FOSTERING A NEW INDUSTRY

- ELECTRONICS
- HEALTH
- METALLURGY & INSTRUMENT MANUFACTURE
- NANOMATERIALS
- NANOINDUSTRY INFRASTRUCTURE
RUSNANO Group

**OUR MISSION:** create a nanotechnology industry in Russia

### STRATEGIC GOALS FOR 2020

- **RUSNANO: A RUSSIA-BASED GLOBAL TECHNOLOGY INVESTOR**
  - Total funding from outside investors: 150 billion rubles
  - Revenue from import substitution projects: 400 billion rubles

- **ANNUAL TURNOVER IN THE RUSSIAN NANOINDUSTRY:**
  - 1.3 trillion rubles
  - Sales of RUSNANO portfolio companies: 600 billion rubles
  - Sales of third-party companies: 700 billion rubles

### INVESTMENT PRIORITIES:

- **Health**
- **Telecommunications**
- **Chemicals and petrochemicals**
- **Biotechnology**
- **Nanoindustry infrastructure**

- Power engineering, mechanical engineering, instrument manufacture
- Electronics and optoelectronics
- Metallurgy and metalworking
- Construction and industrial materials
RUSNANO

is a high-tech development institution focused on diversifying the Russian economy. A successor to Rosnanotech State Corporation, it was established in 2007 as part of the Strategy for Development of the Nanotechnology Industry initiated by the President of Russia.

RUSNANO GROUP

OJSC RUSNANO — Commercialize the latest developments in nanotechnology to create competitive businesses. The company co-invests in economically viable projects directly as well as via investment funds.

RUSNANO MANAGEMENT COMPANY — Manage RUSNANO’s investment portfolio and launch investment funds with external partners aimed at setting up new production facilities in Russia. Private investors (Russian and foreign) account for at least 50% of each fund.

FUND FOR INFRASTRUCTURE AND EDUCATIONAL PROGRAMS (FIEP) — Create infrastructure for the Russian nanotechnology industry, paving the way for innovative ideas to transition out of the laboratory and become business projects. FIEP’s backbone is a national network of nanotechnology centers and engineering companies, while the Fund also helps to train personnel for the national nanoindustry by designing and implementing professional education programs. FIEP also works to expand the market for nanoindustry products by leveraging sectoral and regional programs as well as by promoting public understanding of what nanotechnologies have to offer.
[1] Russian Prime Minister Dmitry Medvedev at the opening of the Hevel production plant of solar cells (Nовоcheboksarsk, Chuvash Republic, 2015)

[2] Production of nanostructured and metal ceramics at the Virial plant (St. Petersburg)

[3] Moscow Mayor Sergei Sobyanin and RUSNANO CEO Anatoly Chubais at the opening of the Crocus Nanoelectronics plant built to produce magnetoresistive memory chips, (Moscow, 2014)

VALUE OF ASSETS

under management at the end of 2014

192 BILLION RUBLES
The RUSNANO Group is shaping infrastructure for the nanotechnology industry

THE FUND FOR INFRASTRUCTURE AND EDUCATIONAL PROGRAMS (FIEP) is forging a nanoindustry mechanism that covers everything from training specialists and selecting promising scientific research to bringing new products to market.

THE NATIONAL NETWORK OF NANOTECHNOLOGY CENTERS works to commercialize tech projects, transforming unique ideas into business plans capable of making headway in a competitive market. Twelve nanocenters opened in nine Russian cities have already nurtured more than 350 startups.

NANOCENTER SHAREHOLDERS AND PARTNERS are private companies, regional governments, research institutions, universities, and individual entrepreneurs in cities all over Russia: Moscow, Kazan, Novosibirsk, Saransk, Samara, Tomsk, Ulyanovsk, Dubna, Zelenograd, Troitsk and Gatchina.

ENGINEERING COMPANIES design and implement nano-production and related technologies in different industries.

FIEP is working to improve Russia’s system of technical regulations and standards so that innovative technologies can be more widely and easily applied.

EDUCATIONAL PROGRAMS train highly qualified personnel to work in the nanotechnology industry. With support from FIEP, 102 new programs have kicked off at Russian universities and have already provided specialized training to 15,000 students (both graduates and professionals from the Russian industry being retrained). Several of the country’s leading scientific universities (Moscow Institute of Physics and Technology, Moscow Institute of Engineering and Physics, Moscow Institute of Steels and Alloys) have joined forces to create a Department for High-Tech Enterprise. About 500 Russian high schools are participating in the RUSNANO School League, which promotes best practices in science education.
[1] Nanograd Summer School, Istra (Moscow region, 2013)
[3] TECHNOSPARK Nanocenter, Troitsk (Moscow)
RUSNANO Priorities

CREATION OF THE RUSSIAN NANOINDUSTRY
RUSNANO has invested nearly 159 billion rubles since its inception in 2007, thanks to which a total of 57 factories and R&D centers are now functional in 27 Russian regions. In 2014 production by RUSNANO portfolio companies generated 227 billion rubles in revenue.

IMPORT SUBSTITUTION AND PRODUCTION FOR EXPORT
51 of RUSNANO’s portfolio companies are focused on domestic production of goods to replace imports and export to foreign markets. The target value of such output is 400 billion rubles by 2020. With that said, goods are already being exported to more than 50 countries, and RUSNANO companies currently control 3.6% of the global hi-tech market.

TRANSFER OF ADVANCED FOREIGN TECHNOLOGIES
More than 20 of RUSNANO’s portfolio companies (Compass-EOS, Crocus Nanoelectronics, Soft Machines, Bebig, NeoPhotonics, Akvanova, SynBio, and others) are applying nanotechnologies that have been brought to Russia from the US, the UK, France, Germany, the Netherlands, and Israel. RUSNANO also invests in several promising foreign companies basing their research and manufacturing in Russia, including Bind and Selecta (nanocapsules for targeted delivery of drugs inside the human body), Mapper Lithography (lithographic equipment), and others.

RETURN ON INVESTMENT AND PROJECT EXITS
RUSNANO has already sold its interest in 18 projects, either in full or in part, staying true to the Group’s profile as a portfolio investor. Successes include a 41% IRR (double the target value) on an investment of 1.3 billion rubles in Nearmedic Pharma, a company building full-cycle pharmaceutical production in Kaluga region. The company’s main product, an innovative antiviral drug called Kagocel, has taken over first place in its segment in Russia with a 19% market share.
new high-tech jobs,
57 new manufacturing and R&D sites

[1] Nano-coated steel pipes, Chelyabinsk Pipe Plant (Chelyabinsk)


[3] President of the Republic of Bashkortostan Rustem Khamitov and RUSNANO CEO Anatoly Chubais at the opening of the Nuclear Medicine Center (Ufa, 2014)
Top 10 innovative technologies in Russia, commercialized with backing from RUSNANO

1. Metaclay (Karachev, Bryansk region) **INDUSTRIAL MATERIALS**
   POLYMERIC ANTI-CORROSION COATINGS TO PROTECT OIL AND GAS PIPELINES. Service life jumps to 60-80 years, all while featuring improved resistance and durability in Russia’s extreme temperatures. The company delivered 20,000 tons of product to customers in 2014, earning 2.4 billion rubles in revenue. By the end of 2015 Metaclay plans to control more than 50% of the Russian market for polymer anti-corrosion coatings.

2. Novomet Group (Perm) **MECHANICAL ENGINEERING**
   HIGH-EFFICIENCY SUBMERSIBLE PUMPS FOR THE OIL INDUSTRY with nanostructured protective coatings. Energy consumption is 20-30% lower than competitors, while resistance to corrosion and water abrasion is 1.5-2x higher. Novomet pumps are now used to produce 20% of Russia’s oil and are also exported to Iraq, India, Colombia, Egypt, and Indonesia.

3. PET Technology **MEDICINE**
   POSITRON EMISSION TOMOGRAPHY AND COMPUTER TOMOGRAPHY (PET/CT). A new national network of nuclear medicine centers using PET/CT is providing highly accurate cancer diagnoses. The first PET center, launched in Ufa in 2014, served nearly 4000 patients over its first year. In 2015 similar centers have been opened in Lipetsk, Kursk, Tambov and Orel, with each serving up to 5000 patients annually. PET Technology also produces radiopharmaceuticals for use at the centers.

4. Crocus Nanoelectronics (Moscow, Russia), Crocus Technology International Corp (USA) **MICROELECTRONICS**
   MAGNETORESISTIVE MEMORY WITH THERMAL-ASSISTED SWITCHING (TAS-MRAM) combines the advantages of flash memory (non-volatile and high-capacity) and DRAM (high-speed read/write). Crocus chips can be used for SIM cards, biometric passports, network switches, bank cards, sensors, and industrial automation. The US-based company opened its first plant in Russia at the Moscow Technopolis.

5. Mikron, (Zelenograd, near Moscow) **MICROELECTRONICS**
   RUSNANO TEAMED UP WITH MICRON, THE LARGEST MICROELECTRONICS FIRM IN THE CIS, to set up a production of super-large integrated circuits. It is focused on the microelectronics market’s fastest-growing segments: navigation systems (GLONASS), industrial electronics, chips for Russian biometric passports, bank and social security cards, SIM cards, and RFID tags.
TAXES

paid to the Russian budget from RUSNANO projects by the end of 2014

27 BILLION RUBLES

[1] Production of micro sources for cancer treatment by Bebig (Dubna, Moscow region)

[2] Automated radiosurgery on cancer patients with sub-millimeter accuracy, Nuclear Medicine Center (Ufa, Bashkortostan)

[3] Production of radiopharmaceuticals for PET/CT diagnostics, PET Technology (Yelets)
Ocsial SA (Novosibirsk) **INDUSTRIAL PRODUCTION**

**CARBON NANOTUBES (NANOMODIFIERS)** used as additives to improve the performance of metals, polymers, rubber, and composites (greater electrical and thermal conductivity, durability, and other mechanical properties). Production in Russia makes mass application of nanomodifiers financially viable for the first time, as Russian carbon nanotubes cost five times less to produce than the foreign analogues.

ELVEES-Neotec (Zelenograd, Moscow) **ELECTRONICS**

**COMPUTER VISION.** Russia’s first processor with 40-nanometer transistors, used for smart computer vision systems (identifies and classifies people, animals, luggage, and cars; reads labels; and much more). Its applications include anti-terrorism, security, safeguarding transport as well as oil and gas facilities (already used by Transneft and Lukoil, both Russian companies), and the production of tablets, laptops, and smartphones.

DSK Grad (Naro-Fominsk, Moscow Region) **CONSTRUCTION**

**NANOMATERIALS FOR PREFABRICATED HOUSING.** RUSNANO has teamed up with Morton, a Russian housing developer, to build the country’s most up-to-date facility for the production of prefabricated housing modules. The project fits RUSNANO perfectly, as DSK Grad applies new technology developed by several of the Group’s other portfolio companies: SP Glass (energy-efficient windows), Galen (basalt reinforcements), and Akrilan (paints and concrete plasticizers). New houses built using those solutions enjoy a 30-40% boost in energy efficiency. DSK Grad expects to earn 7.8 billion rubles in revenue in 2015.

NEARMEDIC PHARMA (Obninsk) **MEDICINE**

**ANTI-VIRAL DEFENSE.** Nearmedic Pharma’s new plant offers full-cycle production of innovative antiviral drugs: the company’s flagship product, Kagocel, treats influenza, acute respiratory infections, and other illnesses, ranking among the ten best sellers in its segments in Russia.

RM Nanotech (Vladimir) **ENERGY AND UTILITIES**

**NANOSTRUCTURED MEMBRANES FOR WATER AND GAS PURIFICATION.** RM Nanotech built Europe’s largest nanostructured membrane plant, offering purification solutions that are superior and often cheaper than the existing competition. Customers include Russian oil and gas companies (Lukoil, Gazprom, and Tatneft) as well as Nizhnekamsk power utility, and Yuzhuralzoloto, the Russia’s biggest gold mining firm. RM Nanotech also expects to win the business of municipal water utilities.
INVESTMENTS IN R&D by RUSNANO portfolio companies by the end of 2014

10 BILLION RUBLES

[1] Production of single-walled carbon nanotubes, Ocsial (Novosibirsk)


[3] Russian Construction and Housing Minister Mikhail Men and Governor of Moscow region Alexander Vorobyev at the opening of the DSK-Grad prefabricated housing plant (Naro-Fominsk, 2015)
Key performance indicators of RUSNANO Group in 2014

- **SALES BY RUSNANO COMPANIES**
  227.2 billion rubles, more than 200% of the target (100 billion rubles)

- **SALES BY INDEPENDENT RUSSIAN NANO COMPANIES**
  719 billion rubles (550 billion rubles expected)

- **FUNDS RAISED FROM CO-INVESTORS**
  7.4 billion rubles (target: 7 billion rubles)

- **NATIONAL NANOCENTER NETWORK**
  12 nanotechnology centers opened by 2015. Over 350 innovative startups launched (target: 273)

- **REVENUE EARNED BY THE NATIONAL NANOCENTER NETWORK**
  1.4 billion rubles

- **SUPPORT FROM THE FUND FOR INFRASTRUCTURE AND EDUCATIONAL PROGRAMS**
  102 educational programs funded. About 15,000 graduates and working specialists trained

**Total investment in portfolio companies and funds**

158 billion rubles

**Investment portfolio**

105 projects in 27 Russian regions

**Investment portfolio value (IFRS)**

113 billion rubles

36% GROWTH OVER 2013

**Net profit (IFRS)**

8.2 billion rubles