



National
association
of secondary
material
application



NASMA TG-channel

Industrial circular economy practices that can aid in reducing GHG emissions

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Baky, November 2024



Russian 2050 Decarbonization strategy

Decree # 3052

Section IV. Measures

Substitution of natural materials with **refuse-derived fuel (RDF)**

Reduction of 'wet process' in cement production

Circular economy practices

Application of recycled materials as feedstock for energy intensive production (industrial waste, fly ash, slags, tailings)

Russian Green Project Taxonomy

Act # 1587

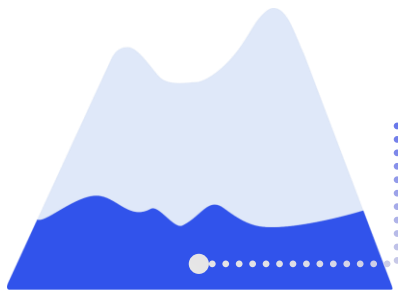
p. 4.1.3.

Reduced carbon footprint of cement operations

p. 2.4.1.

Utilization of fly ash and boiler slags from thermal power plants for construction purposes

The case of using fly ash in 'green' concrete



30% of cement

Is applied on average in concrete production

30% can be substituted with low-calcium fly ash
or


50% can be substituted with high-calcium fly ash





Technological benefits

Strength

 *Baltic federal university (Russia)*

The use of fly ash as a filler in the production of concrete provides a more uniform coating of the air voids of the mixture, increasing the density of the finished product.

 *Izmir university (Turkey)*

The strength of ash-based concrete is 1.5-2 times higher compared to cement-based concrete.

Thermal insulation


 *Ningxia University (China)*

The maximum thermal insulation of 0.0824 W/(m·K) is achieved when the proportion of fly ash in the mixture is about 40%.



Economic benefits

Transport costs

 *Financial university (Russia)*

With a radius of 130-150 km, the use of fly ash will always be more cost-efficient in the production of building materials as opposed to using natural resources



Environmental benefits

CO2 emissions

 *University of Victoria (Australia)*

Greenhouse gas emissions are on average 5-10% lower in the production of ash-based concretes due to the reduced use of carbon-intensive cement

The first Russian methodology on using Industrial circular economy practices to prevent GHG emissions in construction

NASMA drafted a new climate project methodology

«The use of fly ash from thermal power plants in the production of building materials»



October 14, 2024 – the draft methodology is presented **for public review** in the Russian carbon register



Expert verification and refinement

from the **Izrael Institute of Global Climate and Ecology**

Russia's leading think-tank on climate projects and GHG reporting

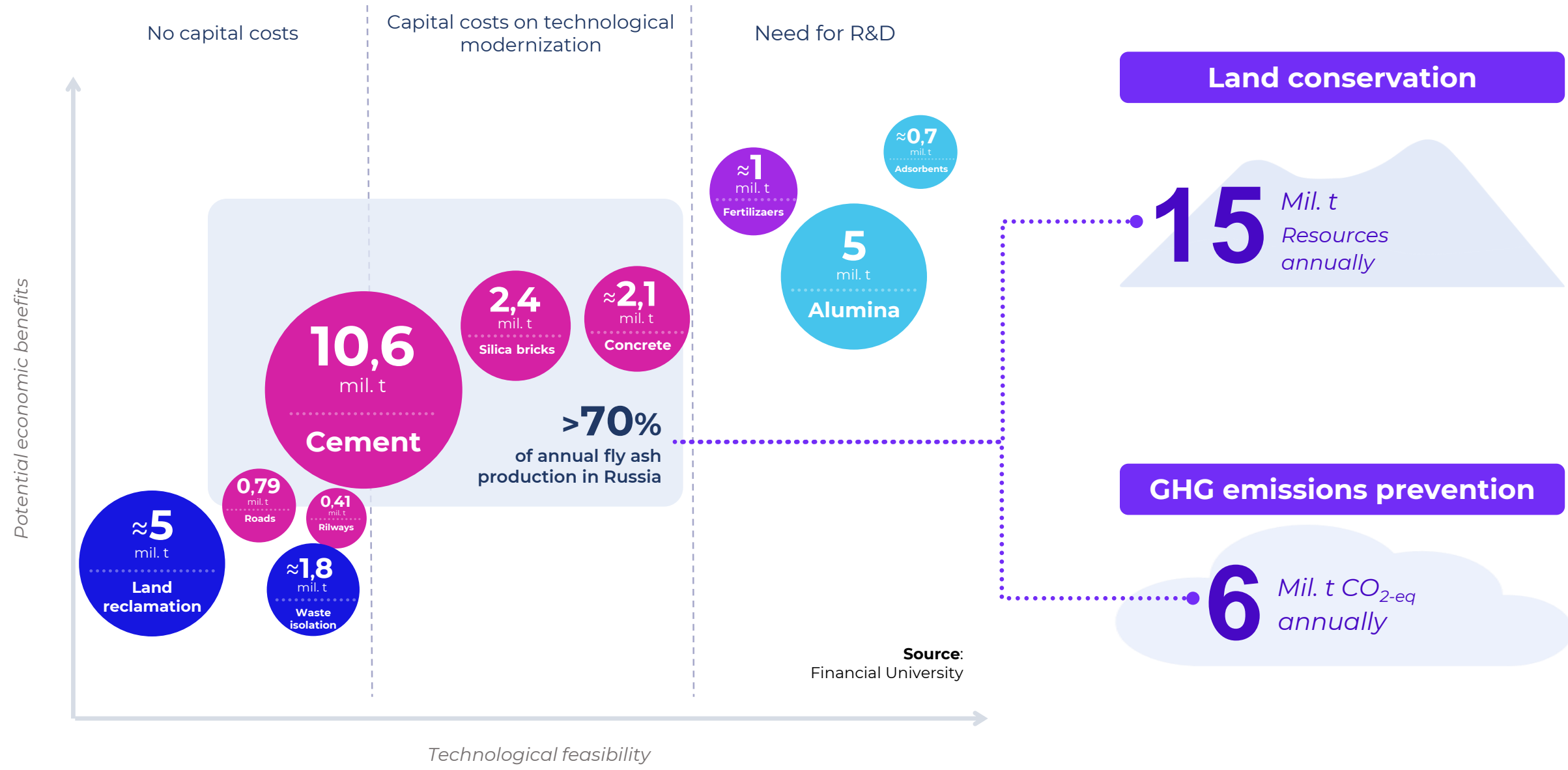


Expert approval

November 12, 2024 will mark the **completion of the public review procedure**



Potential for new climate projects based on industrial circular economy practices




Incentives for new projects

For construction material producers

Refining production processes to apply fly ash:

 Setting up the recipe and technology


 Additional equipment

 Managing logistics

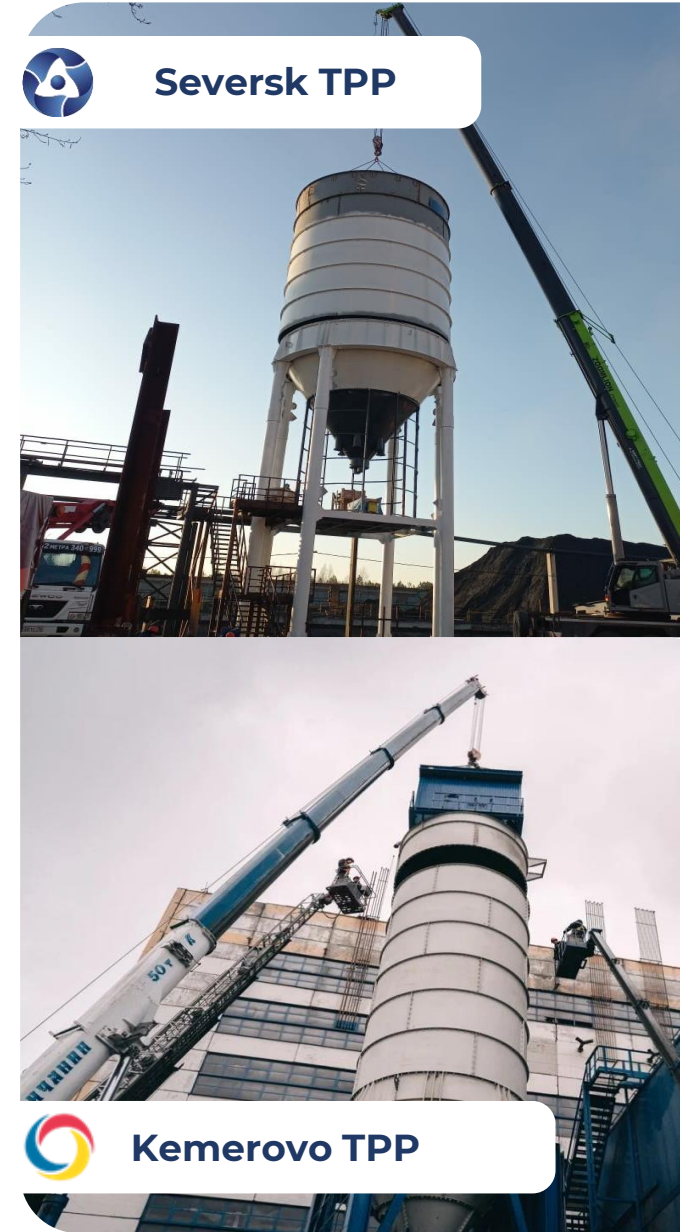
For fly ash producers

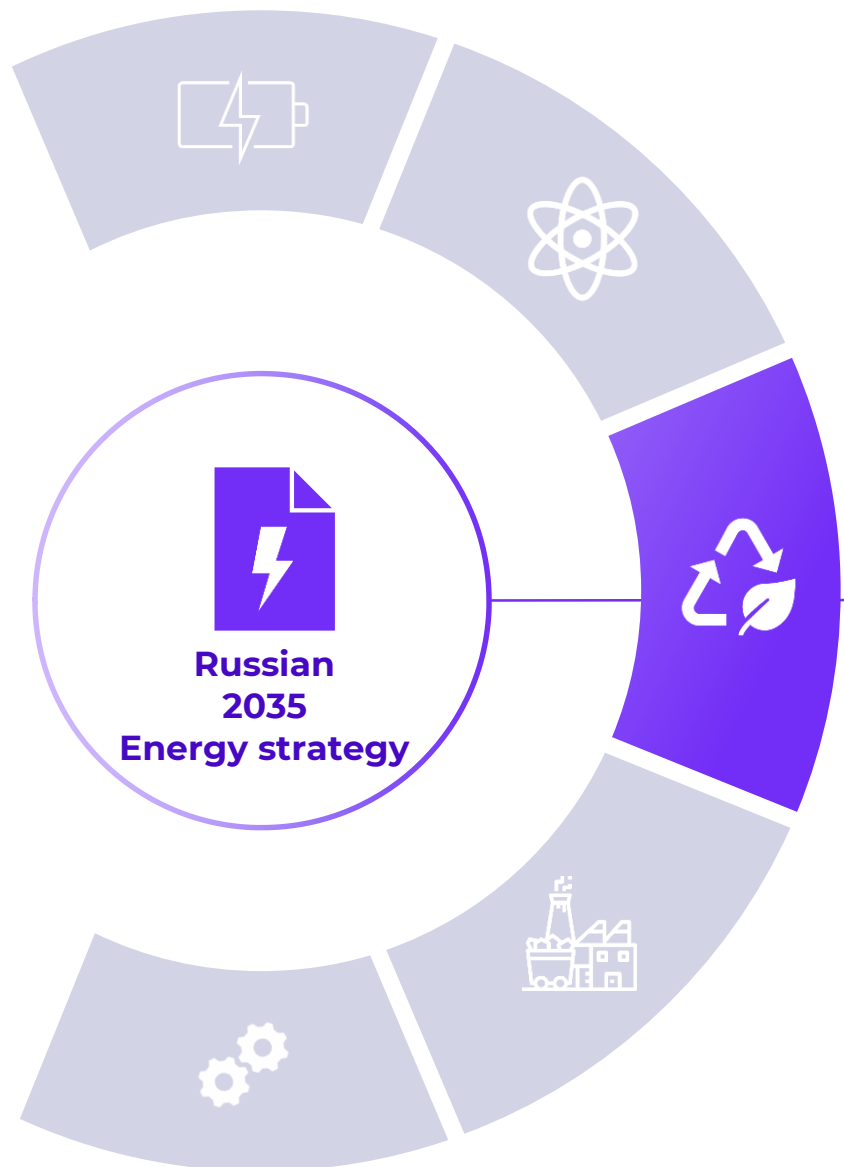
Upgrading ash **storage and delivery processes:**

 Transition to dry ash removal

 Organized shipments using road and railway routes

 Installment of silo storages





13 Russian regions
with ash road maps



Case of Krasnoyarsk
The region plans to establish a new state-of-the concrete production factory focused on using fly ash as its primare feedstock



National road map
For applying fly ash



Benefits for the construction industry

- 1 **New national standards for using fly ash**
- 2 **Pilot projects**
- 3 **Inter-governmental task force to introduce legislative initiatives**

- 1 Transition to a **turn-key approach to scale climate projects** with fly ash application
- 2 To continue the **development of methodologies based on circular economy practices** and their international mutual adoption
- 3 Create an **international database** of climate projects with a circular economy focus
- 4 Create additional non-financial incentives –
e.g. an **International award for best circular economy practices** that aid GHG reduction to be presented annually at the COP



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Thank you!



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