

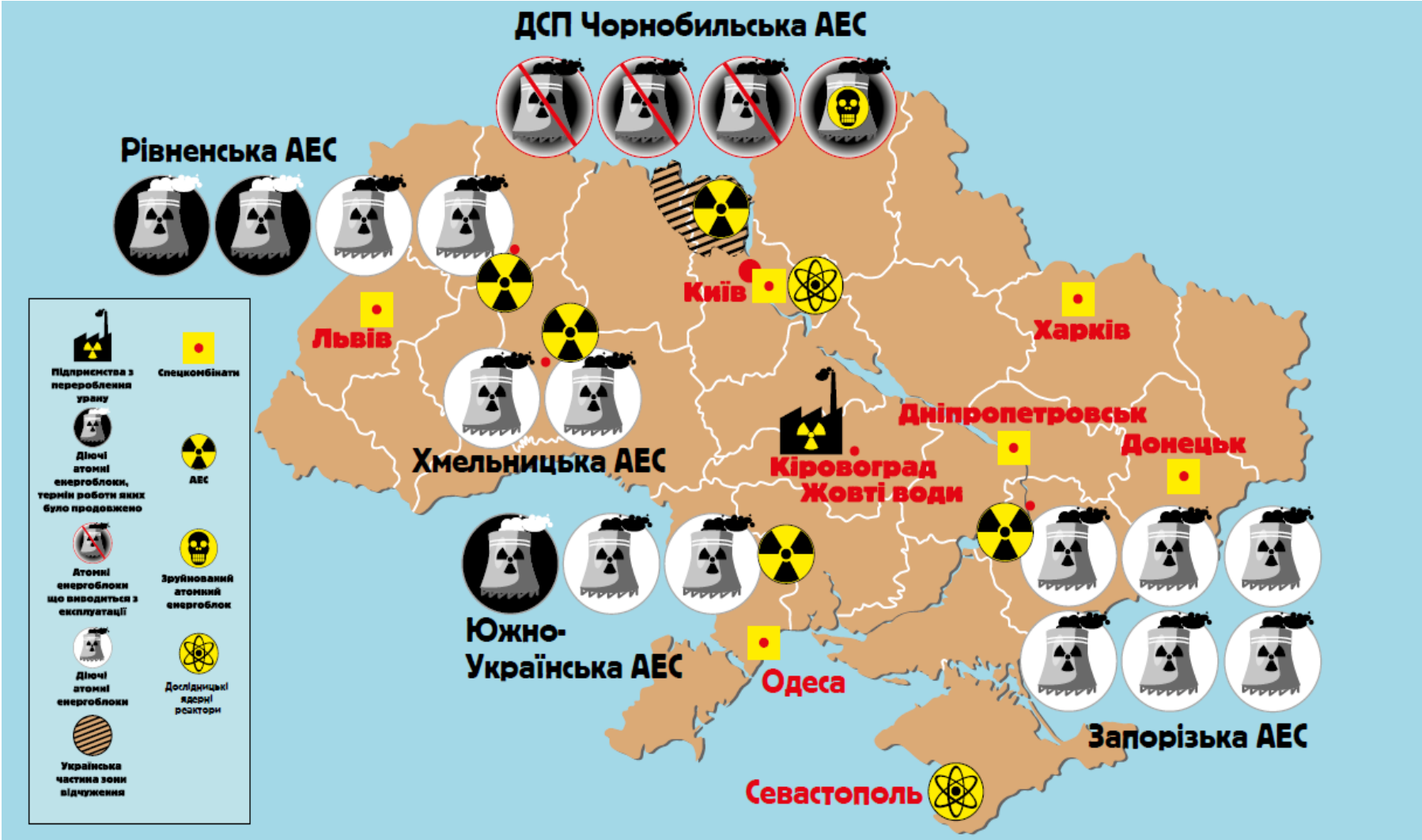
National Ecological Center of Ukraine

Nuclear Waste governance in Ukraine

by

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NPPs in Ukraine



Who is responsible for the nuclear waste

The Parliament



The Cabinet of Ministries of Ukraine



State Nuclear Regulatory Inspectorate of
Ukraine, Ministry of Energy and Coal,
Ministry of Ecology and Natural Resources
of Ukraine



NAEK Energoatom, State Agency of
Ukraine of the Exclusion Zone
Management

Magnitude of the nuclear waste (up to 2013)

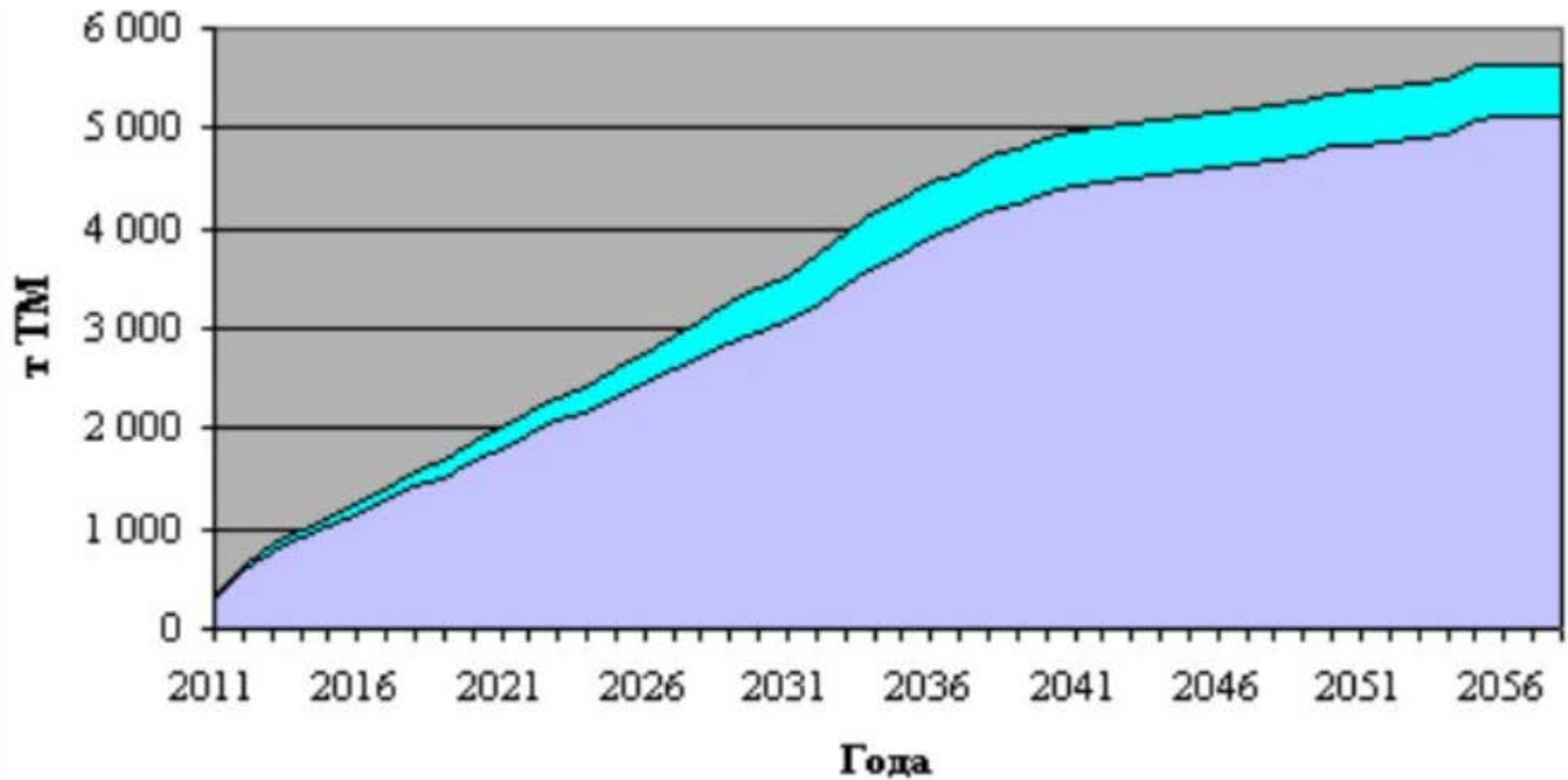
Solid nuclear waste - **40,45 t m3**

Liquid nuclear waste - **28,03 t m3**

As of year end of 2012 Waste Management Fund received from the NAEK Energoatom (Ukrainian NPP's operator) a total of UAH 1,771,410,000 (~ \$ 200 mln.) The Fund was established in 2009 and Energoatom allocates approximately \$50 mln. annuarily.

The amount of money of 4 years allocations accumulation to the Fund is not enough even for the disposal of radioactive waste generated as a result of Ukrainian NPPs operation for 1 year

“By the end of lifetime of units Rivne, Khmelnytsky and South-Ukrainian NPPs, the total accumulated amount of spent nuclear fuel will be about 5648 tonnes of heavy metal” - Energoatom



By 2050, nuclear power plants in Ukraine will accumulate more than 5050 tons of spent nuclear fuel

NPPs annually produce 132 to 114 spent fuel assemblies.

Spent nuclear fuel discharged from the reactor to spent fuel pools where it is stored for 4-5 years to reduce the residual energy. After aging in spent fuel pools Ukraine exports SNF to the Russian Federation. SNF from nuclear power units of VVER-440 (1st and 2nd Rovno NPP) is transported to the plant "Mayak" for reprocessing and spent fuel from nuclear power units of VVER-1000 - to deposit.

According to the agreement between Ukraine and Russia starting from 2013 high-level radioactive waste after reprocessing on Mayak should have been directed back to Ukraine.

However Ukraine does not have a repository for such kind of waste and will not have at least till 2017.

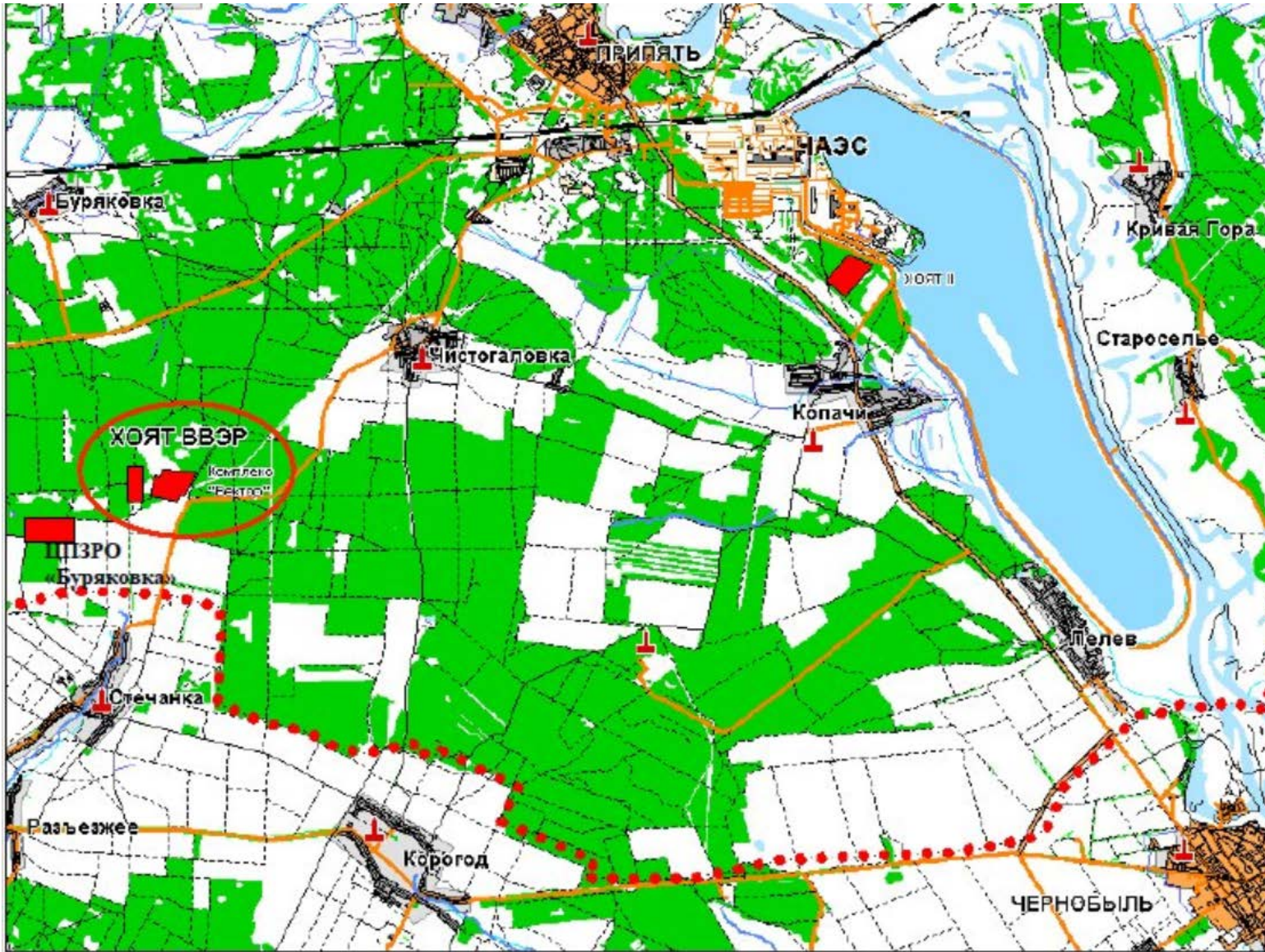
There is spent-fuel storage on the Zaporizhyya NPP located in the territory of a nuclear power plant. The storage was put into operation in 2001, the period of its operation 50 years.

It is designed for 380 containers, which can accumulate up to 9000 gags.

By 1 October, 2011 90 containers of spent fuel were located in the storage already that is of about 25%.

On August 26, 2014 Energoatom put the real start of the construction of centralized repository for spent nuclear fuel.

Technology storage of spent nuclear fuel will be provided by the American company “Holtec International”. The cost of construction of the start-up facilities, as defined in the feasibility study is approximately **\$1.23 billion** (in 2008 prices). However, it will be updated upon completion of the construction project.



Site for centralized storage of spent nuclear fuel

It is located in 76 kilometers from the three hundred thousandth of Chernigov city, 110 kilometers from the capital and just 13 kilometers from the border with Belarus.

Removal of spent nuclear fuel - an expensive treat for Ukraine. Every year it costs about \$ 200 million for the country“

- Yuriy Nedashkovsky, the President of NAEK Energoatom.

According to the forecasts of Energoatom payback period for the storage is 2-2.5 years

Holtec company plans to deliver 3-4 container for spent fuel storage in 2017 . Total number of such containers to be placed at the site is 450, which will keep the 16.5 thousand spent fuel assemblies that equal to 5650 tones of heavy metal.

The total square of the Repository is 18 ha.

There is no even discussion about site research of deep geological disposal for SNF yet.

Lifetime is over

RNPP 1	2010
RNPP 2	2011
SUNPP 1	2012
ZNPP 1	2014
ZNPP 2	2015
SUNPP 2	2015
ZNPP 3	2016
RNPP 3	2016
ZNPP 4	2017
KhNPP 1	2017
ZNPP 5	2019
SUNPP 3	2019
ZNPP 6	2025
RNPP 4	2034
KhNPP 2	2034

Thank you for your attention!