



## REDUCING THE CARBON FOOTPRINT OF RUSSIAN RAILWAYS

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# RUSSIAN RAILWAYS TODAY

**85,600 km**  
length of railways

**1.3 bln**  
cargo units carried

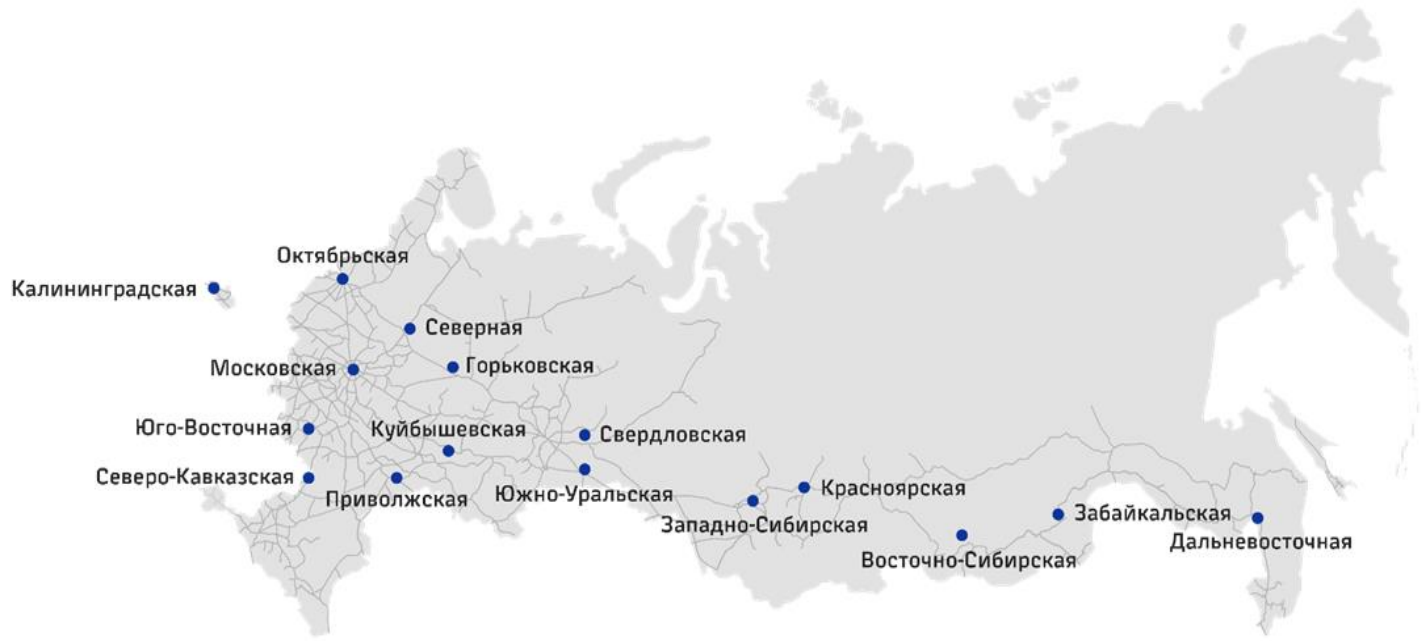
**86%**  
of cargos were carried with electric traction

**16**  
railways

**1 bln**  
passengers carried

**85%**  
of passengers were carried with electric traction

**77**  
regions of Russia



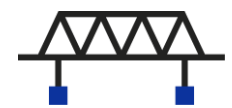
## / WE BUILD



Railways



Railway stations



Bridges



Tunnels



Public facilities

## / WE CARE FOR THE ENVIRONMENT



**Energy-efficient** and safe handling of heavy trains



**Smart systems** for traffic schedule optimization



**Energy management**

# PARIS AGREEMENT AND PLANS OF RUSSIAN RAILWAYS



✓ Paris Agreement signed in 2015



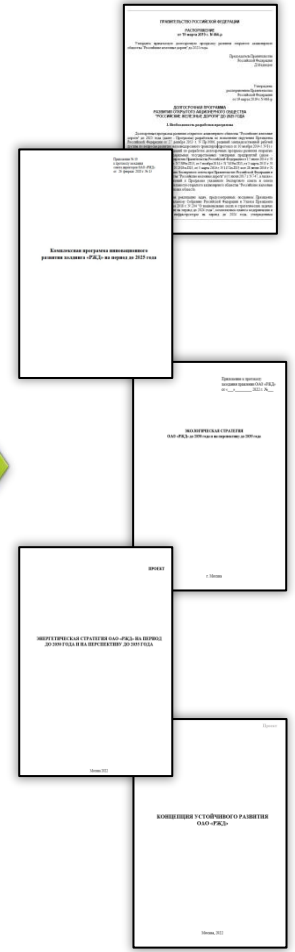
The Russian Federation signed the agreement in 2015 and ratified it in 2019.



## LEGAL FRAMEWORK IN RUSSIA

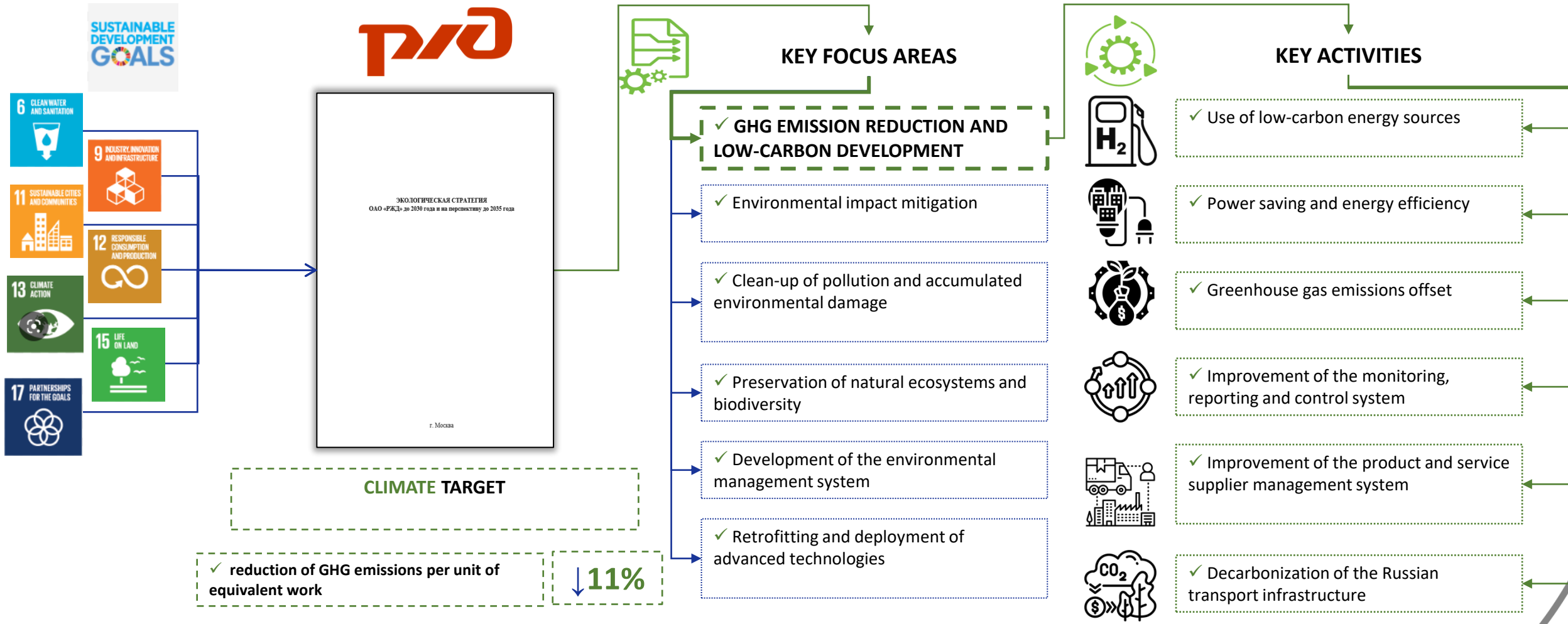


- ✓ Russian Presidential Decree on National Development Goals until 2030 No. 474 dated 21 Jul 2020
- ✓ Russian Presidential Decree on the Reduction of GHG Emissions No. 666 dated 4 Nov 2020
- ✓ RF Federal Law on the Restriction of GHG Emissions No. 296-FZ dated 2 Jul 2021
- ✓ RF Government Decree on the Criteria for Sustainable Development Projects No. 1587 dated 21 Sept 2021
- ✓ RF Government Decree on the Strategy for Low-Carbon Development until 2050 No. 3052-r dated 29 Oct 2021
- ✓ RF Government Decree on the Rules of Filing and Checking GHG Emission Reports No. 707 dated 20 Apr 2022



- ✓ Russian Railways Long-Term Development Program until 2025
- ✓ An Integrated Program for Innovative Development of Russian Railways Holding until 2025
- ✓ Russian Railways Environmental Strategy until 2030 and for the long term until 2035
- ✓ Russian Railways Energy Strategy until 2030 and for the long term until 2035
- ✓ Russian Railways Sustainable Development Concept

# RUSSIAN RAILWAYS ENVIRONMENTAL STRATEGY



# IMPROVEMENT OF THE MONITORING SYSTEM

Automatic acquisition of data from monitoring sensors



Automatic monitoring of environmental components



Analysis of environmental components



Corporate Information System (Baikal-M)

Automated interaction with environmental laboratories



Live monitoring systems

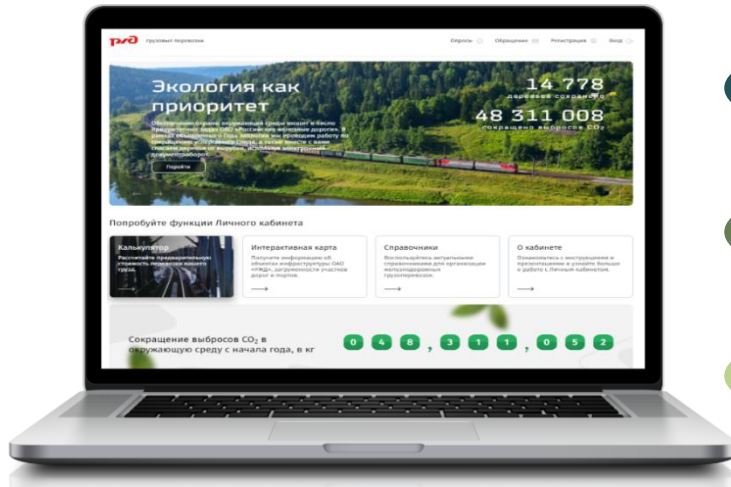


Integration with IT systems of Russian federal executive authorities



# IMPROVEMENT OF THE REPORTING AND CONTROL SYSTEM

## ENVIRONMENTAL CALCULATOR



1

**CALCULATOR** of CO2 emission reduction thanks to client's request for rail carriage

2

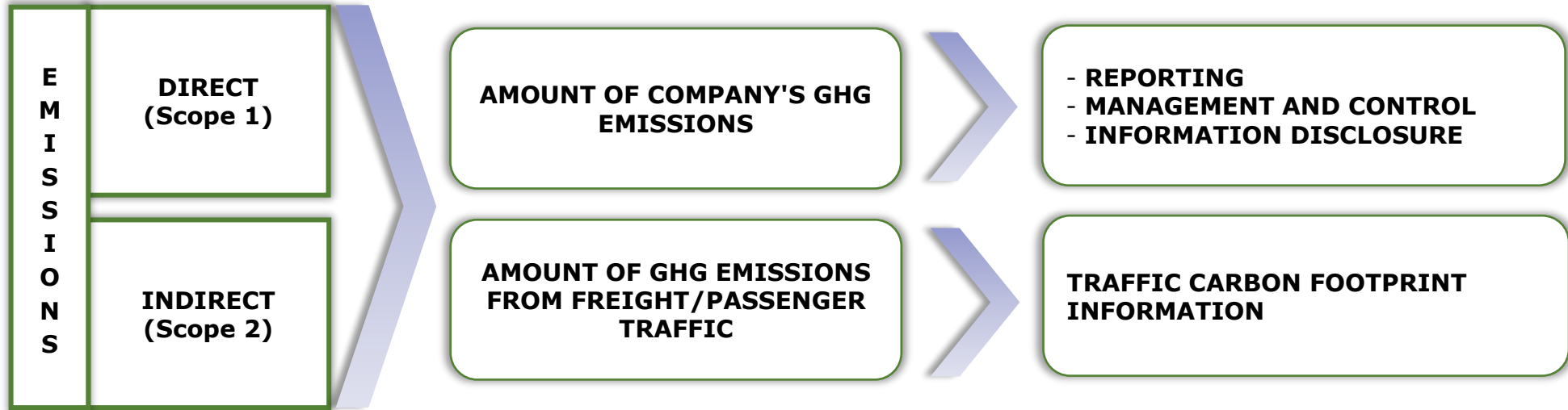
**METER** of carbon footprint reduction thanks to choosing railway transport services

3

**METER** of trees saved from felling thanks to using electronic document control



## INTEGRATED METHODOLOGY FOR ASSESSING GHG EMISSIONS



# USE OF LOW-CARBON ENERGY SOURCES

## NATURAL GAS



Locomotive running on liquefied natural gas (LNG)

## STORAGE BATTERIES



Hybrid battery-trolley DC electric locomotive with induction motor drive and on-board energy storage

## HYDROGEN CELLS



Hydrogen train on Sakhalin



Solar power plants and solar lighting systems



Heat pumps



Wind turbines



Pellet boiler systems



Catalytic cogeneration plant-based boiler facility

# CLIMATE PROJECTS



✓ FIRE SAFETY MEASURES



✓ RIGHT-OF-WAY CARE



✓ REFORESTATION AND AFFORESTATION



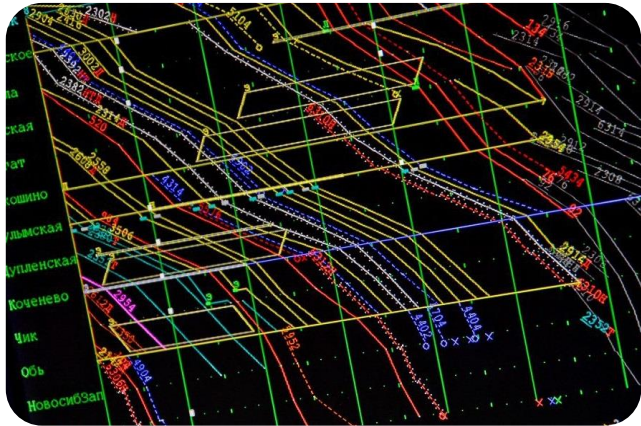
✓ COOPERATION WITH RESEARCH INSTITUTIONS, INCLUDING ON THE ISSUES OF CARBON LANDFILLS



✓ LAND IMPROVEMENTS IN AREAS ADJACENT TO RAILWAY INFRASTRUCTURE



# IMPROVEMENT OF THE PRODUCT AND SERVICE SUPPLIER MANAGEMENT SYSTEM



## ✓ "GREEN LINES" OF SCHEDULE

IN THE FUTURE – A NEW TRANSPORT SERVICE



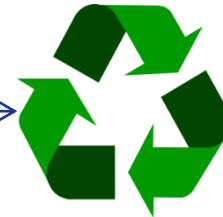
## ✓ "GREEN" CONTAINER TERMINALS

IN THE FUTURE – ENVIRONMENTALLY FRIENDLY TRANSSHIPMENT HUB (SAINT PETERSBURG)

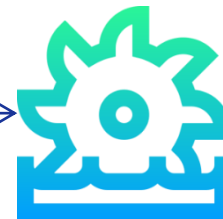


## ✓ "GREEN RAILS"

A PROVEN TECHNOLOGY



✓ Use of recycled materials for manufacturing purposes



✓ Use of "green" energy for manufacturing purposes



✓ End-to-end quality control systems

# THANK YOU FOR YOUR ATTENTION

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