SCIENTIFIC AND EDUCATIONAL CENTER **«NORTH:** THE TERRITORY OF SUSTAINABLE DEVELOPMENT»

INTERREGIONAL SCIENTIFIC AND EDUCATIONAL CENTER OF THE WORLD LEVEL:

NORTH:
THE TERRITORY OF SUSTAINABLE DEVELOPMENT

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INFORMATION ABOUT CENTER IN DIGITS:

5
regions of RF - participants of SEC

23
scientific organizations

47
real sector companies

13
universities

CLUSTERS OF SEC «North»

1. Comprehensive approach to energy supply and new forms of energy
2. Sustainable energy use in the ctyolithozone
3. Technology of economic activity and new materials
4. Biotechnology, medicine and health care in the Arctic
5. Technological ensure social stability in the North-East of Russia

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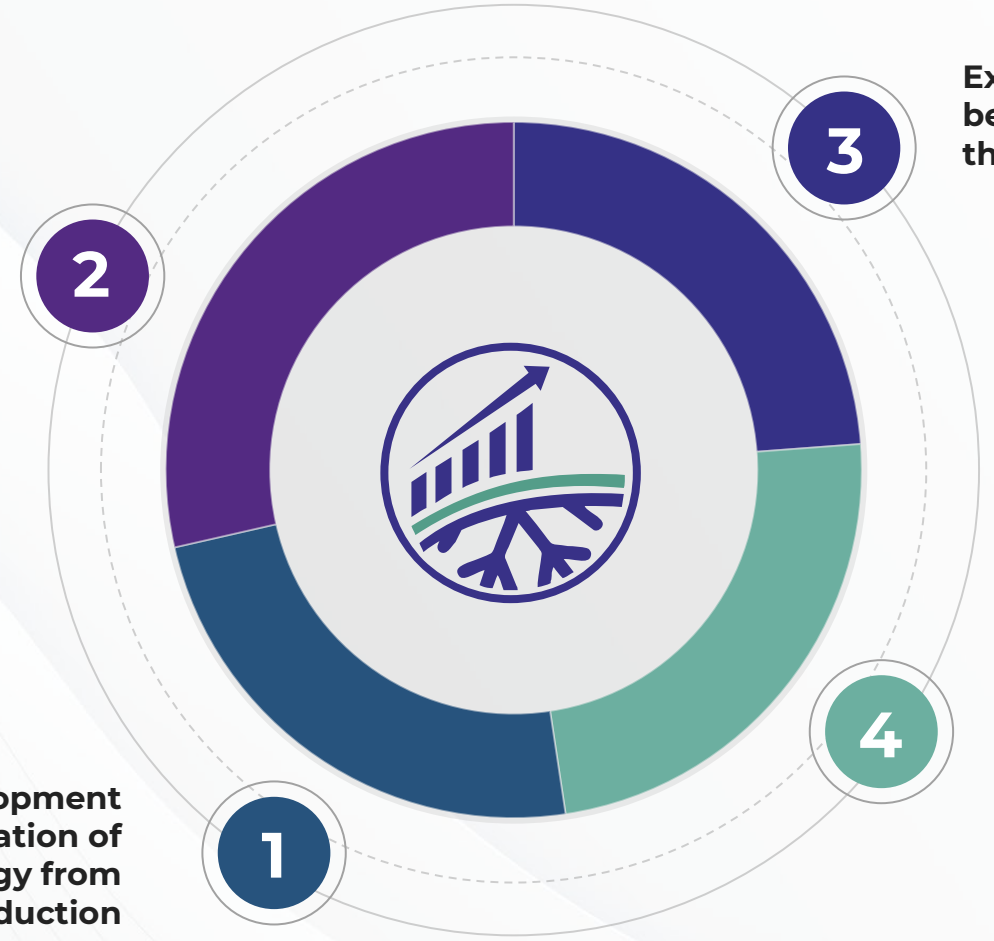
ACTIVITIES OF THE CENTER



1. **Development and implementation of technology from prototype to production**
2. **Implementation and development of research support system and technologies**
3. **Exchange of practices between regions to support the program of SEC «North»**
4. **Organizing and conducting awareness raising events at the international level**

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PRACTICES OF RUSSIAN ENTITIES IN ORDER TO SUPPORT THE PROGRAM OF SEC «NORTH»

1. Grants for non-profit organizations for basic and exploratory research, other research support measures
2. Applied scientific research in the field of public health, national economy, environment, research on priority areas of social and economic development
3. Scientific support and monitoring of exploration in the Arctic, extraction of fish resources and marine mammals
4. Grants for young scientists, realization of scientific and technological potential of young people
5. Sustainable development program for indigenous peoples, ethnic cultural preservation and dissemination of national heritage

985 million rubles

530 million rubles

21 million rubles

121 million rubles

80 million rubles

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IMPLEMENTATION AND DEVELOPMENT OF RESEARCH SUPPORT SYSTEM AND TECHNOLOGIES

The North tour

Газпромнефть · АЛРОСА · GV GOLD ВЫСОЧАЙШИЙ · САХА ТРАНСНЕФТЕГАЗ

Aggregator of federal financial measures to support projects and technologies

Digital assistant «GrantMaster»

ИИ Агент ГрантМастер

Project companies

АО «СЕВЕР СТТ»

СЕВЕР ТЕНТ

Federal grant of Russia's Ministry of Education and Science

>360

million rubles

Interregional consortia of 12 Russian regions in collaboration with SEC of Perm Region, SEC of the South and SEC «Yenisei Siberia»

- Perm region;
- Krasnoyarsk region;
- Republic of Khakassia;
- Republic of Tuva;
- Volgograd region;
- Krasnodar region;
- Rostov region

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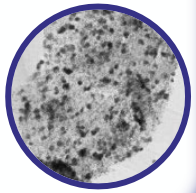
TECHNOLOGIES OF THE CENTER: FROM PROTOTYPE TO PRODUCTION

PROTOTYPES, TESTED BY SCIENTIFIC ORGANIZATIONS IN REAL CONDITIONS

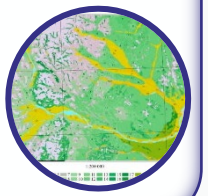
The prototype of nanocatalyst for electrolyser



Experimental hydrogen power unit for low-tonnage ships

Stand with hydrogen production system through electrolysis method for educational program usage

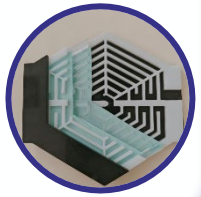
Informational system HydrogenApp for analyzing energy efficiency, greenhouse gas emissions and carbon footprint



Welding technologies for polymeric pipes at low temperatures

New method of DNA-diagnostics for conducting hereditary diseases and mutations, production personal methods of treatment

The hybrid plasma filter, which normalizing blood parameters of patients with hepatic impairment



Collagen hydrolysate for the treatment of wounds

Satellites «Khors» №3 and №4, which were successfully launched into orbit under the program «UniverSat»

AI and LLM algorithms for communication with robots

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TECHNOLOGIES OF THE CENTER: FROM PROTOTYPE TO PRODUCTION

TECHNOLOGIES WITH HIGH DEGREE OF READNESS, WHICH ARE MADE BY SCIENTIFIC ORGANIZATIONS TO THE CUSTOMER'S BENEFIT

Universal biological product for remediation of soil from oil pollution

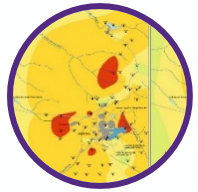
Bio oil sorbents

New cleaning methods, providing a high helium extraction rate from gas even in low temperature conditions

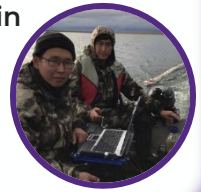
Specialized software complex for automated wildfire prediction

New forecasting methods of diamond potential

New gold deposits forecasting methods



New georadar tracking methods to search for fossil mammoth bones in permafrost conditions



Database of ethnocultural heritage (languages, folklore, archaeological and ethnographic artifacts

An App with correct pronunciation record for learning Koryak language

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TECHNOLOGIES OF THE CENTER: FROM PROTOTYPE TO PRODUCTION

TECHNOLOGIES AND PRODUCTS, WHICH WERE IMPLEMENTED INTO PRODUCTION OF THE REAL SECTOR OF THE ECONOMY

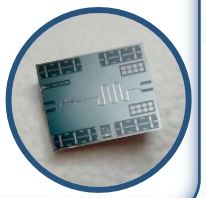
Technological polyethylene canisters 25 and 40 liters production line for pouring and transportation, storage motor fuel (diesel, gasoline), sustainable for use at temperatures from -55 up to +55 degrees

Tonic«YES»

Bakery products with betulin

Energy saving system based on small hydropower plants for gold miners

The first Russian contract manufacturing of superconducting quantum processors



Seals KN-50, KN-70, KN-80, and other rubber seals and materials for transport. This seals are able to maintain efficiency in -60 degrees

Sublimated bars and tea based on wilding

Fruit and berry leather made without sugar from wild berries of Yakutia

Moisturizer for dry and atopic skin based on natural components

Medication «Sakhabactisubtil» for the prevention and treatment of animal diseases

Combination vaccine from colt distemper and rhinopneumonia

(scientific novelty is confirmed by 49 patents)

Portable garages «Avtoberloga» for vehicles protection in the harsh winter

GROWBOX – plant growing system that allows to adjust the microclimate and maintain favorable conditions for growing vegetables and greens. This system has own source of light which as close to natural sunlight

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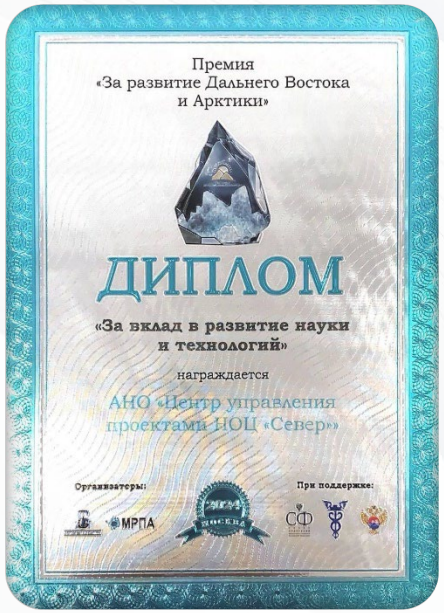
RECOGNITION OF THE ACTIVITIES OF THE CENTER

1. **Group of sustainable development SEC of the world level 2022-2023**
2. **Award «Development of the Far East and Arctic», nomination «Technological development», 2024**
3. **Finalist GenerationS Innovation Awards 2024**



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THE ARCTIC AS A GLOBAL REGION, BUT NOT A TERRITORY OF THE ARCTIC STATES

- Navigation, surveillance, satellite communication systems, resistant to magnetic anomaly, under-ice navigation and acoustics
- Drones that can work in extreme conditions, for intelligence and logistics
- Renewable energy resources and compact reactors; technologies of climate modeling, prediction of weather patterns for agricultural adaptation
- Autonomous underwater and surface vehicles for research, monitoring, including state-of-the-art sensors, AI and control system
- Technologies in energy recourses production and transportation
- Materials and engineering solutions for building in permafrost conditions: seaport, railway, scientific stations
- Powerful icebreakers, including nuclear reactors

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SECURITY AND ADAPTATION TO CLIMATE CHANGE

- Power plant, energy storage systems for integration renewable energy resources into a single energy microgrid
- Systems to deal with oil splits, monitoring and catching methane, waste management and removing pollutants
- Climate models and powerful AI-algorithms for crunching climate and environmental data
- Drones, underwater, electric and hydrogen vehicles; modern icebreakers
- Protection of isolated power grids and telecommunications from cyber attacks
- Building technologies in permafrost conditions, solutions for local food production (hydroponics, greenhouses)
- Platforms and equipment for ensuring quality telemedicine and distant educational services

DFC U.S. International Development Finance Corporation

EXPORT-IMPORT BANK OF THE UNITED STATES

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THE STRENGTHENED PRESENCE AND COORDINATION IN THE ARCTIC

- Counter Russia technological advantages and creating competition in requests for the development technologies in the Arctic
- Space monitoring
- Addressing risks of the technological gap from Russia and China in autonomous systems and mineral resources
- Infrastructure in the Arctic, including building materials; systems of real-time monitoring infrastructure conditions
- The development of drones and renewable energy resources

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SUSTAINABLE DEVELOPMENT AND MITIGATION OF CLIMATE CHANGE

- Catching microplastics from synthetic fabrics(ex. Filters for washing machine) and tires (ex. Wear-resistant materials with less emissions)
- Renewable energy resources that are capable of working in the arctic climate conditions (low temperatures, darkness)
- Electric and hydrogen vehicles (aviation, sea vessels) adapted for use in arctic conditions, including energy with high density storage systems
- Fishing monitoring and control system
- Small ship refurbishment (less than 300 tons) in accordance with the requirements Polar Code, including air discharge purification system and energy-efficient motors
- New polar orbiting satellites to establish a reliable connection and viewing over high latitude

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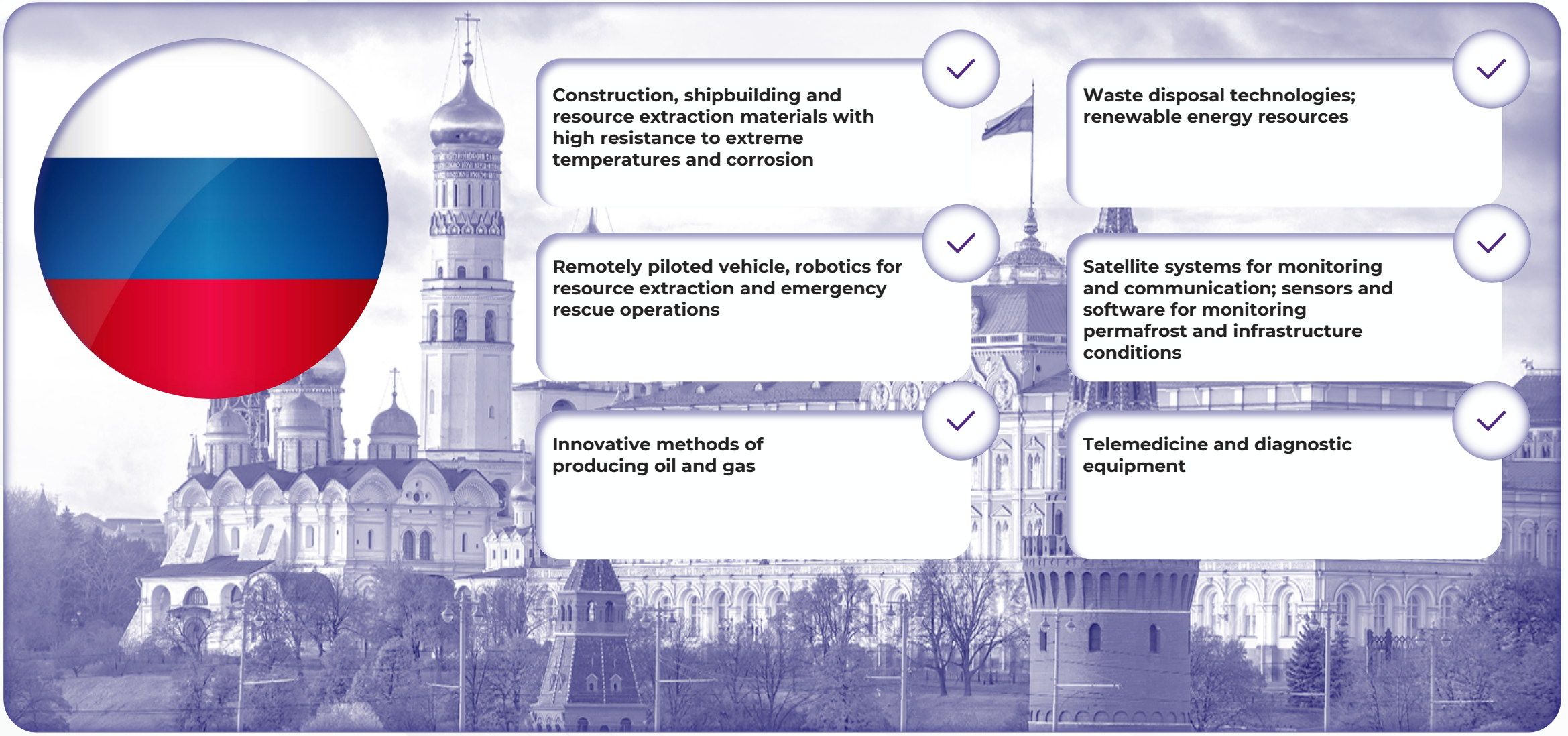
ECONOMIC GROWTH, STRENGTHENING POLITICAL STABILITY AND INTERNATIONAL COOPERATION



- Construction, shipbuilding and resource extraction materials with high resistance to extreme temperatures and corrosion
- Waste disposal technologies; renewable energy resources
- Remotely piloted vehicle, robotics for resource extraction and emergency rescue operations
- Satellite systems for monitoring and communication; sensors and software for monitoring permafrost and infrastructure conditions
- Innovative methods of producing oil and gas
- Telemedicine and diagnostic equipment

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PUBLIC INVESTMENT IN RESEARCH IN THE ARCTIC

731
projects

230
universities and scientific organizations

10,7
billion rubles

ARCTIC TECHNOLOGY MARKET

DRONES FOR MONITORING AND NAVIGATION

- Drones for infrastructure inspection and delivery — SQUADRONE SYSTEM, Air Methods, stellar tech, DELAIR
- Defense drones — Patria
- Ice monitoring — ICEYE
- Drones for monitoring and logistics — KONGSBERG, NTNU
- Hydrogen drone Skyblade 360 UAV up to 6 hours of flight — ST Engineering

ENERGY

- Small modular reactor — energy harbor, VISTRA, $3,4 billion
- Hydrogen sets — Statkraft, $1,9 billion, Lhyfe, UNITED HYDROGEN, $1,6 billion, HYGN
- Small hydropower plants — ORIENT GREEN POWER COMPANY LIMITED
- Portable fuel elements — THE LILLIS TECHNOLOGY GROUP
- Compact reactors (thermonuclear fusion) — Commonwealth Fusion Systems

SUSTAINABLE DEVELOPMENT AND ECOLOGY

- Wind, solar, green energy
  - $2,1 billion — NTT Anode Energy
  - $7,3 billion — NuStar, חברת החשמל
  - $3,4 billion — MASDAR
  - $6,2 billion — mip México Infrastructure Partners, Invenergy
- Wind energy and hydrogen storage (hybrid systems) — GLENCORE Canada
- Modular electrolysis of sea water for extracting hydrogen — Brineworks

LOGISTICS AND COMMUNICATION

- Hydrogen mini-buses — MMI
- Steering the icebreaker fleet with AI — KONGSBERG, KVH
- Satellite communication with CO_2-neutral data-center. Fiber-optic network for remote regions — GCI, ARCTIC SPACE TECHNOLOGIES

North America and Europe

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The Ministry of science and higher education of the Russian Federation

FINANCING:
- new materials;
- waste management and pollution remediation

Other requirements not closed.

THERE IS FREAT POTENTIAL FOR ATTRACTING INVESTMENTS IN OTHER TECHNOLOGIES

Electric and hydrogen vehicles (aviation, sea vessels)	
Space monitoring; systems of real-time monitoring infrastructure conditions	
New polar orbiting satellites to establish a reliable connection and viewing over high latitude	
Small ship refurbishment (less than 300 tons) in accordance with the requirements Polar Code, including air discharge purification system and energy-efficient motors	
Climate models and powerful AI-algorithms for crunching climate and environmental data	
Protection of isolated power grids and telecommunications from cyber attacks	
Building technologies in permafrost conditions, solutions for local food production (hydroponics, greenhouses)	
Renewable energy resources and compact reactors	
Materials and engineering solutions for building in permafrost conditions: seaport, railway, scientific stations, shipbuilding and resource extraction	

Drones that can work in extreme conditions, for intelligence and logistics	
Navigation, surveillance, satellite communication systems, resistant to magnetic anomaly, under-ice navigation and acoustics	
Technologies in energy recourses production and transportation, including oil and gas, emergency rescue operations	
Power plant, energy storage systems for integration renewable energy resources into a single energy microgrid	
Systems to deal with oil splits, monitoring and catching methane, waste management and removing pollutants	
Telemedicine and diagnostic equipment	
Sensors and software for monitoring permafrost and infrastructure conditions	
Autonomous underwater and surface vehicles for research, monitoring, including state-of-the-art sensors, AI and control system	
Powerful icebreakers, including nuclear reactors	

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ACTIVITIES OF THE
SEC «North» up to 2030

- **CRYOTECHNOLOGIES FOR THE ARCTIC**
- **RATIONAL ENVIRONMENTAL MANAGEMENT IN CRYOLITOZONE**
- **UNMANNED AIRCRAFT AND LOGISTIC MODELS**
- **COMPREHENSIVE APPROACH TO ENERGY ACCESS AND NEW ENERGY SOURCES**
- **BIOTECHNOLOGIES AND TECHNOLOGIES OF THE AGRO-INDUSTRIAL COMPLEX**

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Become a part of SEC «North»!

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Thank you for your attention!