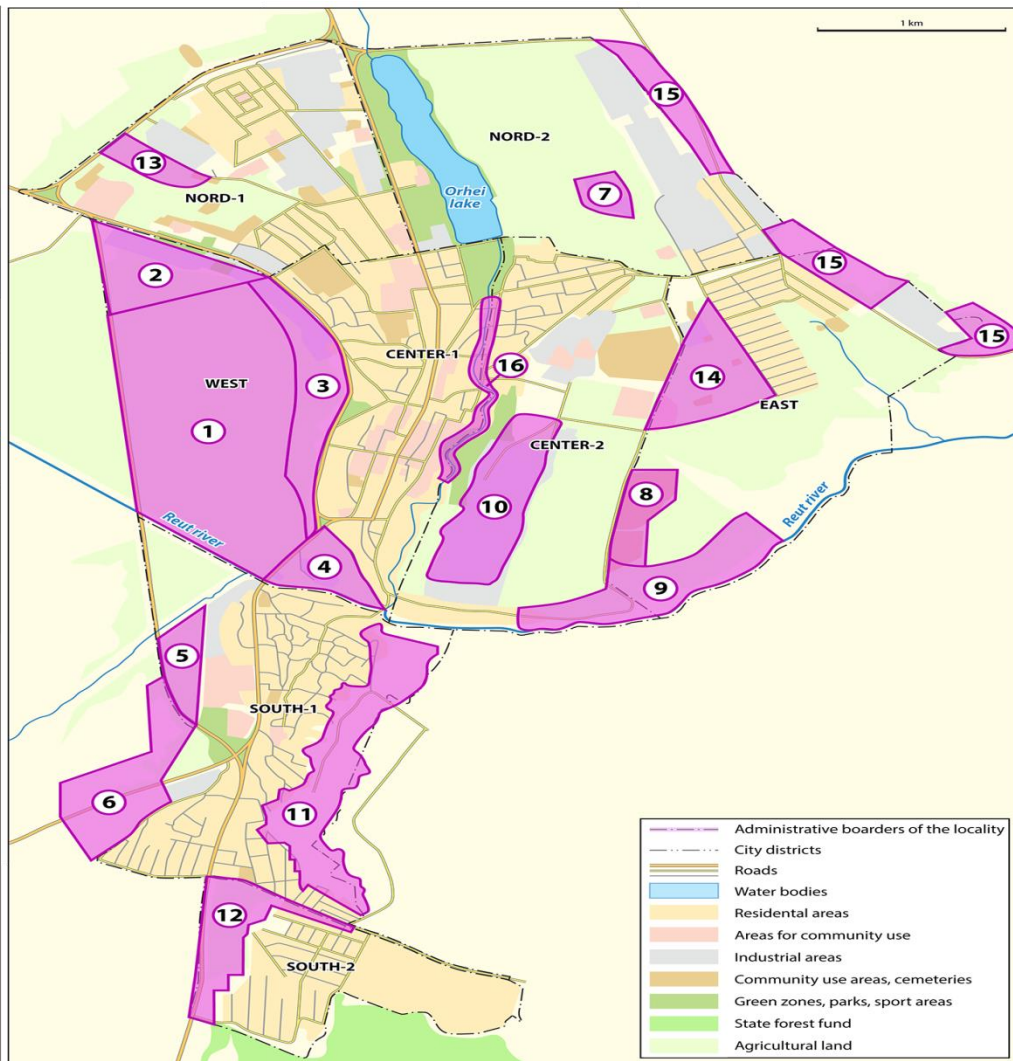
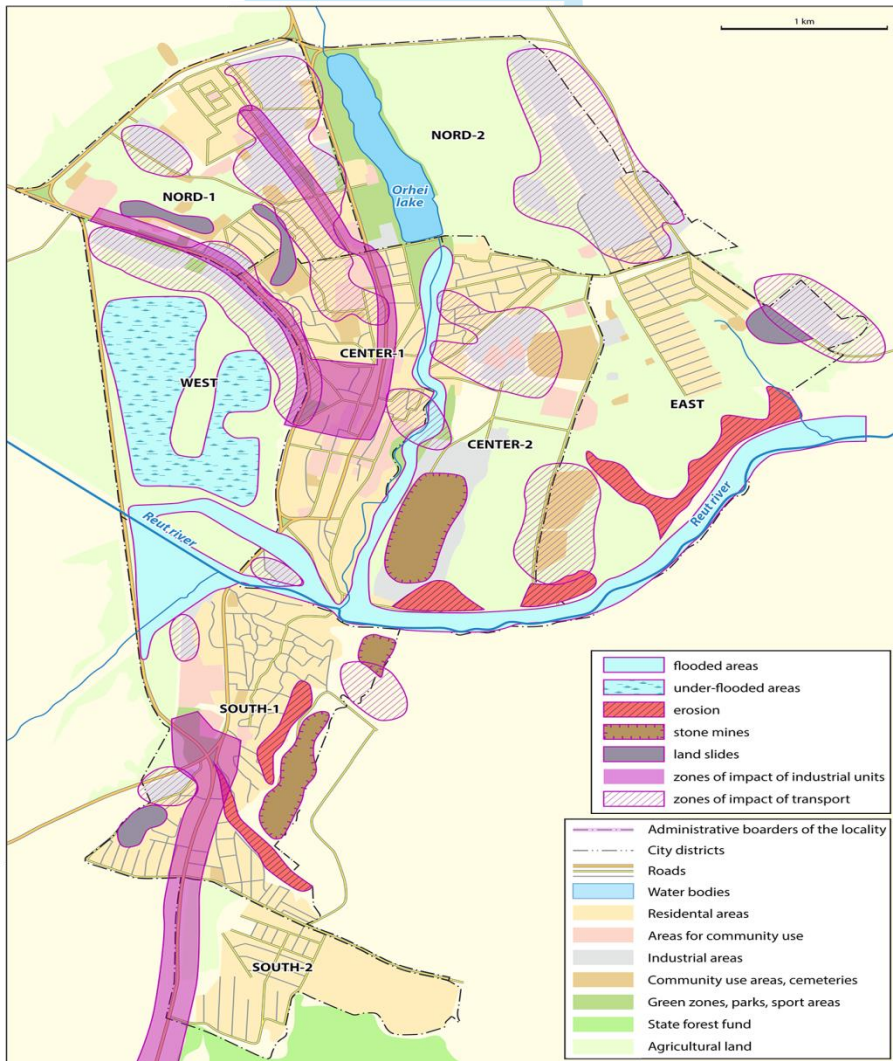
This project is funded by the EU

## Cultural and historical heritage





# Major zones with impact on environment





## Environmental, including those related to public health issues related to the Master Plan

| Main issues  | Specific concerns and problems   | Linkages to the spatial plan   | Proposals of the Master Plan   |
|--|--|--|--|
| <p><b>Impact on the health of the population</b></p> | <p>Pollution of ground waters and water in wells with households waste waters and wastes</p> | <p>Individual private buildings :<br/>                     - from the south Slobozia Doamnei<br/>                     - in the central part of the town residential constructions that date back to 1950-60-s;</p> | <p>Transition to the centralized water supply system, expansion of the sewage network to achieve full coverage</p> |



## Compliance of the Master Plan with environmental policy objectives

| Objectives of the national strategic documents  | Objectives of the Strategy for the social-economic development of the Orhei city for 2014-2020 (nr 13.20 from 27.12.2013) and other documents                               | Objectives, stated in the draft Orhei Master Plan  | Level of formal compliance<br><br>(+) full<br><br>(+/-) partial<br><br>(-) non-compliance |
|---|---|--|---|
| Reduction of emissions of pollutants by 30% by 2023 and of greenhouse gases by at least 20% by 2020 | <p>Ensuring protection of natural environment.</p> <p>Reduction of pollution of environment.</p> <p>Promotion of advanced technologies related to extraction of mineral</p> | Reduction of discharges of pollutants by means by closure of a number of enterprises, optimization of the transport schemes, development of territories and planning of trees and shrubs, and other measures | +   |



## Key environmental, including health, effects

**Air:** likely worsening the traffic along the new and bypass roads, but improvement in the city centre; closure of the stone mines will reduce the impact of pollution with dust.

**Water:** improvement of the situation with the increasing of the number of people connected to the sewerage, which will reduce the level of pollution of ground waters; in case of closure of the old waste water treatment plant there will be reduction in the level of pollution of the Raut River.

**Soil:** identification and highlighting the land slides and erosion areas will help implementing targeted actions to reduce and eliminate them. Change of destination of green areas – into areas for industry or commerce could reduce the surface of the natural areas.



## Key environmental, including health, effects

**Wastes:** continuation of the problems with the old landfill – it can be considered as missed opportunity (the problem needs intervention from higher strategic level).

**Biodiversity:** improvement of the state of the existing areas (forest, park, green spaces) and enlarging of their surface and connecting into a single system will improve the state of biodiversity; proper mapping and management of the natural monument on the banks of the Raut River will improve its quality and contribute to the integration of the city in the National Park Orhei.

**Health:** enlargement of the green areas and areas designated for sports will positively impact the general life conditions; proper water supply and sanitation measures will contribute to the reduction of public health risks.

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Partnership for Environment and Growth



This project is  
funded by the EU

**Measures to prevent, reduce or mitigate any significant adverse effects on the environment, including health, which may result from the implementation of the Master plan of Orhei**





## Proposed measures:

- Delimitation of the strictly protection zones for the rivers (Raut, Ivanos and of the city lake);
- Inclusion the boundaries of the green zones, of the parks and green belts of the city in the Master Plan
- Mining zones inventory and mapping
- Indication of the identified degraded lands (landslides, etc.) for the forest planting
- Modernization of the waste management infrastructure (placement of platforms and bins for the separate waste collection etc) and integration of the city waste collection and recycling into the regional/national schemes





## Proposed measures:

- Re-cultivation of the old municipal wastes landfill and planting of trees
- Placement of the air quality monitoring stations (in the city centre and on the highway)
- Placement of the Raut River water monitoring points
- Extension of the green zones and recreation areas (on the Raut river banks) and plant or restore the green belts on the river banks/river protection zones
- Development of the road links and junctions for the traffic, which will be able to go around the city centre
- Review of options to improve conditions for the parking of cars, especially in the old city centre



## Proposed measures:

- Application of public-private principle for industry and services development
- Promote the proposal for the construction of the pre-treatment waste water treatment plant at the Orhei-Vit Company
- Cover all households with the extension of the sewerage system for waste water collection
- Establish a platform for the sustainable development and environmental protection in the city
- Development of the management Plan for the Monument of the Nature „Defileul Orhei” (geological and paleontological), fix its borders in the territory and ensure the implementation of protection measures, propose to integrate the territory of the city, natural monument and forest into the National Part “Orhei”



## Proposed measures:

- Establishment of the rain water collectors system in the city and link it to the waste water treatment network
- Reducing the traffic problems on the main roads and creation of distribution networks
- Elaboration and integration of the information on planned investments and current expenditures for the environmental protection activities and environmental infrastructure into the planning process at the city/region/national level
- Facilitation of the development of the local/city environmental action plan



## Evaluation of alternatives

1. "Zero/ no-development option";
2. Comparison of the Master Plan Orhei 2015 and Master Plan of 2008;
3. Alternative proposals for the bypass road in the framework of 2015 Master Plan.



## Evaluation of alternatives

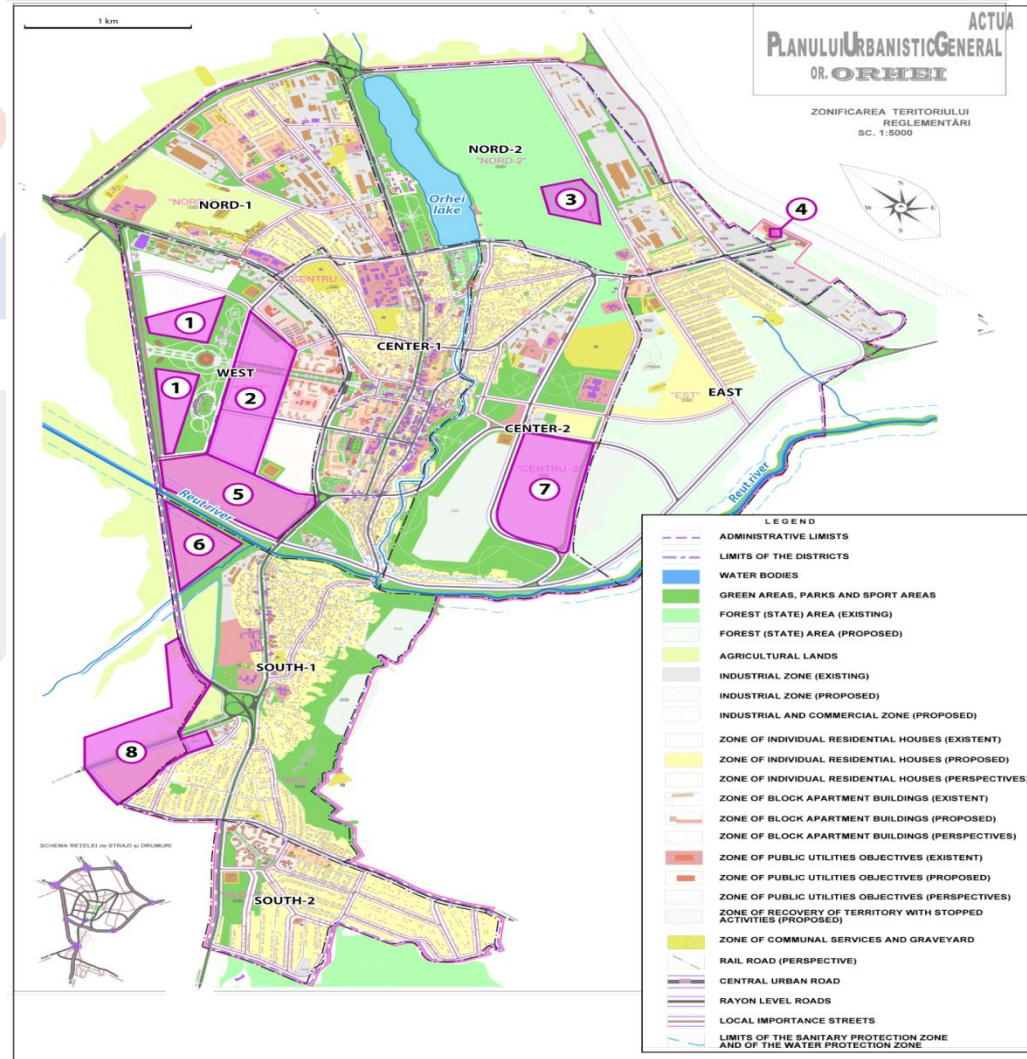
### "Zero/ no-development option“:

- new Master Plan not developed and not approved
- original 2008 Master Plan is not properly implemented
- continuation of the current (often unfavorable) environmental trends
- sustainable development of the city is clearly problematic



## Evaluation of alternatives

Comparison 2008/2015:  
demonstrated the superiority of draft Master Plan of 2015 in most of the environment-related parameters





# Evaluation of alternatives





# Evaluation of alternatives



Alternatives: change of  
destination of territory





# Evaluation of alternatives

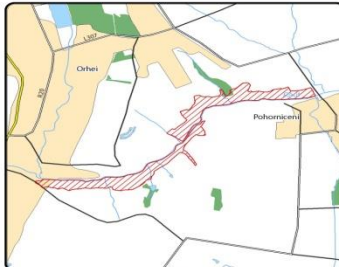
## Alternative proposals for the bypass road in the framework of 2015 Master Plan

- planned road construction indicated risk of spatial conflict and potentially significant impact on the paleontological monument protected by the state "Defileul Orhei"
- requirement - to change the scheme to avoid conflict with the area of paleontological monument

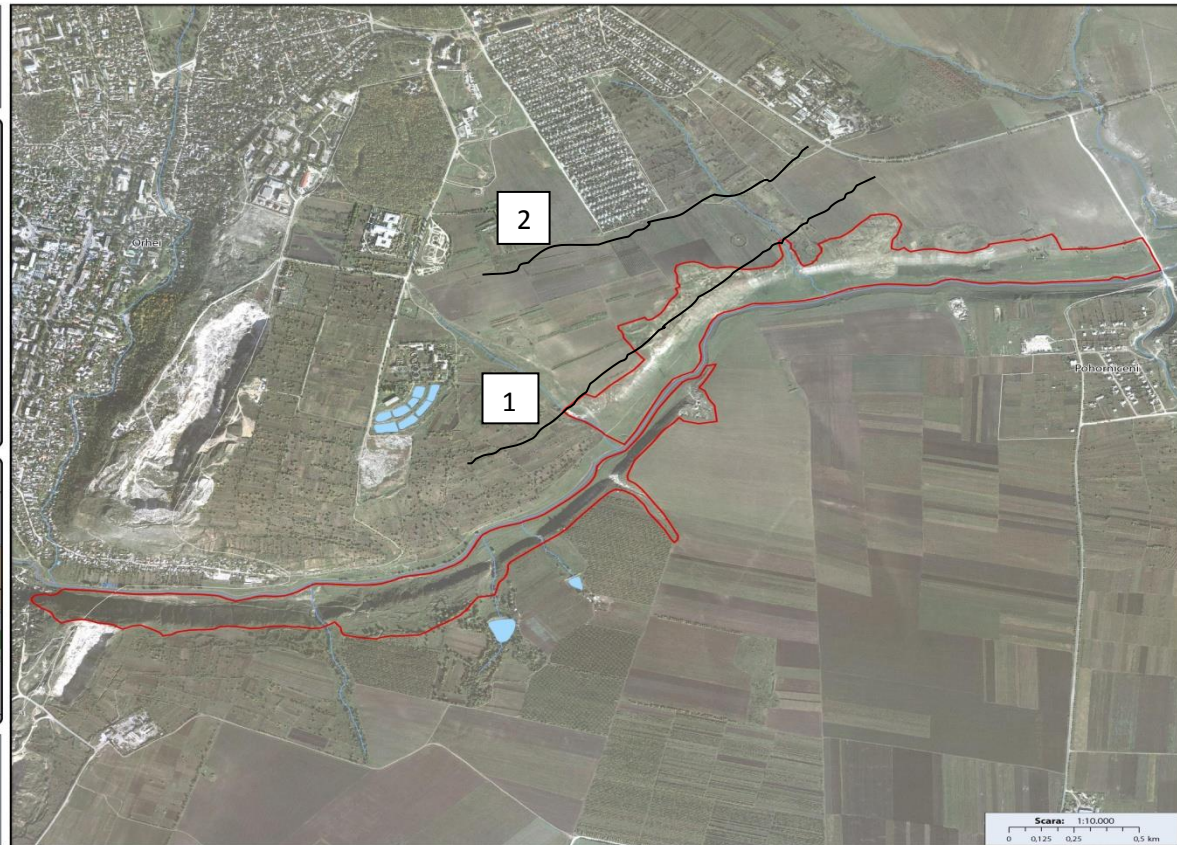


# Evaluation of alternatives

**Defileul Orhei**  
Monumente ale Naturii - Geologice și Paleontologice  
Suprafața (ha): 102,94  
Deținători de terenuri:  
Primăria or. Orhei.



Acest material a fost elaborat în cadrul proiectului PNUD  
"Fortificarea capacităților instituționale și a reprezentativității  
Sistemului de Arii Protejate din Republica Moldova",  
finanțat de Fondul Global de Mediu.



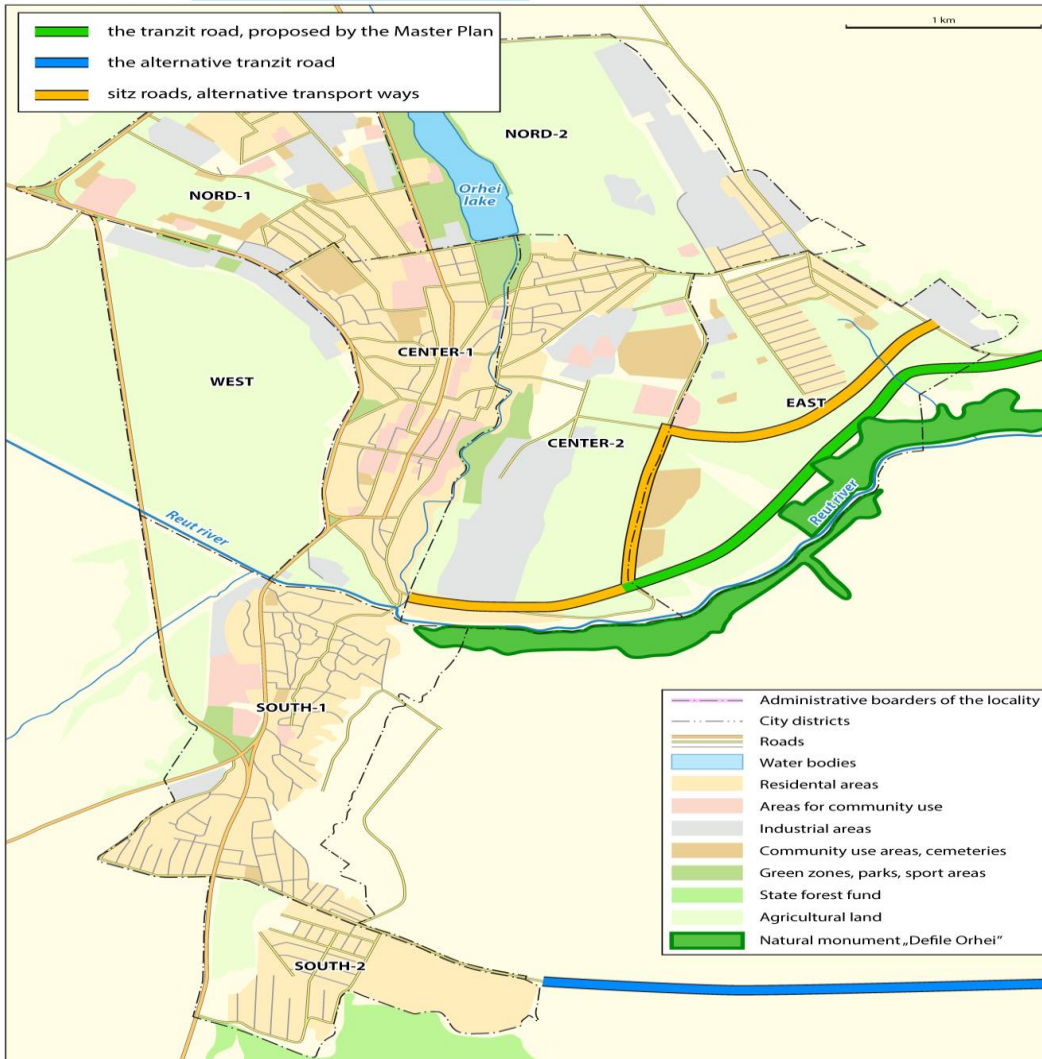


# Evaluation of alternatives





# Evaluation of alternatives





## Monitoring indicators

- Surface of the green areas in the city (% , ha, per capita)
- Municipal wastes generation: total volume, tons/year, kg/person
- Separately collected wastes for recycling, tons/year, % of total
- Households, connected to the centralized sewerage system, number, % from total



## Monitoring indicators

- Emissions of major pollutants from transport (on selected monitoring points in the city centre and highway) (CO<sub>2</sub>, NO<sub>x</sub> and PM, etc) , daily (mg/m<sup>3</sup>), compared to emission values, or annual (t/year)
- Rain water collector constructed, km
- Renewed street pavement, km/year
- Cases of illnesses, caused by impact of use of polluted water for drinking or recreation purposes, nr., % of total



# SEA Environmental Report-related meetings and consultations

Meetings of the SEA team and Master Plan development Working Group





# SEA Environmental Report-related meetings and consultations

## Public consultations in Orhei:





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## Thank you for a cleaner environment in Orhei!

