

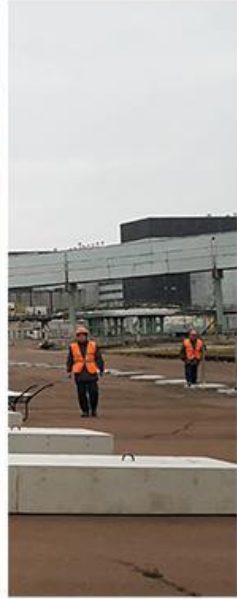


State Agency of Ukraine on  
Exclusion Zone Management

# Chornobyl Exclusion Zone and Radioactive Waste Management in Ukraine



# ABOUT THE AGENCY

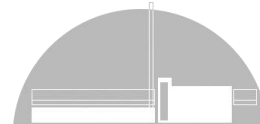


## State Agency of Ukraine on Exclusion Zone Management

is a central executive body responsible for strategic directions:



**Realization** of the state policy in the area of management of the exclusion zone and the zone of unconditional (mandatory) resettlement



**Decommissioning** of Chernobyl NPP and transforming Shelter Object into ecologically safe system



**Overcoming the consequences** of the Chernobyl accident



**Implementation of state management** in the field of radioactive waste management at the stage of their long-term storage and disposal



**CABINET OF MINISTERS OF UKRAINE**



**THE MINISTER OF ECOLOGY AND  
NATURAL RESOURCES OF UKRAINE**  
(directs and coordinates the SAUEZM activity)



**STATE AGENCY OF UKRAINE ON  
EXCLUSION ZONE MANAGEMENT**

**STATE ENTERPRISES AND ORGANIZATIONS  
IN THE SPHERE OF SAUEZM MANAGEMENT**

## State enterprises and organizations in the sphere of SAUEZM management:

### ➤ **Ukrainian State Corporation**

#### **“Radon”:**

- SSE “CERWM”
- SSE “Odesa SISC”
- SSE “Dnipropetrovsk SISC”
- SSE “Kyiv SISC”
- SSE “Lviv SISC”
- SSE “Kharkiv SISC”
- SE STC DCRWM
- SSE “MCCEZ”
- Ukrainian Radiation Training Center

### **Enterprises**

- SSE “Chornobyl NPP”
- SSE “Ecocentre”
- SE “COTIS”
- SSE “Pivnichna Pushcha”
- SSE “Chornobyl SC”
- SE “MPFO of ChNPP”

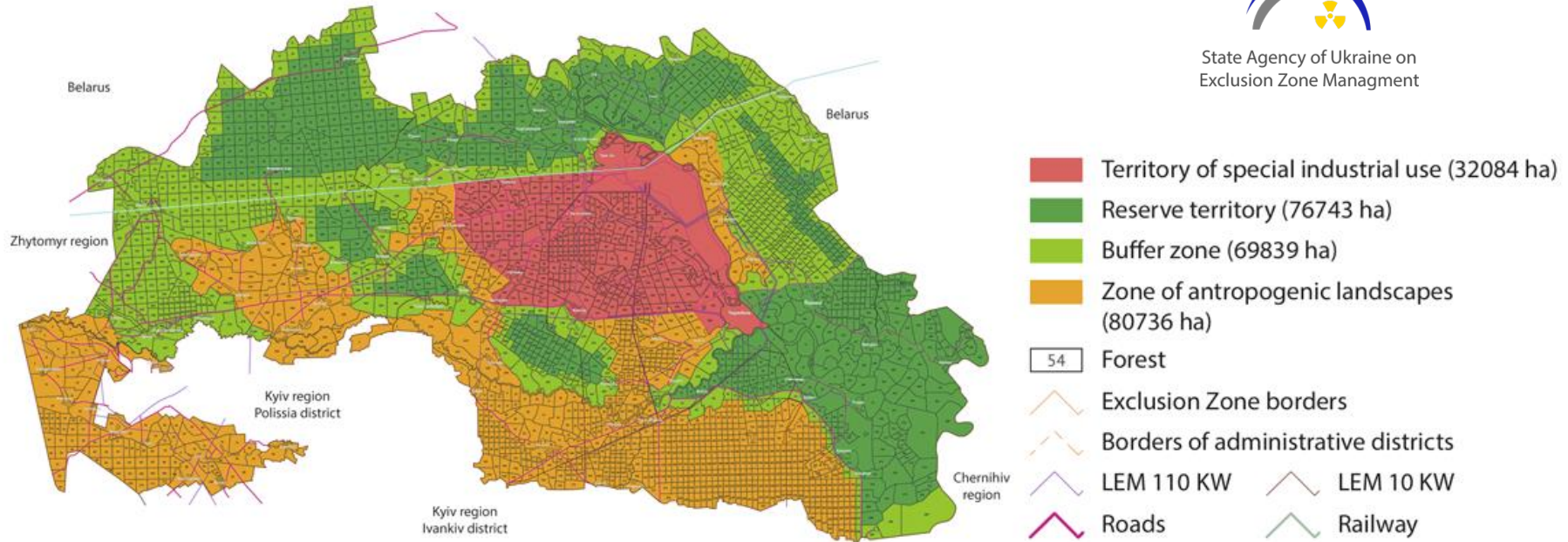
### **Organisations**

- Chornobyl Center for Nuclear and Radiation Safety Problems
- Chornobyl Radiation and Ecology Biosphere Reserve
- Scientific Center for Cultural Heritage

# EXCLUSION ZONE TERRITORY



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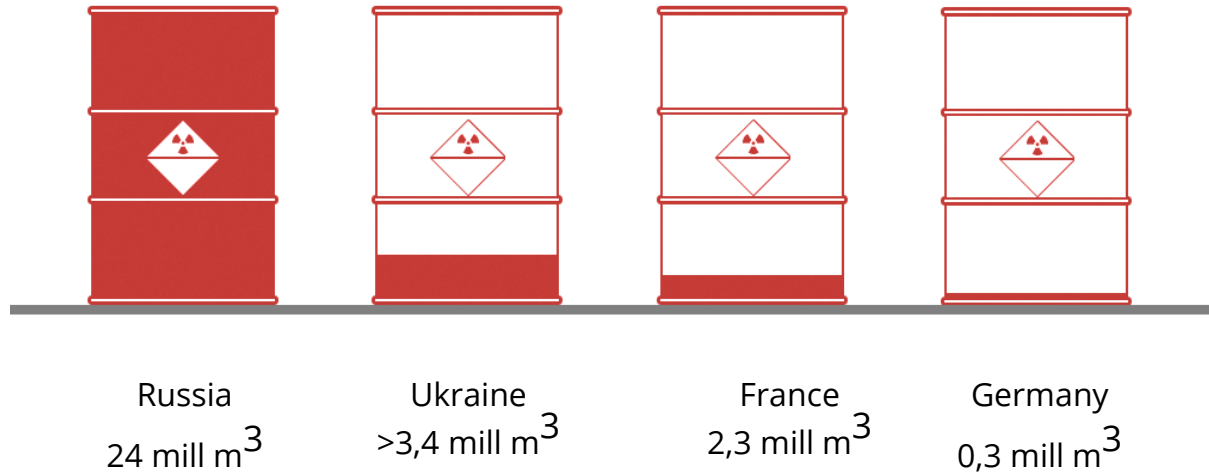
*Realization of the state policy in the area of management of the exclusion zone and resettled part of the zone of unconditional (mandatory) resettlement*

# STATE POLICY IN THE SPHERE OF RW MANAGEMENT



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By volume of radioactive waste (RW)  
Ukraine's on the second place in Europe  
and on the 4th in the world (3.5 million m<sup>3</sup>):



*The State puts an important role on the **Agency** in long-term storage of radioactive waste and its disposal.*

# ABOUT THE EXCLUSION ZONE

Exclusion Zone is divided into two main parts:



10 km  
**Territory of special  
industrial use**

Advantages:

- Will **never** be used for living and usage by people
- Placement of objects of alternative energy** (solar, wind, etc.)
- Transformation of the territory** into RW, SNF, SIRS storage facilities



30 km  
**Chornobyl Radiation and  
Ecological Biosphere  
Reserve**



# TERRITORY OF SPECIAL INDUSTRIAL USE



# ABOUT RESERVE



## Chornobyl Radiation and Ecological Biosphere Reserve

area = 227 thousands of hectares

Created within the 30-kilometer Exclusion Zone, the largest reserve in Ukraine is a basis for an extremely important and unique natural experiment not only in our country, but also in the world. It performs a barrier (buffer) function and provides the restoration of the eco system to its original state.

According to scientists, there are more than **400 species** of animals, birds and fish in the Reserve, including the species from the Red Data Book.

To date, **300 species** have already been identified, **19** of which are listed in the Red Data Book of Ukraine \* *the list of endangered species*

There were also found **1 228 species** of higher plants, of which **61 species** is rare and **subject to protection**.





# CHNPP DECOMMISSIONING



Construction of NSC  
fencing contour is  
**completed**

(the certificate of the State  
Architectural and Construction  
Inspection of Ukraine about its  
readiness for operation has been  
received)



Cold tests have  
**begun**  
on ISF-2\*



It is **planned to put  
into operation** objects  
built at the expense of  
donor contributions  
(NSC, ISF-2, etc.) by the  
end of 2018.



All financial liabilities  
related to ChFS and  
FRS have been **met**

# TRANSFORMATION OF CHNPP INTO ECOLOGICALLY SAFE SYSTEM



## The world's largest moving construction in the world – New Safe Confinement (NSC):

- The commissioning of the facility is scheduled for the end of 2018. The new facility will operate for 100 years
- The project of reinforcement and sealing of existing structures of the 2nd stage ChNPP is completed

## The main steps in transforming the Shelter Object into an ecologically safe system:

- Urgent dismantling of unstable structures of the Shelter Object in order to ensure the security of further activities at the Shelter Object
- Ensuring reliable operation of the ChNPP facilities

## ISF-2

- 08/01/2017 - "cold" testing of equipment and systems began
- "Hot" tests are scheduled to begin at the end of 2018
- The complete completion of the contract work is scheduled for February 2019



# CHNPP DECOMMISSIONING

## Industrial complex for solid radioactive waste management (ICSRWM)

- ❑ Modernization of the radiation control system - **February 2018**
- ❑ Carrying out the 3rd stage of "hot tests" - **June 2018**
- ❑ Obtaining a separate Regulator permission for operation - **October 2018**



## Construction of a liquid radioactive waste processing plant (LRWPP)

- ❑ Construction and installation work is **completed**
- ❑ Start-up and adjustment works are being **carried out**.
- ❑ **SACI has taken a positive decision** to issue a certificate of completed construction
- ❑ **After commissioning, production of 42 packages per day** is planned.



## "Complex for the production of metal barrels and ferroconcrete transport containers for the storage of RAW at ChNPP" (U4.01 / 04W)

All measures envisaged by the project are implemented, the results are achieved. The complex was put into operation and the production of primary packaging was started. 14 workplaces were created.

### Products released :

PUI-0,165 - 2 126 pcs.;  
PUII-0.165 - 223 pcs.;  
VUIII-0.2 - 92 pcs.;  
MBIV-0.2 - 1 575 pcs.;  
KZ-3 (3) - 12 pcs.

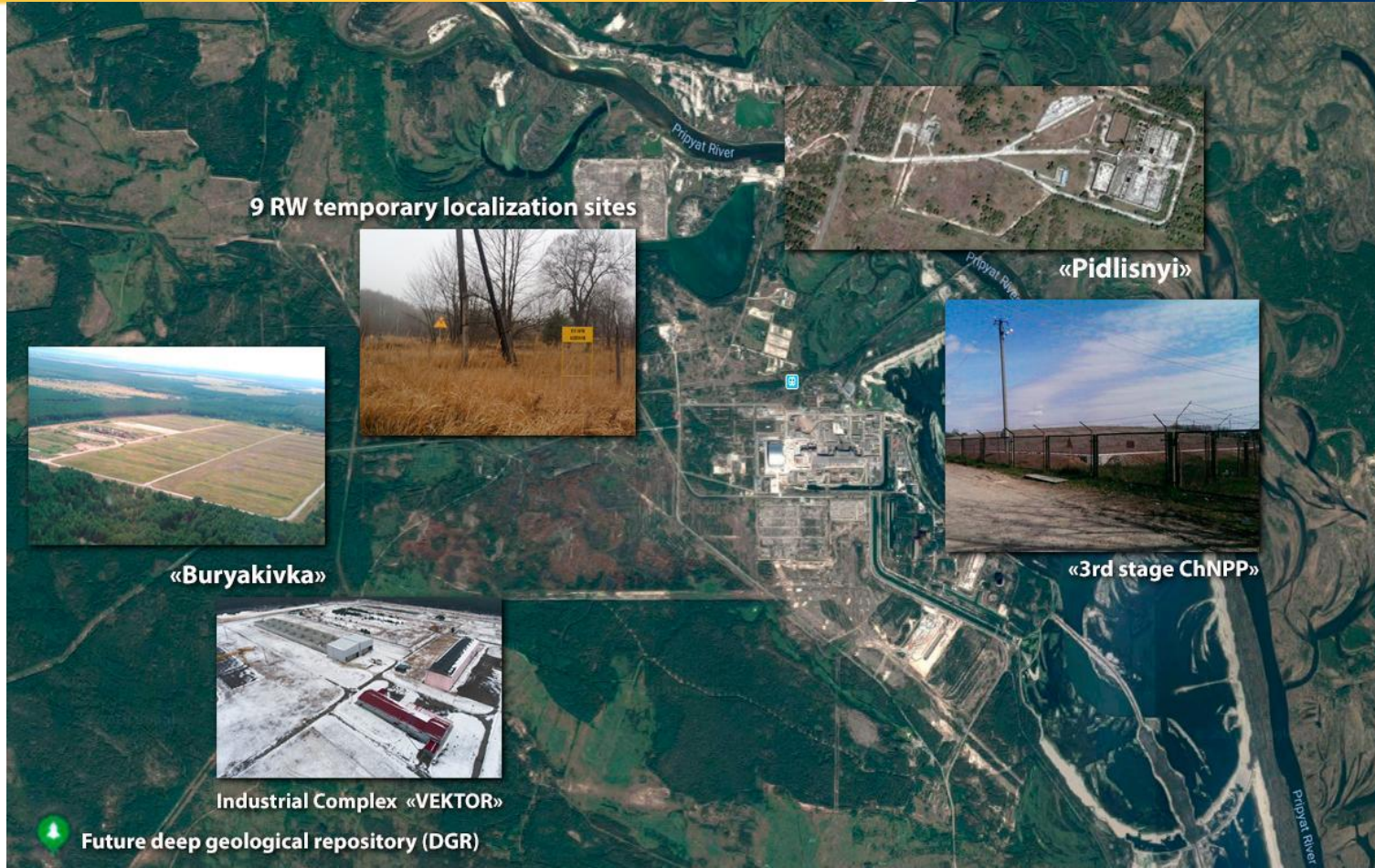


# RW MANAGEMENT FACILITIES WITHIN THE EXCLUSION ZONE

## State Specialized Enterprise "Central Enterprise for RW Management"

**SSE «CERWM»** - the only one national operating organization for the management of radioactive waste. SSE «CERWM» was also designated to be an operating organization at all stages of life cycle of radioactive waste disposal sites:

- «Buryakivka»;
- «Pidlisnyi»;
- «3rd stage ChNPP»;
- 9 RW temporary localization sites;
- Future deep geological repository (DGR).



# OBJECT OF RW MANAGEMENT ON THE TERRITORY OF THE EXCLUSION ZONE

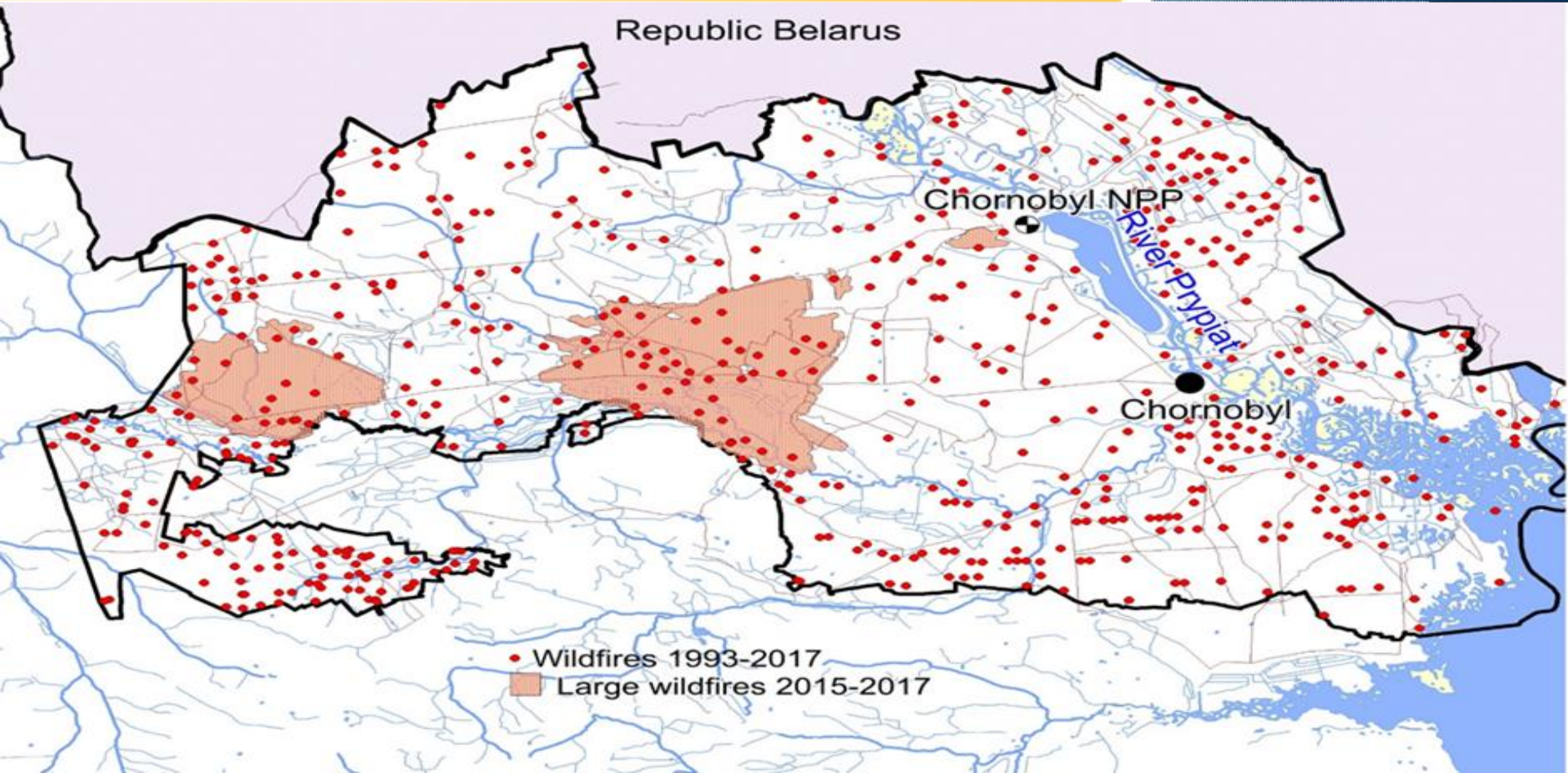


"Vector" Industrial Complex  
Photo by SSE "ChNPP"

The key aim of SSE "CERWM" is a creation of industrial complex on decontamination, transportation, reprocessing, storage and disposal of radioactive waste (so called "Vector" industrial complex). The capacities of "Vector" are as follows:


- ❑ Centralized Storage for Spent Ionizing Radiation Sources (**CSSIRS**), controlled storage of long-lived low – and intermediate level RW;
- ❑ Near-surface **SRW-1** and **SRW-2** storages (construction almost completed);
- ❑ **SRW 2-1** – this storage is designated for low-and intermediate level short-lived solid RW (1 storage) to be built;
- ❑ **SRW – 3** – long-term storage of LLW and ILW containing long-lived radionuclides, from **50 to 100 years** of storage (2 storages) to be built;
- ❑ **SRW-4** – for long-term storage of HLW, 50-100 years (1 storage) to be built;
- ❑ High-level vitrified RW storage to be returned from Russia according to Ukraine international obligations.


# FIRES IN THE EXCLUSION ZONE



# RADIATION AND FIRE FIGHTING SAFETY

## Coverage of 9 towers in the Exclusion Zone

 existing fire stations, which are planned to be repaired in 2018.


 fire stations, repaired in 2017

 stations planned for construction in 2019


 signal view 15 km

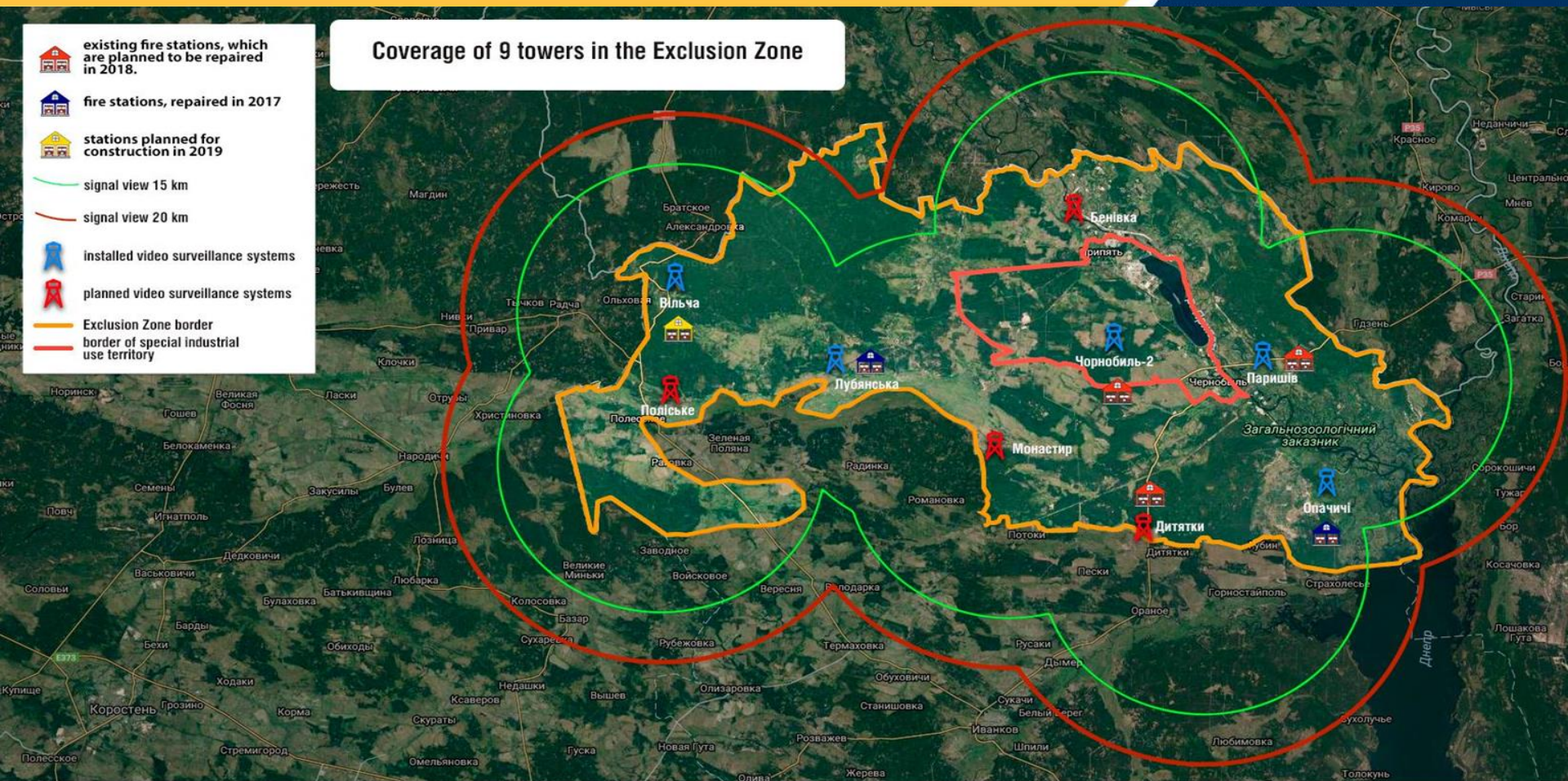
 signal view 20 km

 installed video surveillance systems

 planned video surveillance systems

 Exclusion Zone border

 border of special industrial use territory





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## Radiation and ecological monitoring of the environment:

- The monitoring system in the regular mode is updated once an hour, in emergency situations every 2 minutes
- 22** regular receivers of information
- Radiation and dosimetric control:** radiation safety of personnel
- Ensuring work** of control-dosimetric points
- Carrying out individual dosimetric control
- Restoration** of radiation doses
- Water protection activities:** limiting the flushing of RN from the catchments of rivers and passing it beyond the boundaries of the EZ



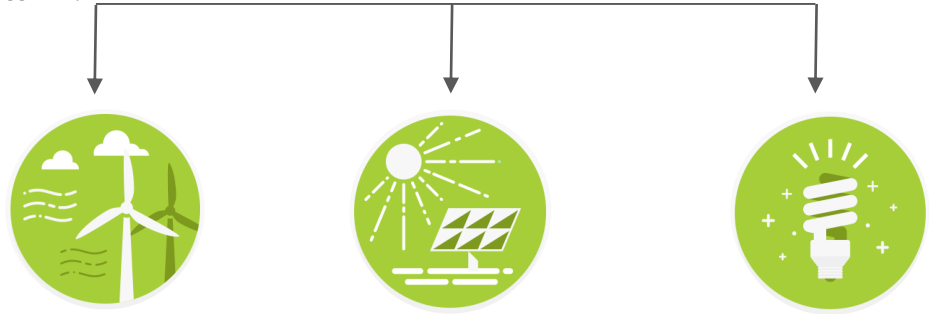


# DEVELOPMENT OF ENERGY IN THE EXCLUSION ZONE: SUN, WIND, SOLID FUEL



03/19/2018

According to the results of the calculation of the feasibility study, the French **company ENGIE and state enterprise UKRENERGO** concluded that from the technical and economic point of view, the construction of the SES with a capacity of **1.2 GW** in the Exclusion Zone is **POSSIBLE**.



The first pilot project with the implementation of a wind power station with a capacity of 40 MW. The project is at the stage of land allocation (7 ha).

State enterprises are developing projects for the construction of solar energy facilities with a search for further funding.

In order to optimize the cost of energy carriers, energy-saving technologies are being implemented (insulation of buildings, roof reconstruction, windows replacement, etc.).



# INVESTMENTS: TRAVEL BY ELECTRIC CARS TO THE TERRITORY

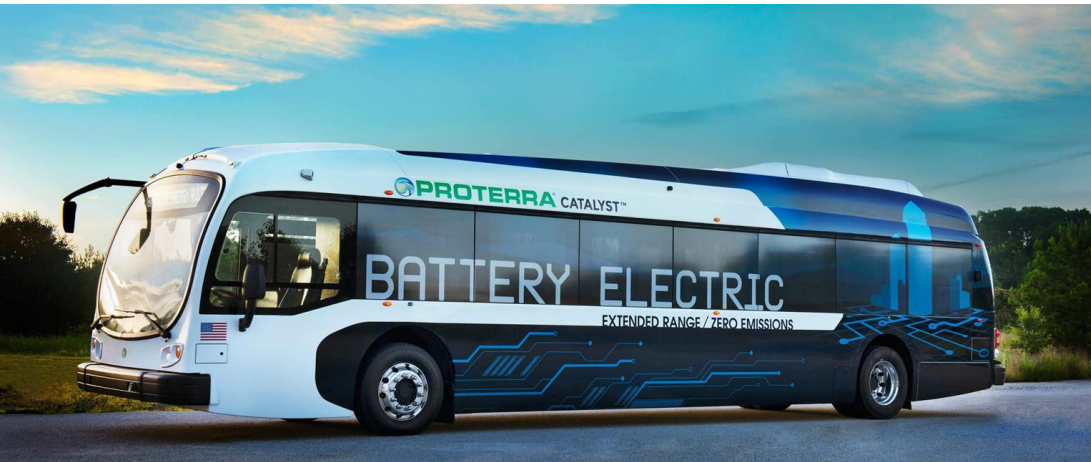


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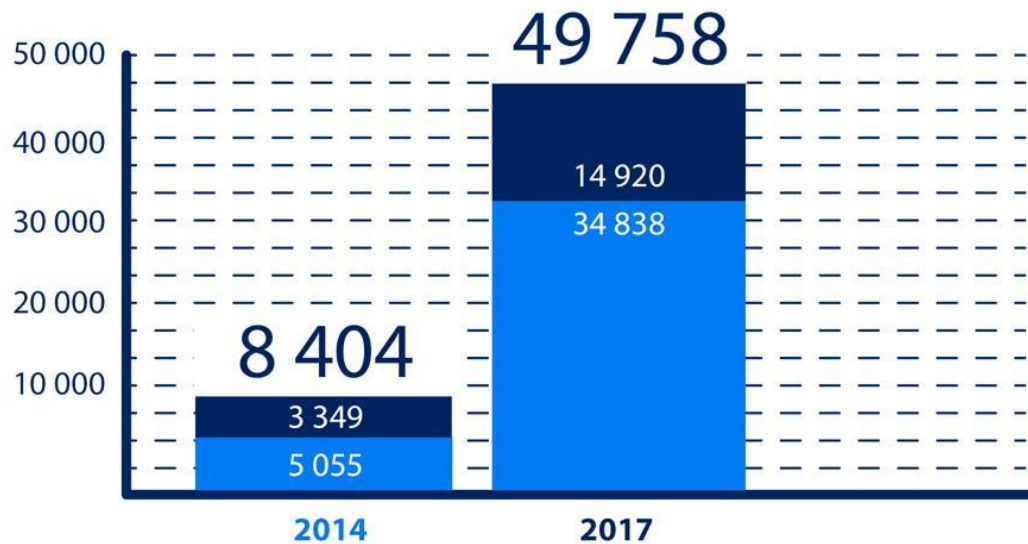




Due to the creation of the Chornobyl Radiation and Ecological Biosphere Reserve, in order to reduce the anthropogenic load on the ecosystem, the following is being worked out:

- ❑ the project of replacement of motor vehicles on ecological / electric;
- ❑ a draft program for the placement of special electric refueling and service stations for electric buses.



# VISITING EXCLUSION ZONE



 citizens of Ukraine  
 citizens of other countries



# INTERNATIONAL COOPERATION



Close cooperation with international organizations and countries to strengthen the non-proliferation regime of radioactive materials - IAEA, NATO, European Commission, G7 Global Partnership, USA, United Kingdom, Sweden, Japan etc.





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# Public outreach campaign on the Program of Amnesty of orphaned IRS



**Donor**

U.S. Department of State, U.S. Ministry of Energy

**Implementer**

Chornobyl Research and Development Institute, Ukraine

**Beneficiary**

State Agency of Ukraine on exclusion zone management

**Period**

01.05.2017 to 30.04.2019



**The aim**

Preventing nuclear smuggling and reduction of the nuclear terrorist threat



**Place**

Dnipropetrovsk region, as the region with the highest

**of implementation**

possible concentration of IRS

# The Project Background



Global reduction of nuclear programs and minimization of nuclear terrorist threat



Formation of an appropriate system, allowing to reduce the nuclear threat



Improving the level of public safety

# The Project Tasks

## **ELIMINATION** OF THE TERRORIST THREAT

- **Collect and analyze** the initial data of SRS in the pilot region
- **Develop** recommendations to the improvement of procedures of handling with orphaned SRS
- **Develop and conduct** the public outreach campaign
- **Hold** the pilot collection of orphaned SRS
- **Form** a mechanism for the further expansion of the Project



# What has been already done?

- **As of today... *\*according to the BOA***
- **Task 1:** Analyze available information to identify potential sources outside regulatory control.
- **Task 2:** Analyze and test procedures for interagency coordination, identify the roles and responsibilities of each agency, and make recommendations for improving interagency collaboration and coordination.



**As the deliverable of Task 1 , there was provided the following:**

- **1) The secured website (portal), dedicated to the Amnesty of IRS Project: <http://amnesty.uatom.org/>**  
\*restricted access
- **2) The detailed report about (a) secured website, (b) database containing information on IRSs that have been or may be outside of regulatory control, and (c) interactive map**

# In addition

- The “Report on Radiation Sources Used in Dnipropetrovsk Oblast with Indication of Their Primary Characteristics and External Appearance” with Annexes was prepared
- The collected historical data on RS was presented
- The data on RS collected from the Register was presented

# Task 2

- Following discussions, consultations and in depth analysis of functions of state authorities, draft joint orders were developed to improve the ***Procedure for Interaction of Executive Bodies and Legal Entities in the area of Nuclear Energy in case of illicit trafficking of RM***

## *Project is in progress...*

The obtained results demonstrate a full picture of the current situation with radioactive sources in the Dnipropetrovsk region and create a platform for public outreach and information campaign as it gives an understanding of the primary cities and towns for the communication with the public and what main types of RS have to be the subject of the communication.

# FOX SEMYON

- The famous fox Semyon, lives in the Prypiat, Chernobyl Exclusion Zone. He approaches people and eats from hands. The legend says that he is the only fox in the world that can talk.



Припятский лис Семён  
@fox.semen



# ANY QUESTIONS?

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