

Experience of public participation in transformation of Braslav district into climate neutral municipality.  
Development of renewable energy and energy efficiency



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Демонстрационные проекты  
Восточное партнерство

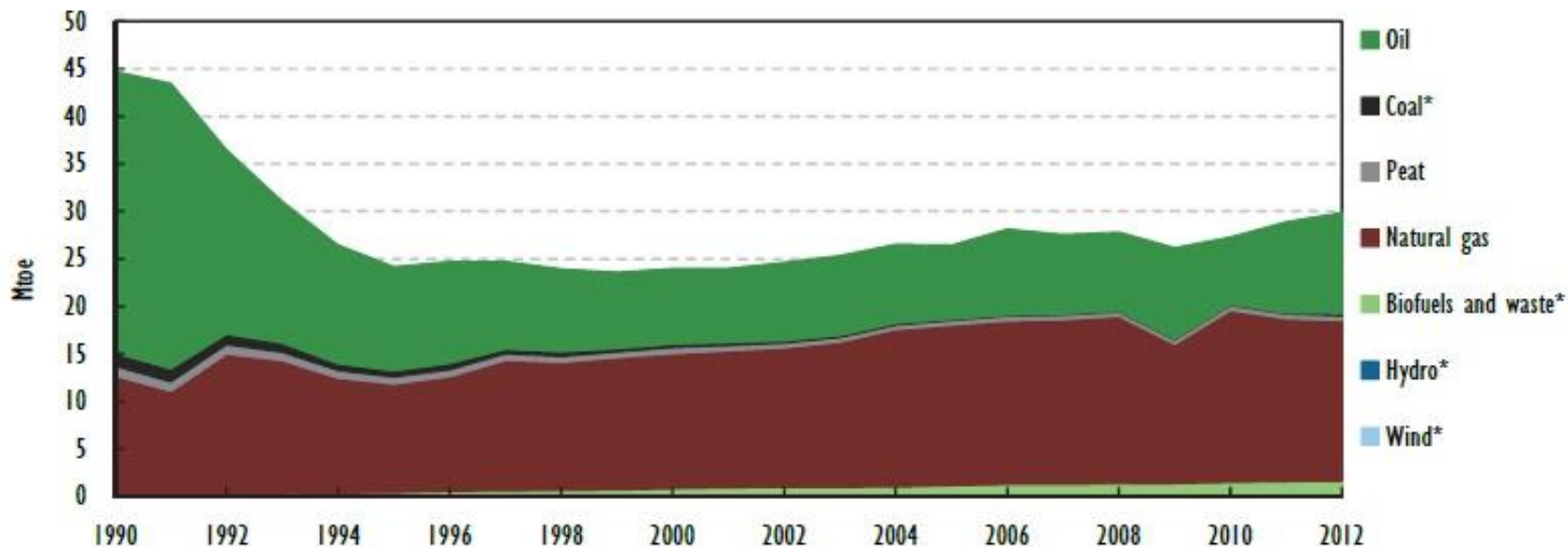


# Some words about Belarusian energy system



Belarus imports most of resources (mainly from Russia).

Crude oil imports amounted to 21.3 Mtoe, oil products 6.7 Mtoe (78% from Russia), Gas imports were **20.3 billion cubic meters (90% of electricity)** and originated from Russia. Gas imports have increased by 15.3% compared to 2002



\* Negligible.

Source: IEA (2014), *Energy Balances of Non-OECD Countries*, OECD/IEA, Paris.



Проект финансируется Европейским союзом



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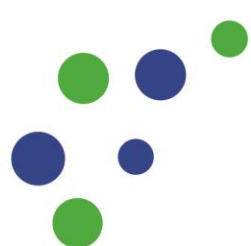
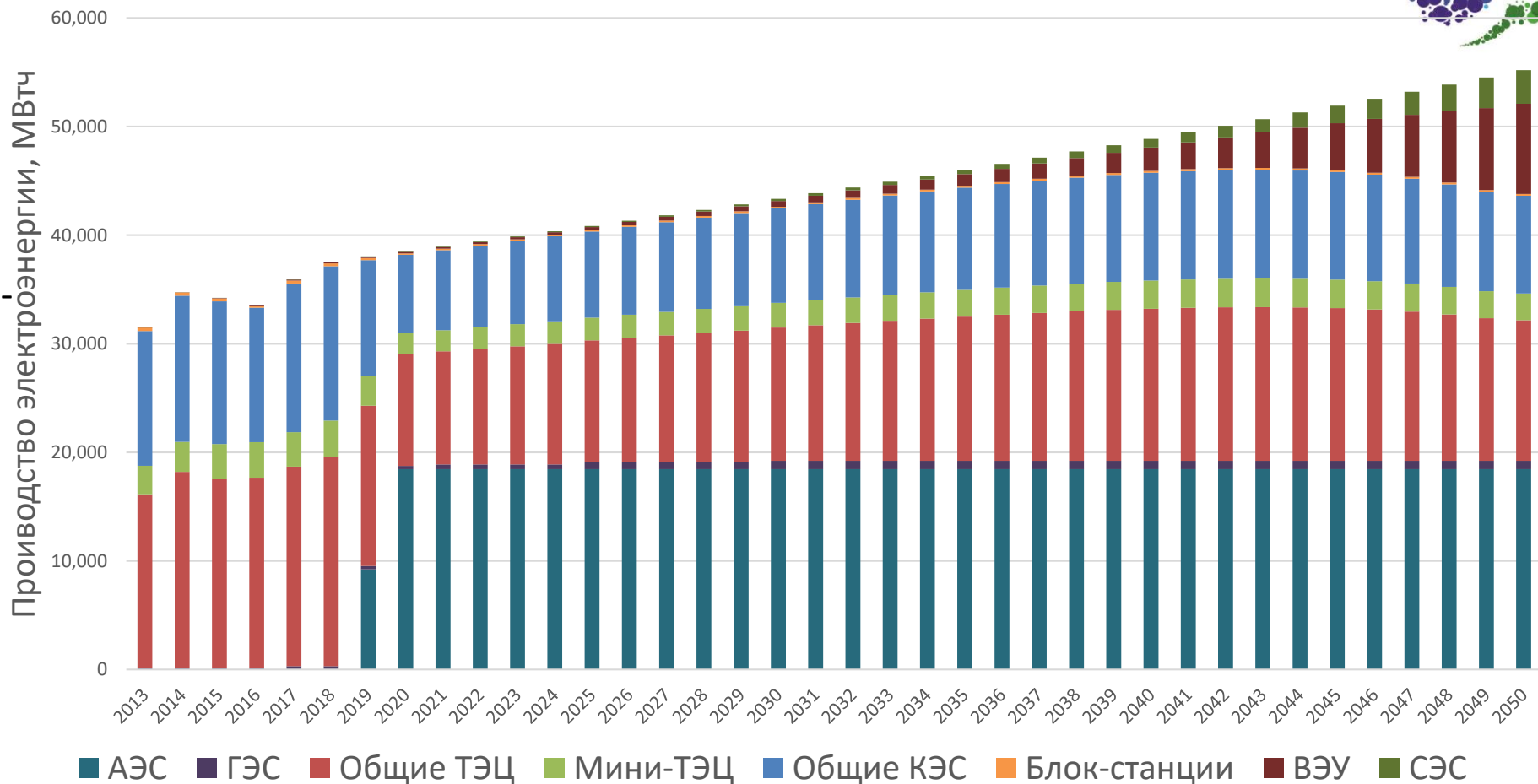


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# Official plans for electricity



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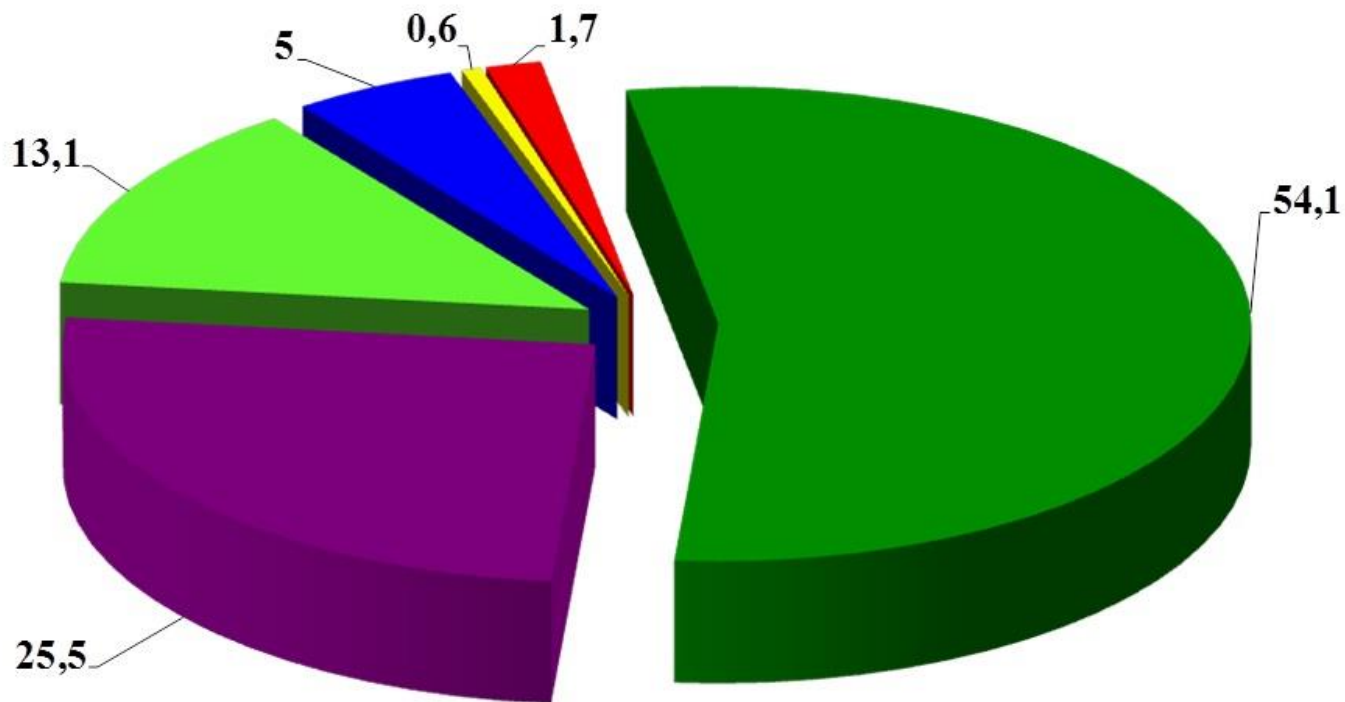






Share of renewables in total consumption – 5,5%

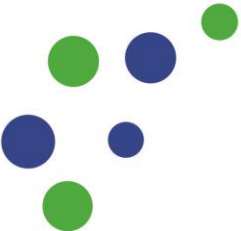
Share of renewables in the total production of electricity – about 1%



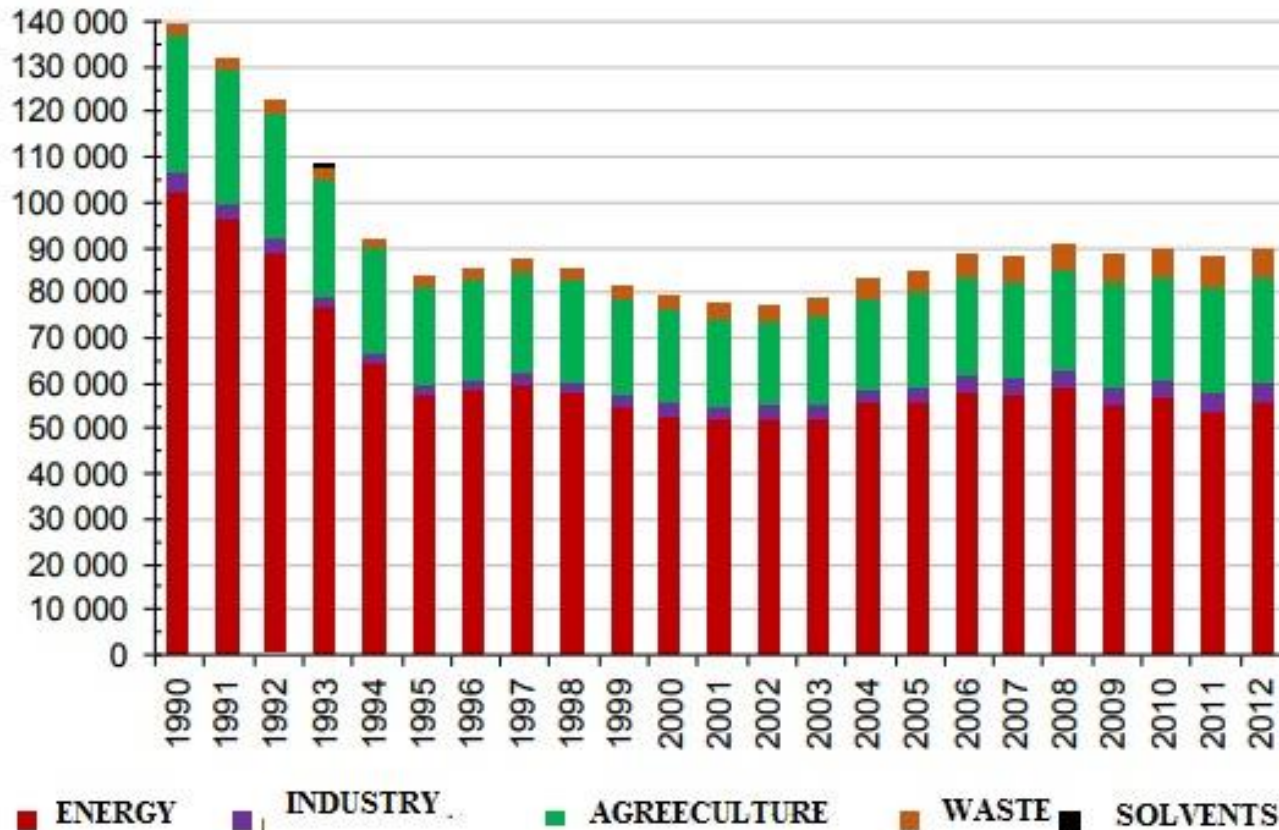
- Wood
- Woodchips
- Wood waste
- Other (incl. solar)
- Wind
- Water



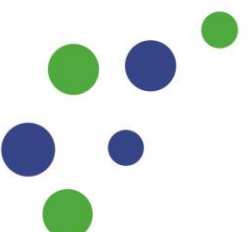
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# CO2 Emissions of Belarus



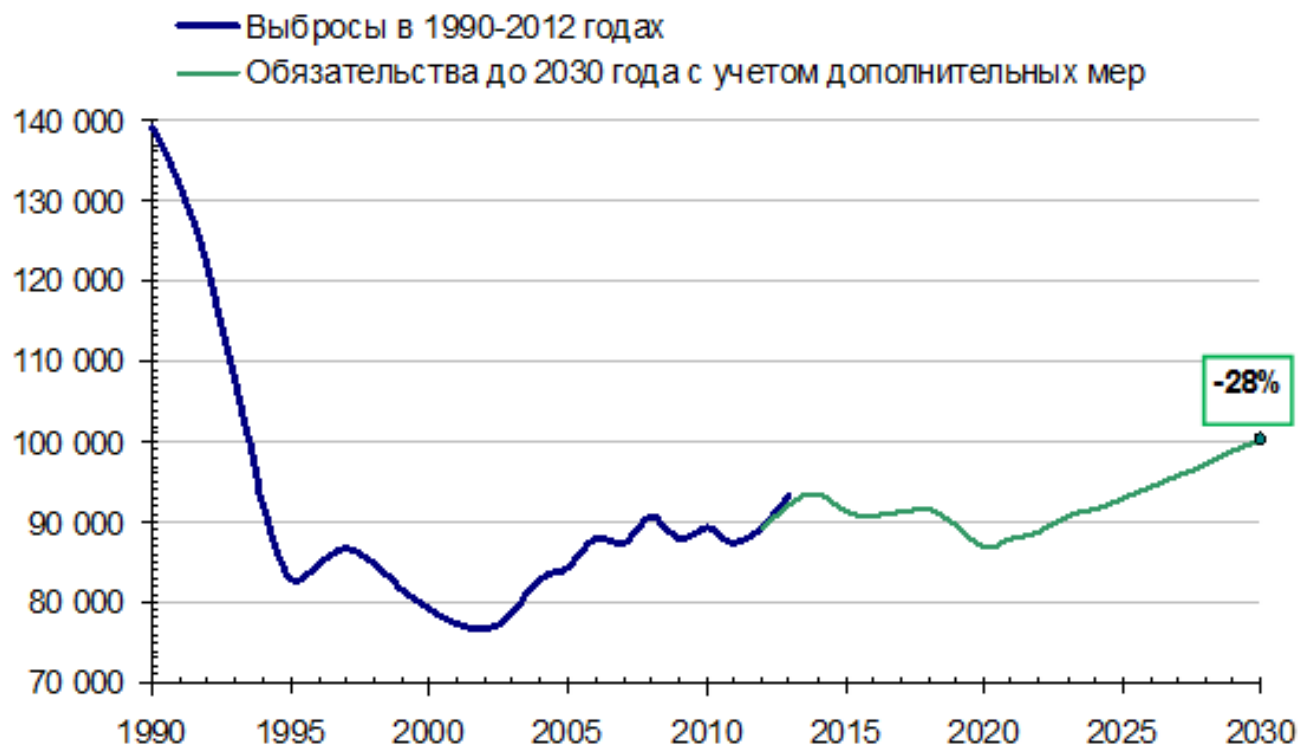
TOTAL EMISSIONS :  
89283,33 thousand  
tons  
EMISSIONS PER  
CAPITA: **9,39 tons**  
EMISSIONS PER CAPITA  
IN ENERGY SECTOR :  
**5,89 tons**



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# Plans to decrease emissions (INDC)

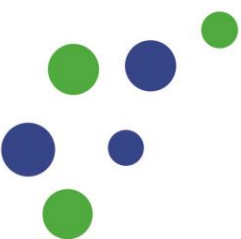


According to Belarusian INDC (-28% from 1990) emissions in 2030 should be 100188,886 tones CO<sub>2</sub>. But actual emissions are 89283,33. SO INDC of Belarus is not very ambitious and suggests increase of emissions for about 8%

# Our good experience - cooperation with local authorities



- 2012 CES invites Braslav authorities to join the small international project
- 2014 Braslav signs the Covenant of Mayors
- 2014 Braslav prepares with CES the application for EU grant
- 2015 Braslav and CES start the project on climate and energy



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# Prerequisites

Many regions and cities in Europe have ambitious goals for achieving acclimate neutrality. For example, Copenhagen, set a goal to become the world's first carbon-free capital by 2025.

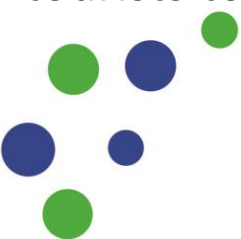
The Braslav district can deliver and achieve the **following goal**: To use only local climate friendly fuels on all boiler houses, expand the use of RE, independently generate electricity

Because of forests (LULUCF) the district could become the **climate neutral**

First, population isn't big, and, therefore, the realization of the goal does not require large investments.

Secondly, it lacks energy-intensive industry. That is why the issues of implementing energy-efficient solutions will not conflict with the lack of funds for enterprises to modernize.

And, thirdly, Braslav is one of the visiting cards of Belarus, attracting tourists to the country.



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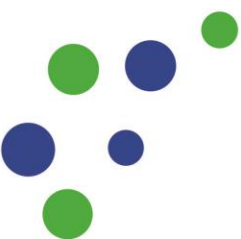




Climate neutrality is the condition of a certain territory in which the amount of greenhouse gas emissions in a given territory is equal to or less than the level of absorption of greenhouse gases by the same territory.



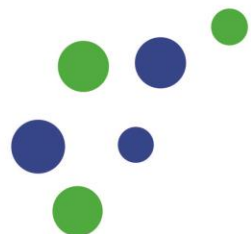
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# Current carbon balance



Сектор выбросов	2013	2014	2015
Энергетика	110	99	91
Сельское хозяйство	148,3	147,6	142
Отходы	9,9	9,9	9,9
ЗИЗЛХ	-145,4	-143,3	-143,5
Транзитный транспорт	1,6	1,6	1,6
Нетто выбросы	124,164	114,5	101,3



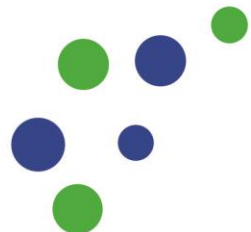
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# Current state of the economy



- Численность населения - 26 705
- Прирост населения - минус 13,6 чел/тыс. чел
- Жилищный фонд - 892,4
- Общая обеспеченность жильем - 28,3 (город) 39,1 (сельская местность)
- Общее число туристов - 95 625
- Средняя заработная плата - 254,2 евро
- Выручка на человека – 2100 евро
- Общая выручка организациями – 56,2 млн. евро
- Энергоемкость - 6,731 МВтч/тыс. евро
- Валовое потребление энергоресурсов 13305,27304 МВтч
- Выбросы парниковых газов – 245 тыс. тонн CO<sub>2</sub>
- Поглощение парниковых газов – 144 тыс. тонн CO<sub>2</sub>



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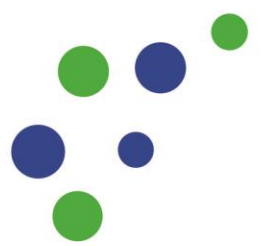




The main goal of the climate neutrality strategy is the development of a number of activities and the definition of conditions and incentives for achieving climate neutrality in the Braslav district.

In addition to the main goal, there are a number of intermediate goals, the achievement of which is also defined in the strategy:

- refusal to use peat as a fuel in the production of thermal energy;
- complete refusal to use peat, including the population;
- refusal to use gas in the production of thermal energy;
- transition to the construction of only energy-efficient housing;
- implementation of the Green Procurement system;
- transfer of all public transport to electric transport;

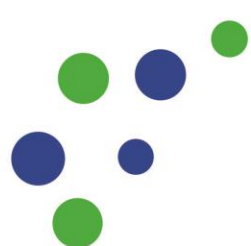
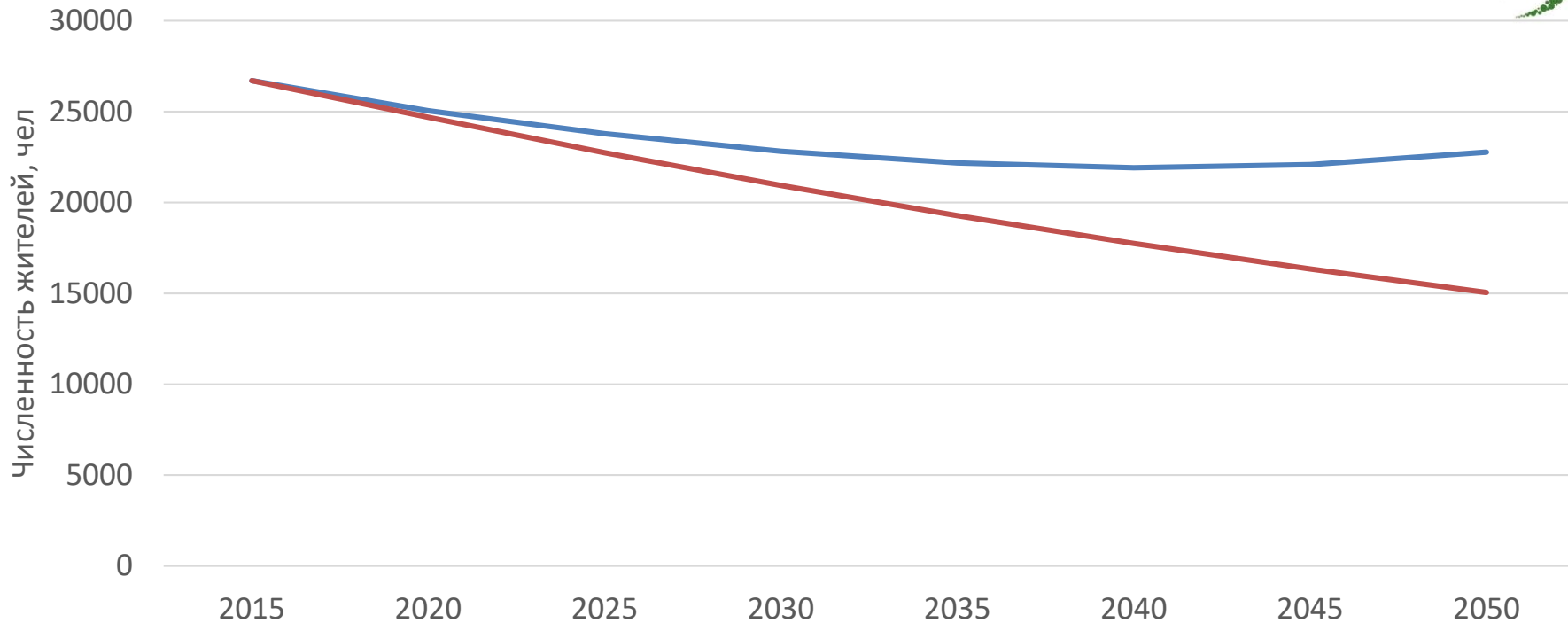


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# Population dynamic



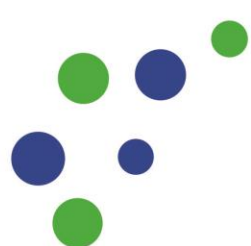
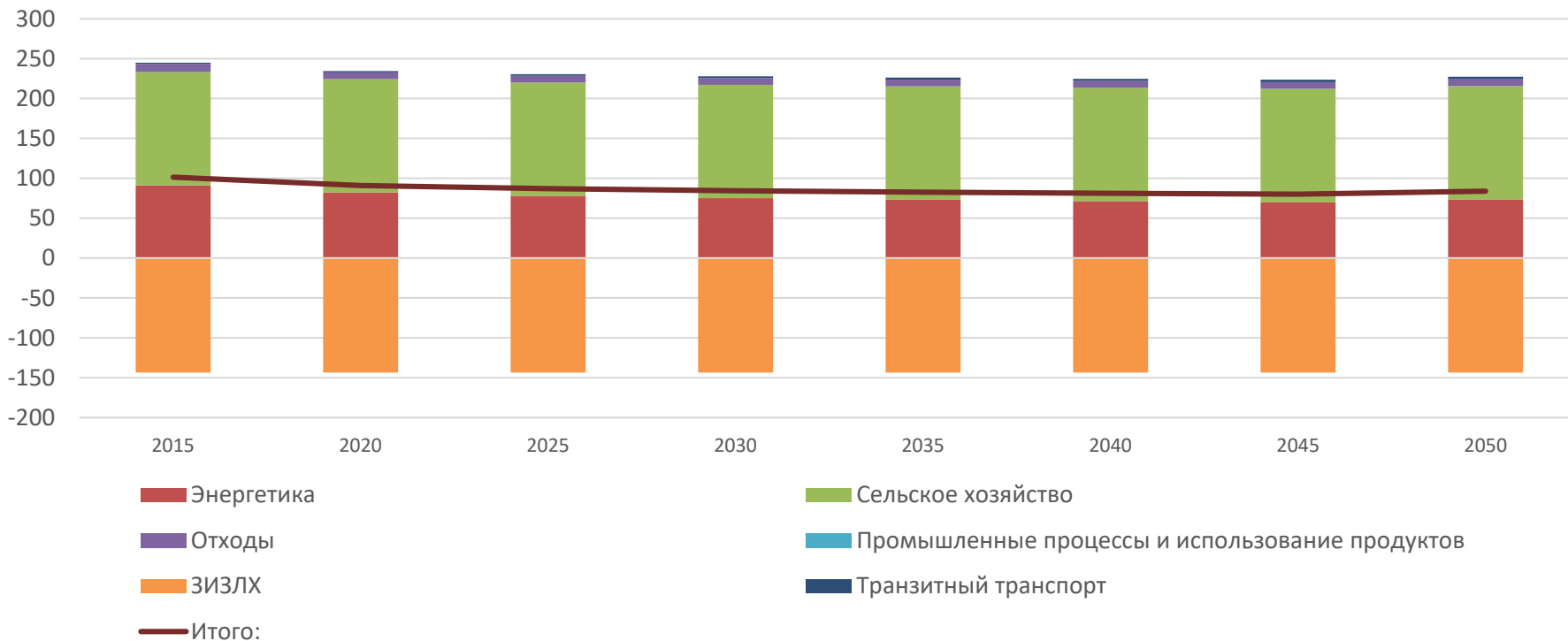
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# Baseline scenario



Углеродный баланс



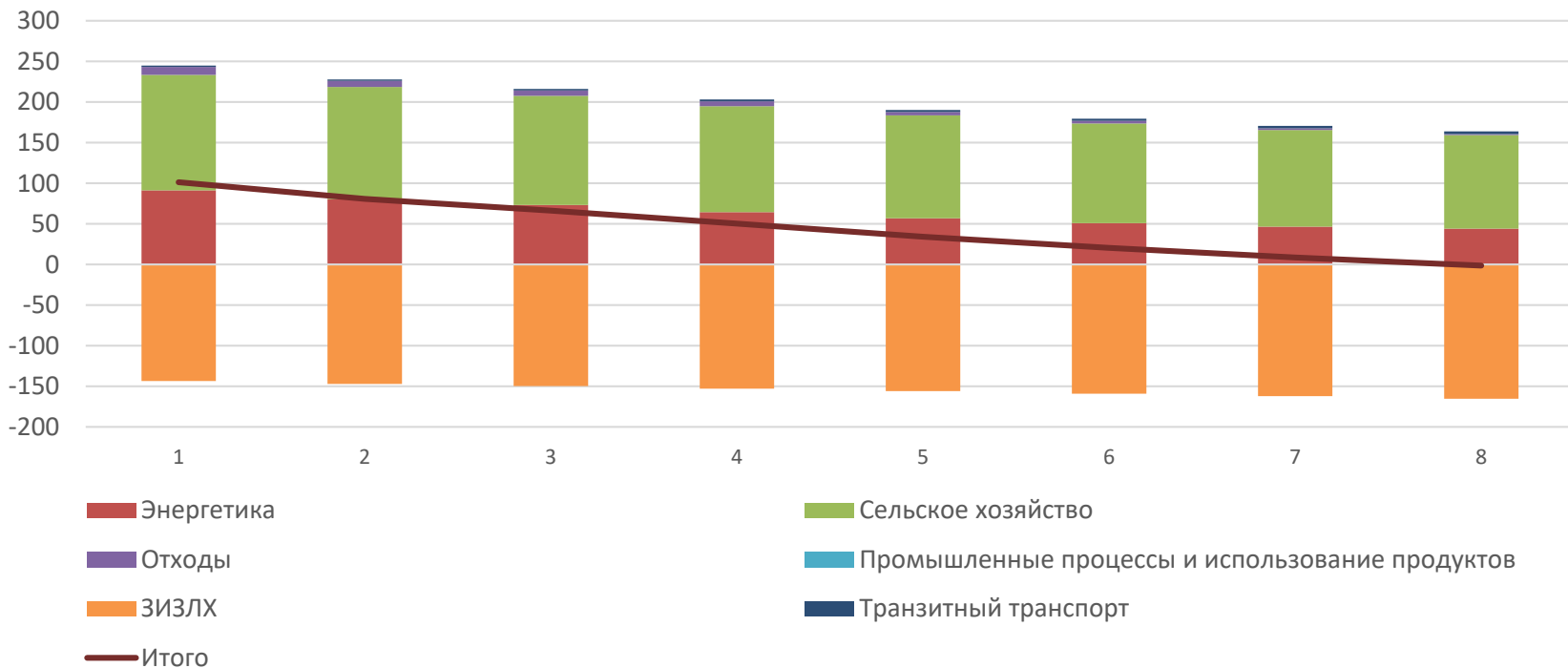
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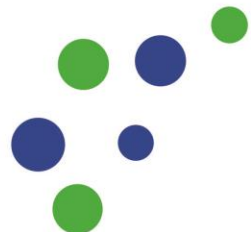
# Scenario 2050



Углеродный баланс



Activation of energy saving, Development of tourism and organic agriculture  
Introduction of electric vehicles, Substitution of fossil energy for wood fuel  
Development of separate collection of garbage



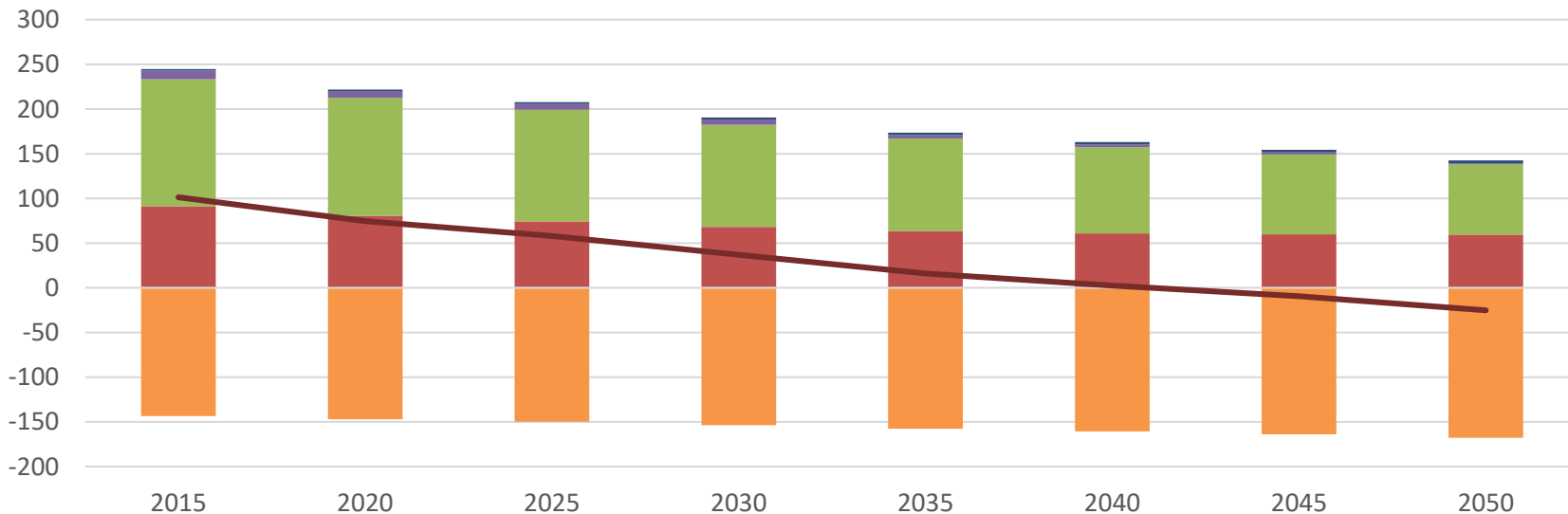
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# Scenario 2040



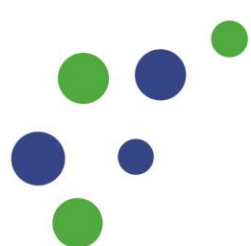
Углеродный баланс



- Энергетика
- Отходы
- ЗИЗЛХ
- Итого:

- Сельское хозяйство
- Промышленные процессы и использование продуктов
- Транзитный транспорт

Additional Activities: The transition from large-scale livestock to organic livestock  
Reorienting agriculture to organic



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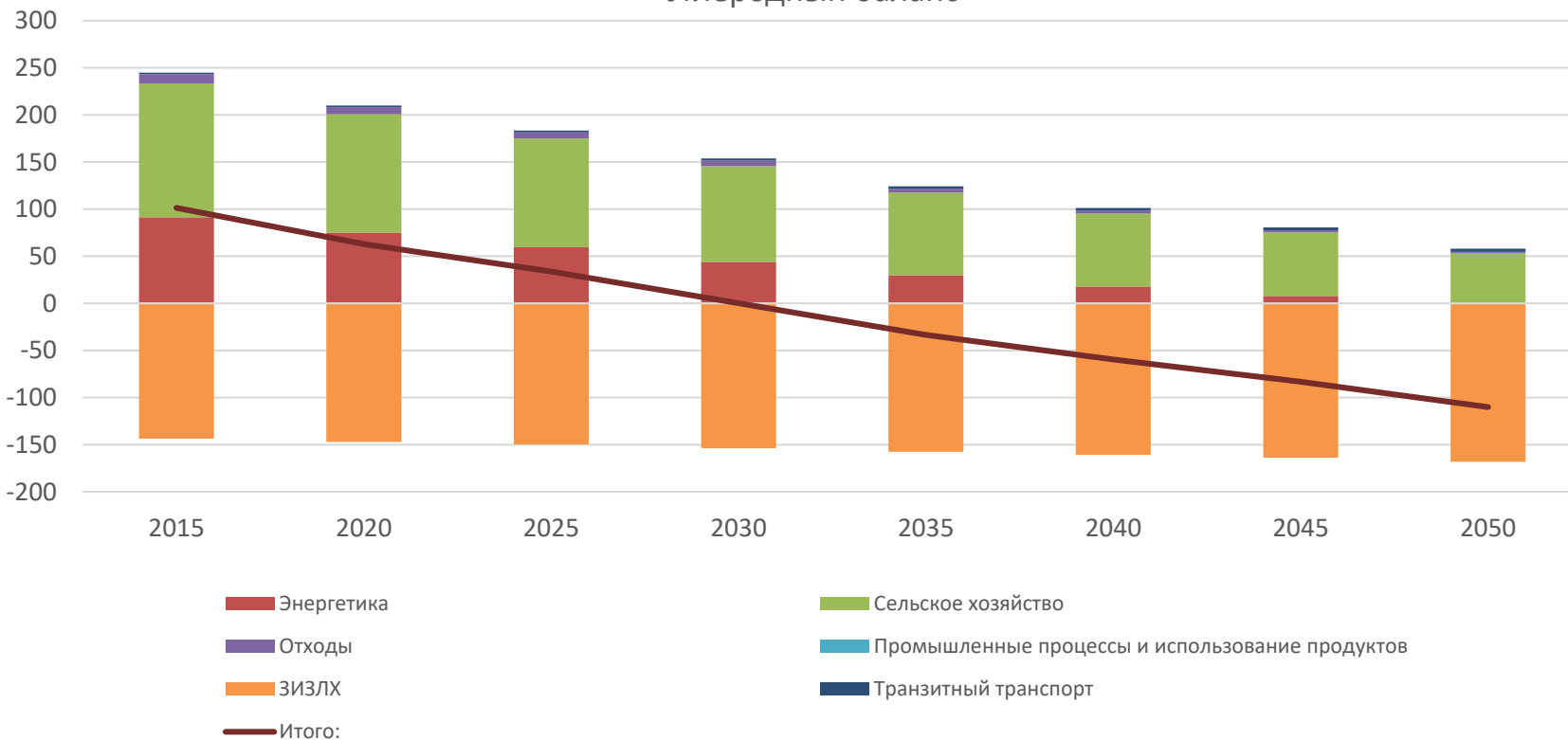




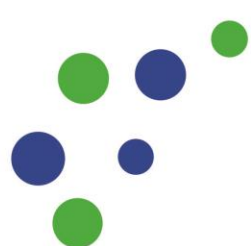
# Scenario 2030



Углеродный баланс



Additional activities: The introduction of renewable sources that use the energy of the wind, the sun, Biogas production, Use of straw



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# Progress on the project



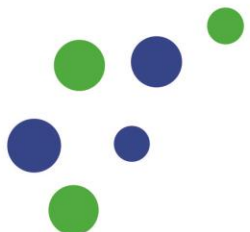
Sodium lamps (DNAT) were replaced with LED lights.

Each sodium lamp consumed 150 watts per hour

Each new lamp consumes 53 watts per hour

54 lanterns were installed

Replacing lanterns will save about 11731 kWh per year. and reduce CO2 emissions by 10.347 tons per year



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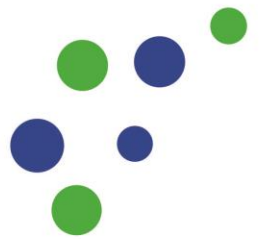
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It was installed 5 lanterns with solar batteries  
Each lantern is equipped with a solar module (solar battery) for 260W, a controller, a battery pack for 70Ah, and two LED lights, with a power of 10W.

If the lanterns worked not from solar panels but from the grid, they would consume about 280 kWh per year

Brookovanka is one of Braslav's sightings, tourists come there, they make photos there. The installation of these lanterns has a popularization effect.



Демонстрационные проекты Восточное партнерство



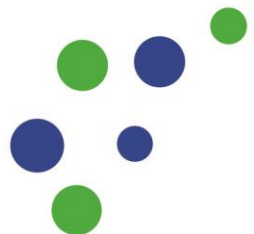


## Replaced sites of inefficient heating network

2,069 meters of pipes of different diameters have been replaced

Total savings amounted to 614.6 MWh per year

The reduction of emissions is 214.3 tons of CO<sub>2</sub>







Implementation of a demonstration project for the replacement of boilers in one of the central boiler house

The old boilers on gas (1989) are now working, as well as the boiler on woodchips with low efficiency (just over 50%)

Will be installed:

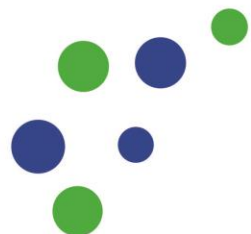
The boiler on woodchips (with a capacity of 3, 1 and 0.5 MW)

Variable frequency drive for a network pump

Replacement of a low-efficiency network pump with a modern energy-efficient pump unit

A modern water treatment system will be introduced

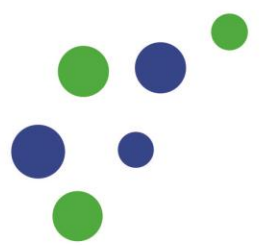
The effect of the event will be **3440 MWh**, reducing emissions of **2,497 tons** of CO<sub>2</sub>



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# Work with population



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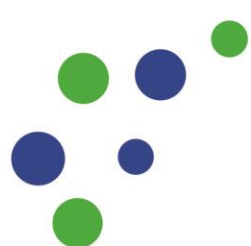


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# Energy audits



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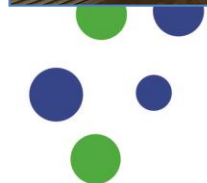


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**БРАСЛАВ  
ПЕРВЫЙ**

**КЛИМАТИЧЕСКИ НЕЙТРАЛЬНЫЙ**

**Thank you**

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