

THE ENVIRONMENT

# NLMK

EFFICIENCY LEADERSHIP

Report 2014



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\* A unique environmental project –  
a biochemical waste water treatment  
facility at coke and chemical  
operations at the Lipetsk production  
site

1.

# THE ENVIRONMENT





## NLMK GROUP'S ENVIRONMENTAL POLICY

In 2014, NLMK Group developed an updated Environmental policy which is seen as a long-term declaration guiding the Company's efforts to ensure the environmental safety of its operations in the regions where the Company has a presence.

VISION	NLMK Group is one of the most efficient steel companies in the world. The Group's high-quality products are in demand in strategically important sectors of the economy, such as construction, machine building, energy, shipbuilding, chemical, oil and gas industries, and many others
MISSION	To manufacture products that satisfy client needs; to continuously improve technologies; to ensure safe working conditions; to reduce the Company's environmental footprint; to make rational usage of resources; and to adhere to widely accepted social responsibility practices
GOALS	<ul style="list-style-type: none"><li>To ensure environmental efficiency of production processes;</li><li>To comply with best global environmental and resource usage practices;</li><li>To be a leader in the sector in terms of specific environmental indicators</li></ul>
PRINCIPLES	<ul style="list-style-type: none"><li>Taking an environmentally responsible approach to operations; modernization; reconstruction; and capital construction;</li><li>Compliance with Russian and international legal and normative environmental requirements;</li><li>Prevention of environmental risks;</li><li>Transparency and accessibility of information on the Group's environmental activities and footprint</li></ul>
ACTIONS	<ul style="list-style-type: none"><li>To improve technological processes in order to minimize environmental footprint;</li><li>To implement advanced environmental technologies;</li><li>To efficiently manage potential operational risks to prevent negative environmental impact;</li><li>To improve management methods in line with current international standards;</li><li>To consistently improve the environmental knowledge and skills of personnel</li></ul>
RESPONSIBILITIES OF MANAGEMENT	<ul style="list-style-type: none"><li>To develop the principles and goals of NLMK Group's Environmental policy and to monitor its implementation;</li><li>To provide resources; and ensure conditions necessary; for implementing the environmental policy;</li><li>To implement efficient incentive mechanisms for personnel to ensure improved environmental performance</li></ul>
RESPONSIBILITIES OF EMPLOYEES	<ul style="list-style-type: none"><li>To know and understand NLMK's Environmental policy</li></ul>

In order to successfully achieve Strategy 2017 goals, in the short-term NLMK Group maintains a focus on completing its large-scale projects, including environmental ones; and on pursuing

process initiatives that ensure a reduced environmental impact with an increased output of steel and raw materials.

## ENVIRONMENTAL INVESTMENT

A minimized negative impact on the environment is the result of NLMK Group's capex programme alongside planned environmental and technological initiatives outside of the investment process.

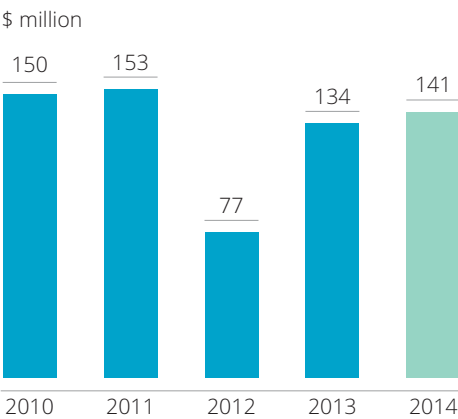
5.4 billion rubles (\$141 million)

NLMK Group's investment into projects to ensure a reduced environmental impact and the cost of environmental initiatives in 2014

21.3 billion rubles (\$655 million)

spent in total on environmental activities between 2010 and 2014

NLMK'S ENVIRONMENTAL INVESTMENTS



### ENVIRONMENTAL PROJECTS IMPLEMENTED IN 2014

NLMK Group's production sites implemented a number of large-scale environmental projects in 2014.

The following projects were implemented at the Lipetsk site:

- Launch of a biochemical waste water treatment facility at coke and chemical operations
- Reconstruction of infrastructure facilities of the refractory shop production unit
- Gunned repair of combustion chambers of air separation units in blast furnaces No. 4, No. 5 and No. 6
- Installation of 400 filter sleeves for de-dusting facilities in the hot metal desulfurization unit in BOF shops
- Implementation of a sintered layer spraying technology at sintering machines No. 3 and No. 4

NLMK subsidiaries also implemented a number of large-scale environmental projects, including:

- Repairs and upgrades of Altai-Koks coke battery equipment
- 1<sup>st</sup> phase of reconstruction of off-gas cleaning systems at NSMMZ EAF shop
- Upgrade of storm water treatment facilities at VIZ-Steel
- Upgrade of the tailings beach dust suppression system of the Stoilensky landfill protection dam

### NLMK ATTRACTS ADVANCED TECHNOLOGIES TO REDUCE EMISSIONS

In 2014, NLMK Group together with Siemens VAI began a large-scale project of upgrading both gas exhaust equipment and emission collection and cleaning systems at the Novolipetsk BOF operations.

Siemens VAI will be responsible for engineering work and for the supply of the technological hardware required for the construction of a secondary emissions collection and cleaning system, as well as for the replacement of the gas exhaust ducts of two BOFs that have a joint capacity of 5.23 million tonnes per year.

Siemens VAI will also supervise equipment assembly and start-up.

The new solutions will provide a 12% increase in the productivity of the Novolipetsk BOF Shop and reduce its air emissions by more than 50%. They also provide the possibility of generating energy from BOF gases.

Construction and assembly activities related to the project are planned to begin in June 2016. The project is scheduled for completion in 2019.



## REDUCTION OF ENVIRONMENTAL FOOTPRINT

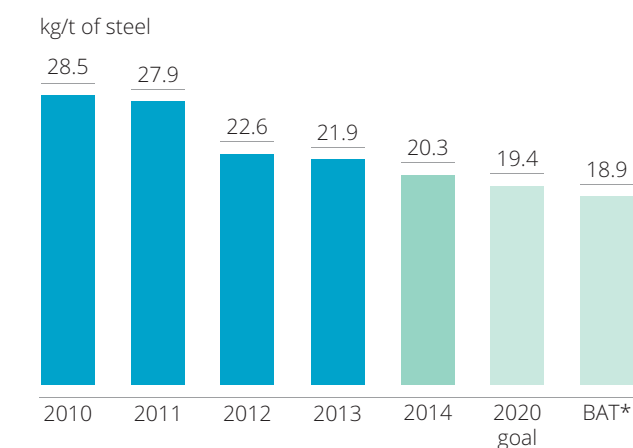
### AIR

The Company's atmospheric impact was reduced in 2014 through systematic efforts to implement environmental technologies and large-scale capex projects. While steel production volumes increased by 2% year-on-year, air emissions were down by 7% year-on-year to 20.3 kg per tonne of steel. Over the last 5 years, specific emissions decreased by a total of 29%.

# 29%

total decrease in specific emissions over  
the last 5 years

### SPECIFIC AIR EMISSIONS



\* BAT = best available technologies for vertically integrated steel companies.

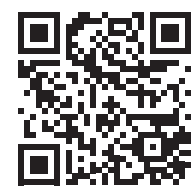
### HIGHLY EFFICIENT GAS TREATMENT EQUIPMENT PROVIDES THIRTY-FOLD REDUCTION IN DUST CONTENT

In 2014, NLMK Group announced its commitment to construct a modern modular dust collection system at its Lipetsk production site to treat off-gases from Blast Furnace No. 4.

With a capacity of 600,000 m<sup>3</sup>/h, the new system will provide a thirty-fold reduction in residual dust content, to 5 mg/m<sup>3</sup>. This will reduce the annual dust emissions by 504 tonnes to achieve the level of best available technologies.

Currently, gases from BF-4 are de-dusted by a previous generation dust collection system that uses the water sprinkling method.

Investment into the construction of the new dust collection system will total approximately RUB 250 million, with launch planned for the end of 2015.



### NOVOLIPETSK CONTINUES TO REDUCE AIR EMISSIONS

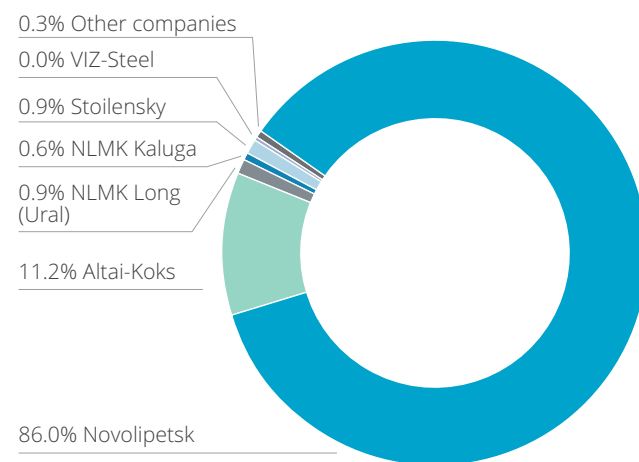
A decrease in emissions at Novolipetsk in 2014 from 22.3 to 22.09 kg per tonne of steel was achieved in parallel to a steel output of 12.56 million tonnes (+1.3% year-on-year); a record over the 80 years of NLMK's history. New performance records were set for every production stage at Novolipetsk.

The Company has invested over 25 billion rubles into environmental initiatives since 2000, almost halving its key atmospheric impact figures and swiftly approaching best available technologies.

Novolipetsk implemented or launched several Environmental Programme 2020 projects in 2014. For example, testing of an innovative waste water treatment facility began at coke and chemical operations, among the benefits of which is a reduction in air emissions. De-dusting facilities in three shops were equipped with 790 new high-performance filter sleeves. An upgrade of the dust collection system was completed at the refractory shop in December 2014, reducing residual dust content in off-gases ten-fold.



### EMISSIONS BY COMPANY



Novolipetsk accounts for approximately 86% of NLMK's air emissions, whilst the Company produces about 80% of the Group's steel, which explains the substantial investment into environmental projects at all stages of the production process that are being implemented at the Novolipetsk site.

NLMK Kaluga, launched in mid-2013, has the minimal level of air emissions. Steel production at the site in 2014 totaled 6% of the Group's overall volumes, whilst NLMK Kaluga accounted for just 0.6% of emissions, a figure which is very low for both Russia and for other global leaders. Mining assets Stoilensky, Stagdok and Dolomit accounted for approximately 1% of total emissions in 2014.

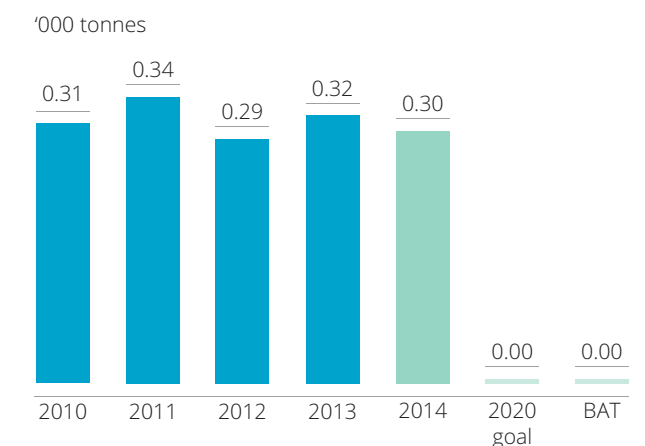
### WATER

NLMK Group has an insignificant adverse impact on water bodies in the regions where it operates.

Novolipetsk, Stoilensky, Altai-Koks, VIZ-Steel, NLMK Kaluga, and Stagdok all have zero-discharge water systems, which results in zero water pollution.

NLMK Group companies that do not have a closed-loop water system are working on reducing their adverse impact on water bodies. For example, NLMK Group Ural sites have reduced the discharge of water pollutants by 16% year-on-year while maintaining stable production volumes.

### NLMK GROUP'S GROSS WATER EMISSIONS



## NLMK EMPLOYS UNIQUE WATER TREATMENT TECHNOLOGY

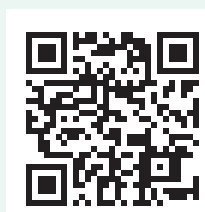
In 2014, NLMK Group began hot testing of a unique environmental complex; a biochemical waste water treatment facility at coke and chemical operations at the Lipetsk production site.

Total investment into the project which was implemented as part of NLMK's Environmental Programme 2020 exceeded RUB 2 billion.

From 2009, all industrial storm and waste water at the Lipetsk production site is contained in a closed-loop water cycle with multistage treatment to enable it to be reused in technological production processes. The new 160 m<sup>3</sup>/hour facility was designed using the best available technologies, and will provide a twenty-fold improvement in the quality of treatment of coke and chemical operations waste water for reuse in the closed-loop water cycle.

The facility employs a custom technology developed by Russian scientists for deep biochemical water purification from phenols, rhodanides, ammoniacal nitrogen and its oxides (nitrites and nitrates) in a single stage, whilst the previous technology required several stages. Elimination of these obsolete stages enables up to 95% waste water purification from nitrites and nitrates.

All infrastructure and utilities were installed above ground on an isolated concrete area equipped with a rain, melt and drain water collector, preventing any chance of groundwater pollution in the event of a containment failure.



## WASTE MANAGEMENT

The Group's facilities, representing various segments of the metals and mining industry, are characterized by different levels of waste, from the low level at steel rolling mills to the significant level inherent in mining companies. Stoilensky accounts for the bulk of NLMK Group waste; with a share of 91% in 2014. Novolipetsk also generated a substantial volume of waste of 8% in 2014; whilst the Group's remaining assets accounted for around 1%.

Recycling levels at all NLMK Group's Russian steelmaking assets exceeded 90%:

- 94% at Novolipetsk;
- 92% at NLMK Long Ural sites;
- 95% at NLMK Kaluga.

Recycling level at NLMK Group's raw materials assets:

- 8% at Stoilensky;
- 75% at Stagdok;
- 97% at Dolomit;
- 95% at Altai-Koks.

Active recycling at NLMK Group companies has enabled the Company to significantly reduce the amount of waste generated over the last decade. Starting from 2004, Novolipetsk stopped accumulating waste and began systematically processing it. The amount of waste that had previously accumulated at the Novolipetsk landfill was reduced by 0.93 million tonnes in 2014.

## PUBLIC APPRAISAL OF NLMK GROUP'S ENVIRONMENTAL ACTIVITIES

NLMK Group management's efforts to reduce the Company's environmental footprint have been noted by public and state organizations.

In 2014, NLMK won the '100 Best Companies in Russia. Ecology and Environmental Management' competition held as part of the VIII Nationwide conference 'Ecology and production. Prospects of environment protection economic mechanisms development' for the Company's systematic approach to tackling environmental challenges; and the implementation of advanced environmental technologies. NLMK's 'Best

Environmental Service' received a special nomination.

NLMK came first in the 'Breakthrough of the Year' nomination, receiving the Lipetsk Region's 'SLON' award for the Company's unique biochemical waste water treatment project at the coke and chemical operations. This project also received the golden medal at the 'Metal-Expo'2014' international industrial exhibition.

NLMK Kaluga was also recognized at the '100 Best Companies in Russia. Ecology and Environmental Management' competition as a next-generation steel company with a minimal environmental impact.

## NLMK'S ENVIRONMENTAL PROJECT RECOGNIZED AS BEST IN INDUSTRY

NLMK Group was among the winners at the 20<sup>th</sup> international Metal-Expo'2014 industrial exhibition. NLMK received a gold medal for a unique environmental project –

a biochemical waste water treatment facility at coke and chemical operations at the Lipetsk production site.





2.

ENERGY EFFICIENCY





In 2014, NLMK Group implemented a number of projects to enhance energy resource procurement efficiency. The total effect of these measures was 2.1 billion rubles (\$55 million).

NLMK Group also implemented a set of measures to increase the efficiency of energy resource usage and the Company's energy facilities. The total effect of these measures was around 800 million rubles (\$20 million).

These projects included an upgrade of NLMK Group lighting systems, optimization of generation equipment repairs to increase in-house energy generation, use of by-product fuel gases, reduction of losses through modernization of heat insulation of vapour and hot-water supply networks, among other projects.

Specific energy intensity of steel produced at the Lipetsk site increased by 1% year-on-year in 2014 driven by one-off factors related to the mastering of pulverized fuel injection technology at blast furnaces No. 4 and No. 5.

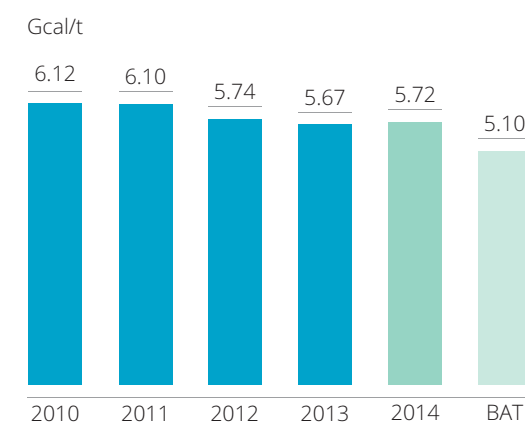
**0.8** billion rubles (\$20 million)

effect of measures to increase the efficiency of energy resource usage and the Company's energy facilities

**2.1** billion rubles (\$55 million)

effect of projects to enhance energy resource procurement efficiency

#### SPECIFIC ENERGY INTENSITY OF STEEL PRODUCTION AT THE LIPETSK SITE



NLMK Group's target energy efficiency level is equal to the level of best available technologies (BAT).

In 2014, Altai-Koks, Stoilensky, VIZ-Steel, NSMMZ, and NLMK Metalware passed a certification audit of their energy management systems. BSI (British Standards Institute, England) certification authority confirmed the compliance of these energy management systems with the requirements of ISO 50001 international standard, which means that all NLMK Group's main Russian companies have passed certification for compliance with ISO 50001.

#### GREEN ENERGY PROJECT BOOSTS ENERGY SELF-SUFFICIENCY

In 2014, NLMK Group began hot testing of a new 'green energy' top-pressure recovery turbine facility at its Lipetsk production site. Another turbine is under construction in parallel, with launch scheduled for 2016.

The new facility is used to generate energy through the channeling of excess blast furnace gas pressure. To date, blast furnace gas was directed to the heat power plant and the recovery cogeneration plant for energy generation; but the potential of excess blast furnace gas pressure had not been harnessed.

The total design capacity of the two turbines that form the top-pressure recovery turbine

complex is 28 MW. The facility will receive gas from blast furnaces No. 6 and 7, with the project increasing the plant's energy self-sufficiency from 54% to 56%; and reducing the amount of energy that must be purchased for the plant by 200 million kWh per year, which accounts for approximately 6% of total purchased energy.

Investment in the top-pressure recovery turbine project totals around 1.9 billion rubles; resulting in a payback period of about 18 months.



# CONTACTS

You can access information about NLMK from a variety of sources.

Visit our corporate website for more information [www.nlmk.com](http://www.nlmk.com).

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## NLMK IN SOCIAL NETWORKS

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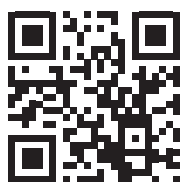
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