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# **PRACTICAL TOOLS FOR MANAGING THE WASTE PYROLYSIS PROJECT IN RUSSIA**

- Russia annually produces about 150 million m<sup>3</sup> of municipal solid waste (MSW)
- Industrial processing involves only 4% of solid waste, everything else is transported to landfills of suburban area





- A significant amount of solid waste goes to illegal dumps and constantly growing



- **MSW is a source of environmental pollution promoting the spread of hazardous substances.**
  - **However,**
- a lot of the valuable components can be used as recycled resources.**





▪ Residents of big cities protest against the building

Waste incineration plants,

but the inhabitants of the suburban villages suffer from illegal dumps.

Amount of waste is growing





Only 4% of household waste is recycled in Russia, everything else is deposited at dumps and landfills



# To Burn or not to burn?

- Local residents and environmentalists protest against the building Waste Incineration Plants.
- The reason is fear of air emissions of dioxins & toxic substances
- Russia burns unsorted garbage and it may also contains batteries and mercury lamps
- Security waste incineration can be ensured only of its pre-sorting



# Russia needs immediate modernization the Waste Treatment Technologies

- The first step is to develop properly separate collection system, competently set the garbage containers and train people, promote the separate collection



- The State Duma is preparing a new Draft Law.
- The Law will establish financial responsibility of producers for the package .
  - They will be required to recycle it.
- The percentage of such processing from year to year will grow:
  - 10 %,
  - 20 %,
  - 30 %
  - or more (by years)

State Duma is also considering the guaranty fee included in the price of products.

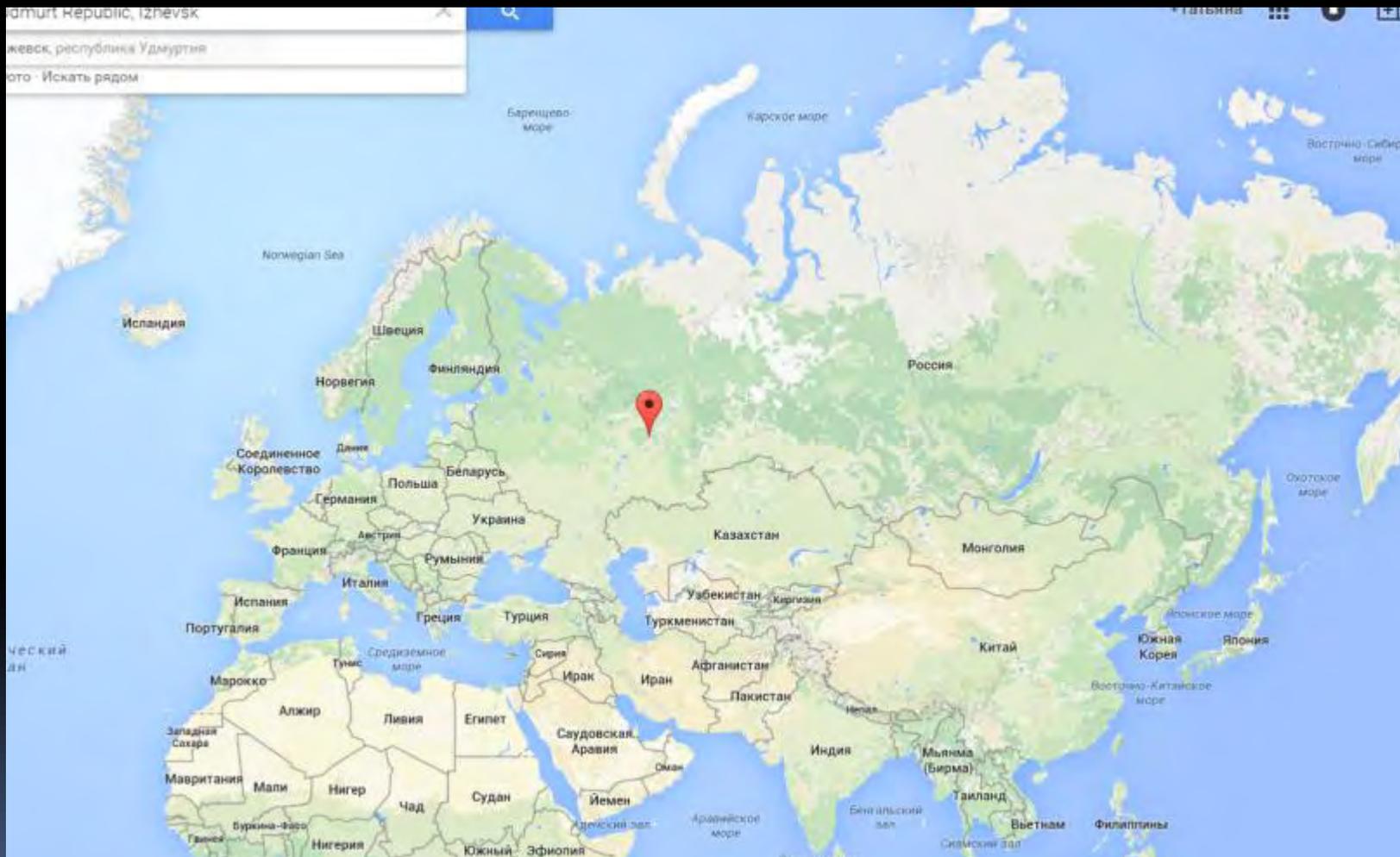
It can be returned to the customer after delivering the package to recycle



# We are better than thinking about ourselves

- The Sociological studies show that about 70% of Russians are ready to collect rubbish separately
- We need the bold and progressive waste management law
  - Russia should prohibit warehousing of untreated waste at dumps
    - Recycling should be on the first place, then - incineration and composting

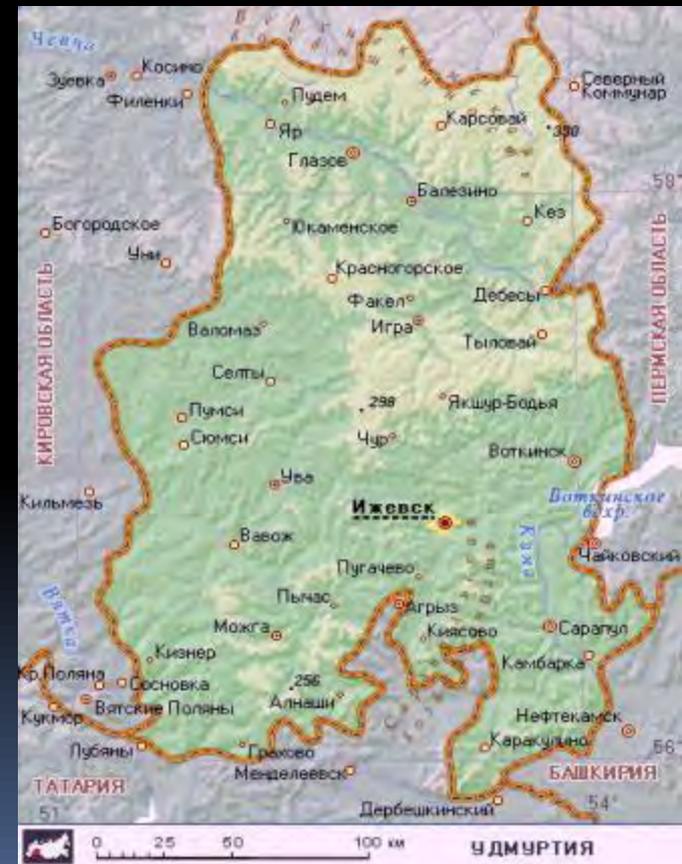
# Do you know Izhevsk?



# Udmurt Republic, Izhevsk

**Udmurt Republic Square  
is 42,100 km<sup>2</sup>**

**Moscow-Izhevsk: 1200 km**



The population of Udmurt Republic is 1,518,000 people



By area Udmurtia exceeds Belgium and Switzerland, and approximately equal to the area of Denmark



Udmurtia is the birthplace of composer **Pyotr Tchaikovsky**  
and the workplace of designer **Mikhail Kalashnikov**

**May 7, 1840,**  
**Place of Birth - city Votkinsk**



**1948-1913 -**  
**years of work in Izhevsk**



# Turn to our Problem

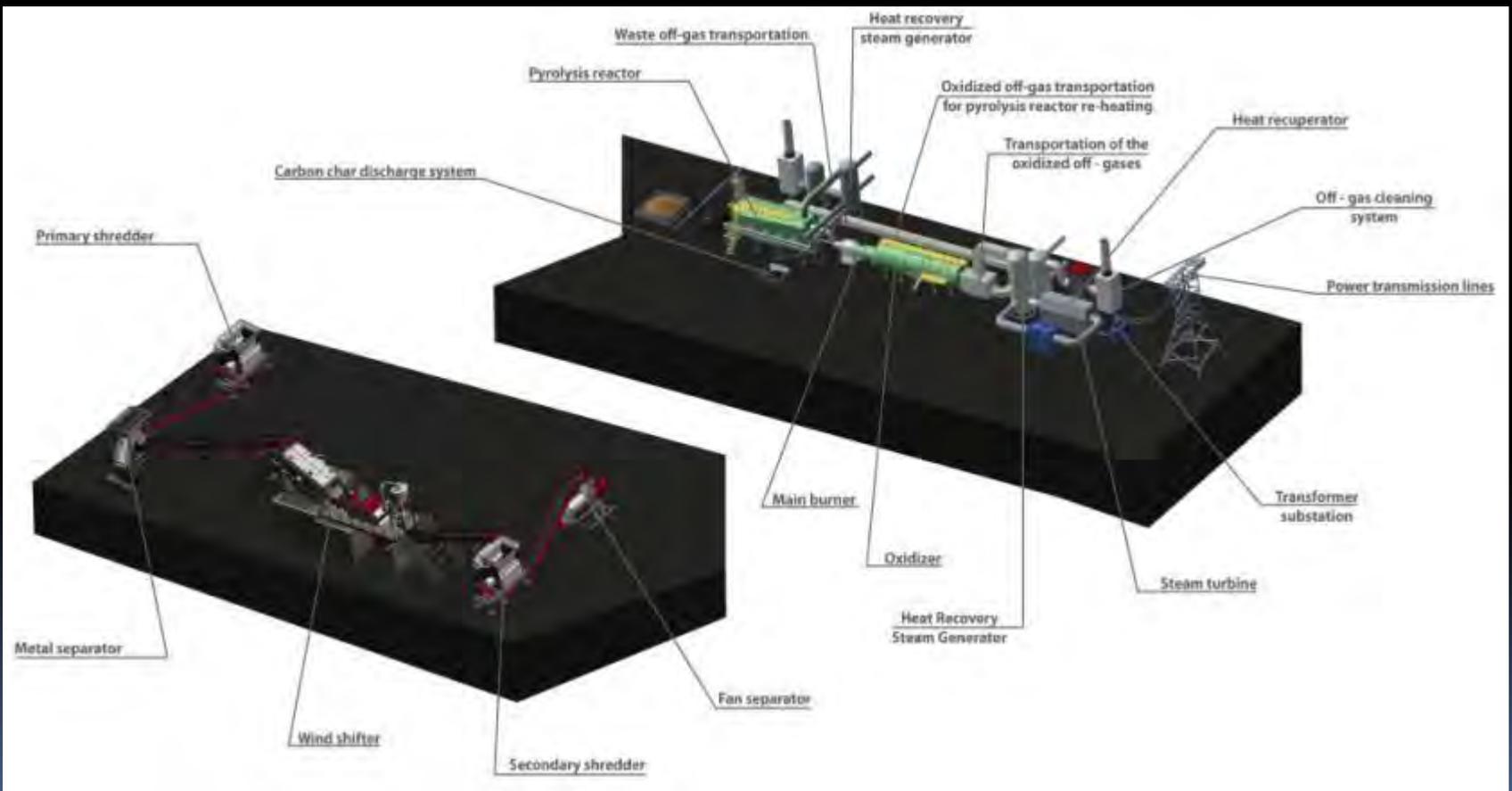
- Udmurtia annually produces about 1.5 million tons of waste
- The problem of recycling is very serious
- The Republic needs immediate modernization of “junk industry”



- Udmurt Republic is a testing site for the implementation of the Waste Recycling Project in Russia.
- Green Light Energy Solutions corporation (US) provides the original Waste Conversion Pyrolysis technology with capacity estimated up to 300 tons of garbage per year (including the launch of three production lines)

- The Waste Conversion Pyrolysis technology implements a high-temperature continuous feed pyrolysis process and transforms mixed municipal waste that comes unsorted to the landfills into 90-98% of combustible syngas and 2-10% of solid carbons char which has further use.
- In order to meet the needs of today's polluted environment, Waste Conversion Pyrolysis units are constructed with a production capacity of 305 TPD (with average waste moisture content 60%), assuming 40 TPD (15%) of recyclable materials are filtered out at the pre-processing line for further sale and that 265 tons of waste with average moisture content 60% per day are converted into energy.
  - The electric energy output is 5+ MW (depending on the feedstock)

- Green Light Energy Solutions Corporation provides MSW Processing Technology
  - for the Waste Recycling



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- The modular design of the systems allows for multiple processing lines making the whole system capacity infinitely expandable
    - A multi-system comprising 3 modules is recommended by GLES to allow for quick and timely service without interrupting the conversion process and to ensure constant guaranteed energy supply to the consumers



- It's approved by Udmurt Republic as the Best Available Technology for the Region.
- At the same time it is a good example of international cooperation between the countries in currently geopolitical realities



# Project Partners



Russia

USA

Germany



Bulgaria



Norway



Italy

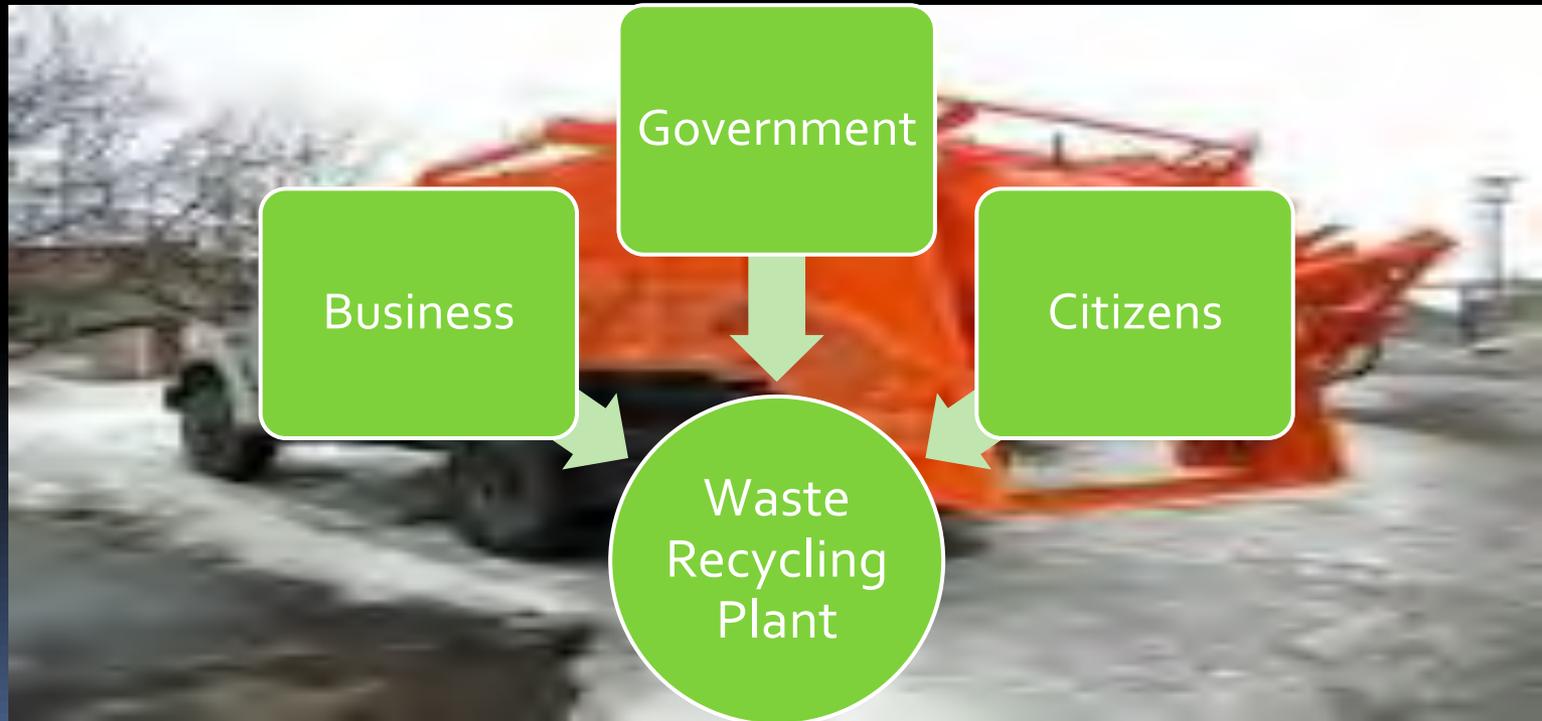
Austria



Spain



- It is important to not only to have access to technology and even investment resources, but also to provide an interaction structure of stakeholders with incentives for Business, Government representatives and Citizens

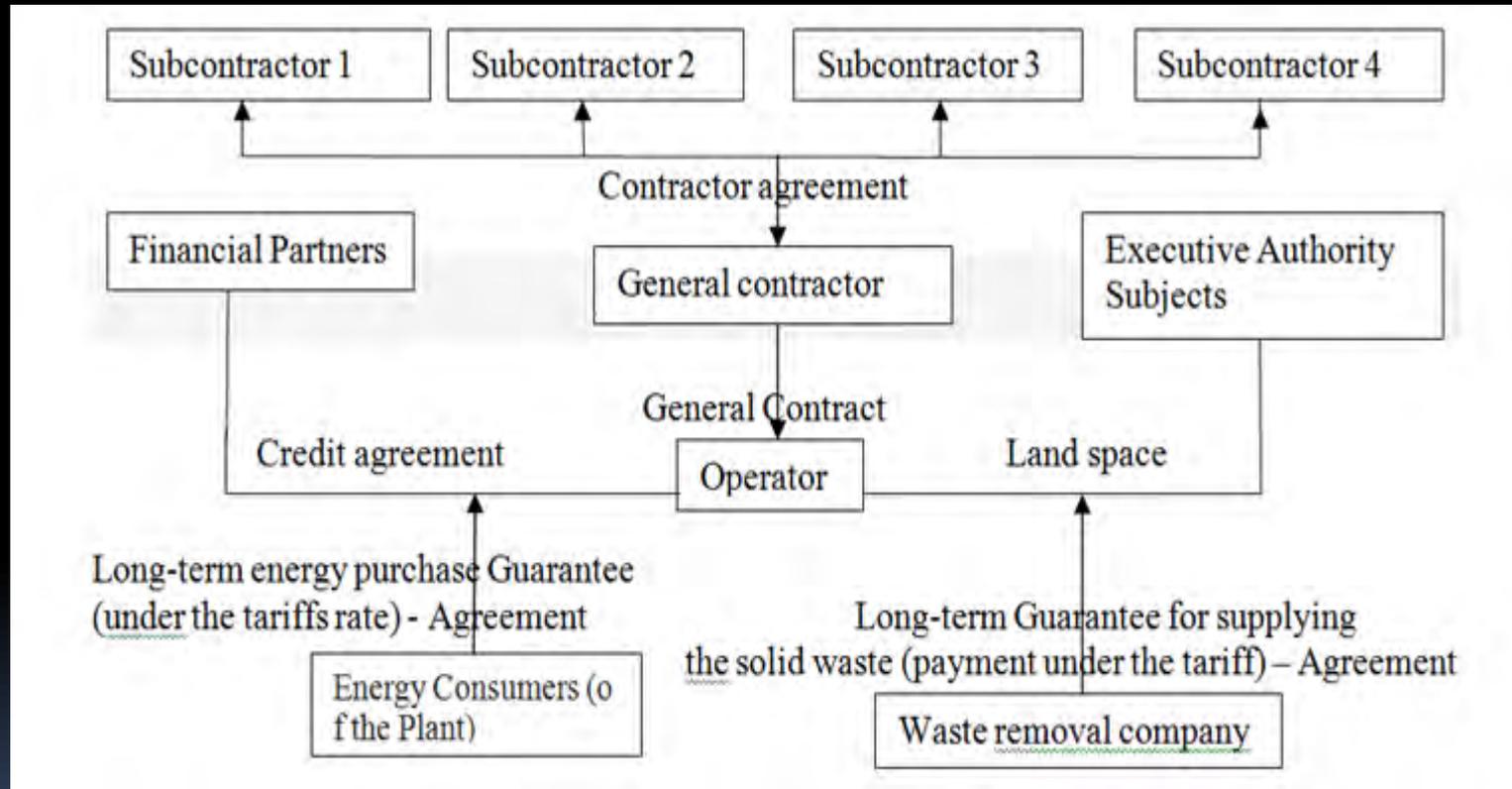


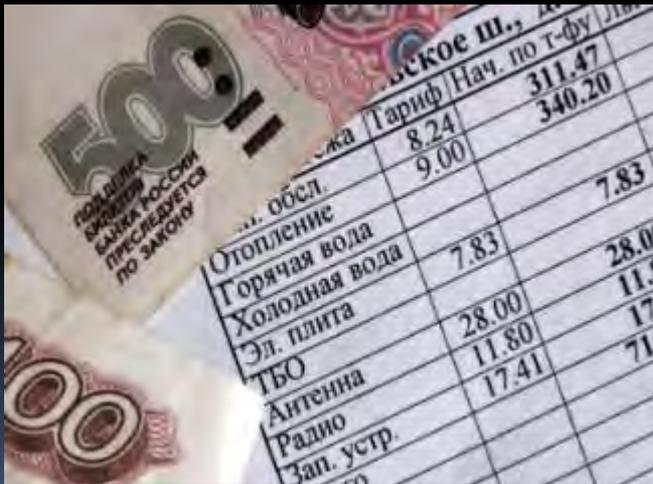


- It is not easy to do in current Economic situation in Russia
- Of course, the main motive is profit of companies involved in the process
- It is important to build correctly the treaty process, to ensure the interests of all participants in Waste collection, transportation and recycling

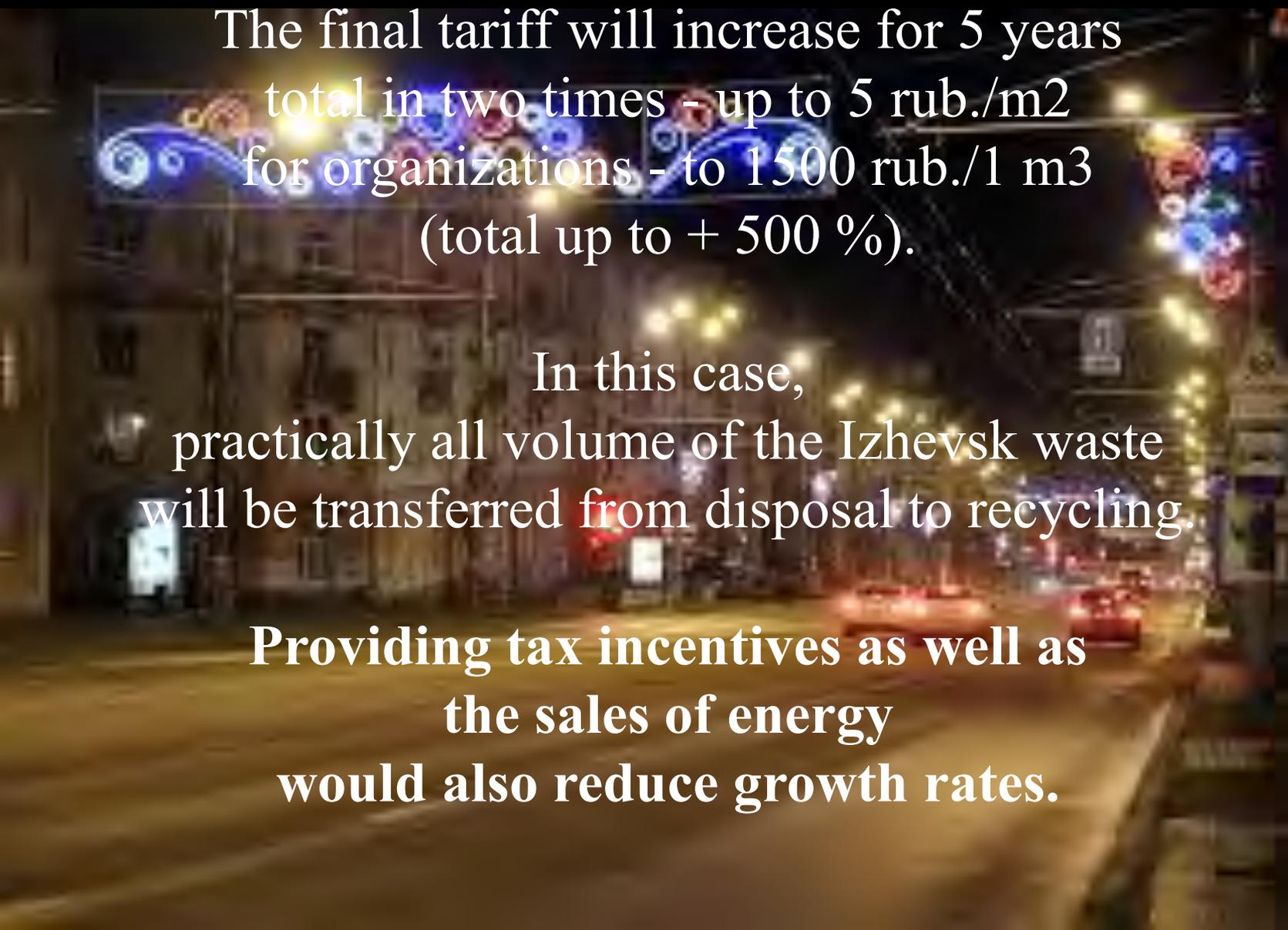


# Organizational structure of Interaction between stakeholders of Waste Recycling Project





- The current tariffs for garbage disposal don't correspond with the removal and recycling company interests
- The prices of services for the waste collection, transportation and recycling will increase
- It is very important to find a balance between the interests of industrialists and solvency of the population into modern technologies transit



The final tariff will increase for 5 years  
total in two times - up to 5 rub./m<sup>2</sup>  
for organizations - to 1500 rub./1 m<sup>3</sup>  
(total up to + 500 %).

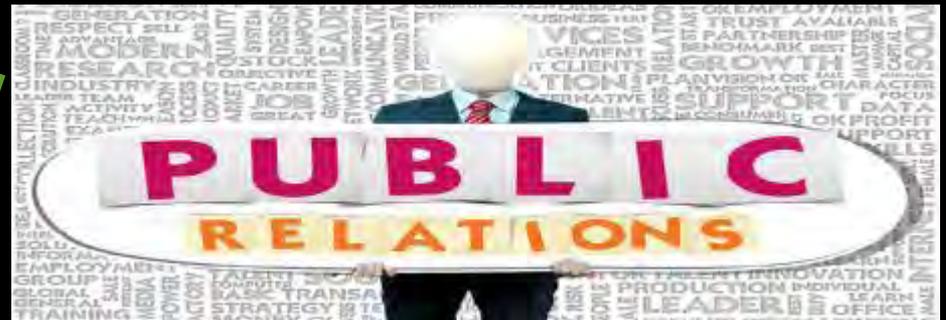
In this case,  
practically all volume of the Izhevsk waste  
will be transferred from disposal to recycling.

**Providing tax incentives as well as  
the sales of energy  
would also reduce growth rates.**

# Community Outreach and Public opinion in Project implementation



- One more problem of the project is the Public Work, Public Opinion and the local bureaucracy
- In practice, project management is faced not only with the conservative officials and commercial interests of competitors - ghostly guardians of the city purity, but also with a lack of public understanding the importance of the issue
- Lack of the knowledge, information, necessary competencies and ignorance of environmental issues pose obstacles on the way of Pyrolysis Project implementation



- In case of need the positive conclusion of the “Public hearing” on the construction of a Pyrolysis Plant can be used known methods of political technologies (in the formal mode), international practices of election campaigns and other well-known PR-technologies.



Education & Training

Economic incentives

Management Tools

Development of strategy

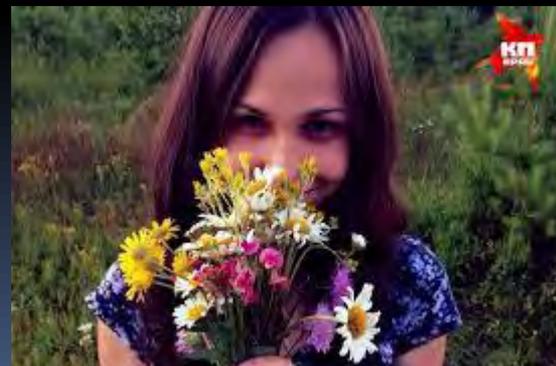
Determination of the target audience

# Conclusion? No! It's the beginning!

- In addressing the challenges of sustainable development, caring for the Environment and Human Health cannot be boundaries and national isolation
- In the current world economic system, people should look for ways to address global challenges together
  - Interdisciplinary studies, international technology and multilateral cooperation - this is an inevitable process in the Post-Industrial Society

# From Udmurtia with love

2015 marks the  
175 years since the birth of Tchaikovsky



**BE OUR GUESTS!**  
**YOU ARE WELCOME!**





