

PUBLIC JOINT STOCK COMPANY TRANSNEFT
(TRANSNEFT)

**Innovation Development Programme
of Transneft for 2022-2026**

PROFILE

Moscow
2021

1. General Information

The Profile of the Transneft Innovative Development Programme (hereinafter referred to as the IDP) is developed and published with the aim of timely informing third-party organisations that are potential partners in the implementation of the IDP about the directions of innovative development of Transneft (the Company) and Transneft subsidiaries (TS), ongoing changes in innovation policy, the needs of Transneft and its subsidiaries in attracting external competencies and resources.

The IDP Profile is primarily intended for:

- third-party Russian organisations – potential suppliers of innovative solutions for Transneft and TS in order to adapt their research and development and production plans to the future needs of Transneft and TS;
- third-party Russian educational organisations in order to adapt their personnel training plans to the prospective needs of Transneft and TS;
- foreign organisations in order to identify areas of possible cooperation with Transneft and TS in the innovation field.

2. Goals and key performance indicators of Transneft innovative development for 2022-2026

The objectives system of the Transneft Innovation Development Programme are closely related to the objectives stated in corporate strategic documents, including the Development Strategy and the Transneft Long-Term Development Programme.

The objectives of the Transneft Innovation Development Programme for 2022-2026 are:

- increasing Transneft's level of technological development and the role of innovation in achieving the Company's strategic goals;
- introduction of technologies to increase the throughput capacity of trunk pipelines;
- application of advanced industry-specific technologies that ensure a high level of reliability, as well as industrial and environmental safety;
- reducing dependence on foreign manufacturers and increasing the share of high-tech equipment and domestically produced software;
- development of technologies aimed at improving energy efficiency and energy saving.

Key performance indicators of Transneft IDP for 2022-2026 are:

- The volume of products manufacturing developed as a result of the implementation of research and development (R&D) plans and Transneft's innovative projects, RUB million.
- Number of titles of protection for intellectual property obtained during the reporting period, pcs.
- Increased diagnostic data transparency, %.
- General level of the specific number for the TP and onsite facilities of the TP, people/object.
- Number of TS operating in the corporate information system (CorIS) (cumulative), pcs.

The IDP goals and KPI take into account the specifics of the Company as an infrastructure company focused on "internal commercialization" of the innovative projects's and R&D results, meaning their application at the TS trunk pipeline transport facilities to ensure the safety and reliability of their operation. Innovative projects and applied R&D are also aimed at ensuring the complete independence of the Company from foreign markets for the products supply (import substitution).

3. Medium and long term priority technologies and areas of technological development of Transneft, the need to attract external competencies

Considering the innovation development goals and based on the findings of the technology audit, a list of technology priorities and technology challenges to be addressed in the medium term has been identified:

- improvement of applied methods and equipment for in-line inspection of trunk pipelines, researching promising in-line inspection technologies;
- developing domestic metrological support systems for the oil and petroleum products

pipeline system;

- development of a comprehensive system for monitoring the technical condition of trunk pipelines built or operated in areas where geological hazards may develop;
- developing environmental equipment to maximise import substitution;
- increasing import substitution and developing Russian production of drag-reducing agents, energy-efficient pumps and electric motors, and oil and petroleum products' lease automatic custody transfer units;
- creation of a single centralised ERP system Corporate Integrated Management Information System of Transneft and its subsidiaries.

In addition, Transneft Digital Transformation Strategy will be a separate area of development. Among other things, it includes such areas as:

- Development of digital solutions for managing commodity transportation activities;
- Development of digital solutions to provide control of oil and petroleum products movement;
- Development of digital solutions to improve trunk pipelines' reliability and efficiency;
- INFOMAX (digital engineering);
- INFOMAX (digital construction);
- Development of digital financial management solutions;
- Digital HR;
- Digitalisation of procurement and interaction with counterparties;
- Digital back office.

For all of the above mentioned technologies, Transneft has the necessary competence to develop and introduce new products that can improve the Company's efficiency and safety. With that said, it is possible to outsource the joint implementation of innovative projects and the purchase of finished products, if they are unique and economically feasible for a particular project.

4. Key Transneft innovative projects for 2022-2026

As part of the IDP for 2022-2026, the implementation of the following key innovative projects is planned:

1. Development of high-precision in-line inspection systems for ensuring reliability of trunk pipeline facilities.
2. Development and implementation of domestic metrological support systems for oil and petroleum product accounting operations.
3. Development and production of domestic drag-reducing agents with improved rheological characteristics.
4. Production of energy efficient pumps with increased efficiency of domestic production.
5. Development and production of high-voltage induction and synchronous electric motors of improved design with improved characteristics.
6. Development of a comprehensive system for monitoring the technical condition of trunk pipelines with an assessment of their current and predicted condition".
7. Creation of a single centralised ERP system Corporate Integrated Management Information System (CIMIS) of Transneft and its subsidiaries.

Description of the needs for attracting external competencies for the implementation of key innovative projects is given in table 1.

Additionally, not only projects and activities for the immediate future, but also areas for technology development and future research are identified for the period up to 2036:

- Monitoring and geolocation;
- The Internet of Things for industrial safety and occupational health;
- Improvement of the construction and operation of storage tanks for oil and petroleum products;
- The technical condition control system with the digital twins technology for trunk pipelines;
- Tools for planning and controlling transportation processes;

- Computer modelling;
- Improving the system of diagnostic inspections and surveys;
- Management of greenhouse gas emissions;
- Improving regulation under Industry 5.0;
- Smart power supply technologies;
- Robotic systems;
- Artificial intelligence technologies.

Table 1 - Description of the needs in attracting external competencies for the implementation of key innovative projects

No .	Project Name	Needs to attract external competencies
1	Development of high-precision in-line inspection systems for ensuring reliability of trunk pipeline facilities	External participants with unique technologies and/or diagnostic techniques may be engaged (for introduction of in-line inspection methods and technologies). The involvement of external participants for the implementation of the project is carried out through R&D or bidding for the supply of products.
2	Development and introduction of domestic metrological support systems for	During the Project implementation, cooperation with a number of external contractors for technical design and metrological support is planned.

No .	Project Name	Needs to attract external competencies
	oil and petroleum product accounting operations	
3	Development and production of domestic drag-reducing agents with improved rheological characteristics	Involving external partners is not planned. Development and production is carried out by Transneft subsidiary resources.
4	Production of energy efficient pumps with increased efficiency of domestic production	During the Project's implementation, there is a need to attract external participants to perform the following works: examination of technical solutions, foundry production of body parts and others.
5	Development and production of high-voltage induction and synchronous electric motors of improved design with improved characteristics	Involving external partners is not planned. Development and production is carried out by Transneft subsidiary resources.
6	Development of a comprehensive system for monitoring the technical condition of trunk pipelines with an assessment of their current and predicted condition	The project will be implemented by Transneft's internal resources with the involvement of RAS organisations, higher education institutions and external organisations on a competitive basis with the best practices and competence. In the process of implementing the Project, there is a need to attract external participants to perform the following works: - Development of import-substituting equipment and software for the development of a local automated geodetic network; - High precision laser scanning; - Development by an algorithm for calculating frost heaving of soils of freezing soils in natural conditions; - Geological surveys and seismic micro-zoning of gate valves sites.
7	Creation of a single centralised ERP system Corporate Integrated Management Information System (CIMIS) of Transneft and its TS	The ERP system is to be built on the Russian-made 1C: ERP Enterprise Management platform. The project implementation will involve outsourcing.

5. Development of interaction mechanisms of Transneft with potential partners in the field of innovation

In line with the IDP implementation, it is planned to further develop interaction with third-party organisations, apply the principles of “open innovation” in a number of areas.

5.1. Procurement of innovative solutions and interaction with suppliers of innovative technologies and products, including small and medium companies

The Company's procurement activities are carried out in accordance with the requirements of Federal Law No. 223-FZ On the Procurement of Goods, Works and Services by Certain Legal Entities dated 18 July 2011 on the principles of open competition.

In recent years, the Company has created all the basic mechanisms to increase the transparency of procurement procedures, information transparency, and the formation of sustainable partnerships. These include, in particular, a “single window” system for implementing innovative solutions, the SME Partnership Programme and the organisation of work of the Procurement Audit Advisory Body. The most important element of the Company's strategy and Long-term Development Programme is the Programme for Setting up Manufacture of Imported Products' Analogues for Oil and Petroleum Products Trunk Pipeline Transportation in the Russian Federation Together, these mechanisms provide favourable access to Transneft procurement for the most responsible and qualified suppliers.

The “single window” system for introduction innovative solutions was established in 2014. The system operation rules are described in the Regulation on the procedure and rules for introducing innovative solutions into the activities of Transneft and Transneft subsidiaries.

To involve a wide range of potential suppliers in the Company's innovation activities in advance and to timely inform them of its needs, the following activities are foreseen and carried out:

- posting information on the procedure and rules for procurement and implementation of innovative solutions in the Customer's activities on Transneft's website in the Sustainable Development - Innovations section (<https://www.transneft.ru/development/innovations/>);
- posting information on SME support for Transneft procurement (at <http://www.transneft.ru/tenders/business>);
- posting information on the procedure for collecting innovation proposals (the “single window” system), including the Regulations on the procedure and rules for introducing innovative solutions into the activities of Transneft and Transneft subsidiaries, a form for submitting innovation proposals, a model contract for expert review, a list of needs of Transneft subsidiaries in new equipment, technologies and materials in the public domain on the Internet (<https://niitn.transneft.ru/innovacii/innovation/>).

The organisation responsible for interaction with potential suppliers of innovative solutions is the Pipeline Transport Institute (Transneft subsidiary).

5.2. Partnership Development in Education and Science

Scientific and educational organisations act as an important source of competence, knowledge and innovation for Transneft. Improvement of the Company's system of partnership with scientific and educational organisations is aimed at addressing the Company's technological challenges and narrowing the gap with foreign peers, including by expanding and increasing the efficient use of competencies, scientific and technological groundwork, as well as the research and innovation infrastructure of scientific and educational organisations.

During the IDP implementation, close cooperation is planned with higher education institutions and scientific organisations, both as part of technology platforms and through bilateral cooperation agreements and direct contracts, in the following main areas:

- carrying out R&D activities;
- maintaining facilities and equipment, research and test base;
- service rendering;
- supporting basic departments;
- advanced training and retraining of engineering and technical personnel;
- targeted training for students;

- corporate scholarships and social payments programme, organisation of scientific and technical events;

- carrying out all types of student internships, including internships for teaching staff.

Transneft focuses on developing a continuing education system, including training, advanced training and professional retraining processes in corporate and state educational organisations from school to university. With this in mind, the Company strives to provide the optimal combination of developing its own corporate training system and attracting the educational competencies of third-party organisations.

Transneft and TS during the programme period will pursue further effective cooperation with higher education institutions on an annual basis in the following main areas:

- organising a targeted training system for specialists in higher education programmes through the development and improvement of the system for detailing the quota of targeted training specifically for Transneft subsidiaries through the Ministry of Energy of the Russian Federation and the Ministry of Education and Science of the Russian Federation;

- engaging lead specialists of the Company to specialised educational organisations to give lectures on issues of engineering and technology of pipeline transportation;

- advanced training and professional retraining of employees of Transneft in specialised higher education institutions;

- organisation of group occupational internships of students in TS with practical and laboratory classes at the Company;

- engaging students during occupational and pre-graduation internships to work in the workplace, subject to the preliminary receipt of the corresponding working profession, as part of the curriculum of study at the higher education institution;

- writing graduation theses exclusively on the topics proposed by industry experts and agreed upon by the core department of the higher education institution;

- regular internships for higher education institution professors in Transneft subsidiaries, introduction to the equipment used and technologies applied, including those developed as part of the Innovation Development Programme.

- To improve the quality of education in specialised higher education institutions the following measures will be carried out:

- improving the forecasting system for the needs of oil and petroleum products pipeline transportation in senior personnel and engineering and technical personnel;

- developing and updating professional standards in the field of oil and petroleum products pipeline transportation;

- developing and updating further education programmes in cooperation with higher education institutions;

- supporting specialised departments and occupational internships system for professors at Transneft subsidiaries.

- application of digital technologies (virtual reality, augmented reality (VR-technology)) to form modules of training and vocational education programmes to form competences in the field of maintenance and repair of pipeline transportation facilities. Development of software modules mimicking the processes of line and onsite operating facilities, with the ability to simulate abnormal situations.

On an annual basis, the material and technical base of higher education institutions and basic departments will be supported. Employees of the Company will continue to participate in teaching and developing curricula, training programs, retraining and advanced training of personnel of Transneft and TS. Senior students will be involved in occupational internship and pre-graduate work at the Company's business units and TS.

Implementation of projects to work with young specialists will continue (including work with schoolchildren and students, payment of corporate scholarships, youth and professional competitions).

5.3. Development of interaction with technology platforms (TPs)

In the programme period, Transneft plans to take part in the activities of technological platforms (TPs) which correspond to the profile of the Company, as well as expand the forms

of such cooperation.

The development of the mechanism of information exchange with relevant TP about current and future needs for innovative technologies and products will continue, as well as the development of opportunities to attract specialised TPs and their participants for joint work and projects.

In 2022-2026, the Company plans to participate in the following activities for interaction with the relevant TPs:

- participation in the activities of relevant technology platforms for forecasting and monitoring scientific and technological development, including monitoring information on the best available foreign technologies, and monitoring the state of the core scientific and technological field in Russia;
- participation in the development and adjustment of strategic research programmes of relevant technology platforms, including the preparation of proposals on the topics of works and projects in the interests of the Company to be implemented as part of the implementation of strategic research and development programmes;
- participation of the Company in the expert evaluation of research and development projects carried out as part of the technological platforms, including through the participation of Company representatives in the relevant advisory bodies of the relevant technological platforms (expert and scientific and technical councils);
- participation in the development and approval of the regulatory framework in the field of technology of common interest to the Company and the technology platform, including draft technical regulations and standards;
- Preparation of proposals for the improvement of existing and development of new educational and professional standards based on technology platforms.

5.4. Implementation of the innovative potential of the regions

In the period 2022-2026, bilateral cooperation with regional innovative production clusters is to be expanded and developed in the following areas:

- joint performance of R&D activities;
- informing and advising clusters members about ongoing and planned research and innovation projects of Transneft;
- mutual information of the parties about ongoing and planned activities;
- use of the Innoscope Russian Centre for Open Innovation portal, in particular the posting of technology and engineering requests, in order to find relevant and innovative solutions;
- professional retraining and advanced training for managers and specialists of Transneft and its subsidiaries at institutes of additional vocational education (on the basis of RICs);
- Development and maintenance of the facilities and equipment of higher education institutions (RICs participants).
- It is planned to working out on interaction with the innovative infrastructure objects being created:
 - science parks, including hi-tech science parks, established to ensure accelerated development of high-tech sectors of the economy. The development of cooperation with these organisations will enable research and development activities to be carried out in order to introduce new technologies into production processes;
 - technology commercialisation and transfer centres, organised to promote the commercialisation of scientific developments, the cooperation of researchers and real economy sector organisations, and the search for practical applications for promising inventions. Cooperation with the centres will enable collaboration with developers of innovative projects and early identification of promising products that can be applied to pipeline transportation facilities in the future;
 - training and innovation centres with training and demonstration sites (modern educational organisations with the necessary competencies, experienced teaching staff and modern training and material facilities, including demonstration sites) for quality and effective advanced staff training in line with current realities and the level of technological development in production.

In order to achieve the Company's goals in the field of innovation, and to realise the regions' innovation potential in 2022-2026, it is planned to identify educational organisations of higher education and secondary vocational education, scientific organisations, small and medium innovative companies, and innovation infrastructure facilities located in constituent entities of the Russian Federation and municipalities, to assess the innovative potential of these organisations in terms of current and prospective opportunities to cooperate with them as part of the IDP implementation through their involvement in the supply of innovative technologies and products and in research and development activities, as well as the development of outsourcing.

5.5. Development of Foreign Economic Activities and International Cooperation in the Field of Innovation

The Company's system of foreign economic activity is formed considering geopolitical factors and the current international situation, and its tools are selected for specific tasks, depending on the expediency and effectiveness. Approaches to the planning and implementation of activities as part of the Company's foreign economic activities are based on the fact that Transneft's activities in the medium and long term are aimed at the implementation of strategic objectives regarding the development of the of trunk pipelines system infrastructure in the Russian Federation. The Company has no plans to build pipeline infrastructure abroad. At the same time, the Company is interested in continuing activities to bring the in-line inspection services of Transneft Diascan to the external market, cooperation of Transneft R&D with foreign scientific organisations and higher education institutions, and increasing the efficiency of participation of Transneft and its subsidiaries in intergovernmental and state events of international and regional cooperation (participation in international associations, international technical committees, working and expert groups, international exhibitions and conferences).

Bilateral and multilateral inter-state cooperation mechanisms as part of the Intergovernmental Commissions and Energy Working Groups, as well as joint working groups with foreign fuel and energy companies and direct contacts with foreign partner companies will be used to promote Transneft subsidiaries in foreign markets.

Particular attention will be paid to organising and preparing the participation of Transneft subsidiaries in international exhibitions and conferences. When making plans for Transneft subsidiaries' participation in international exhibitions and conferences, preference will be given to professional events allowing for a broad representation of Transneft subsidiaries. Such events will be used to establish contacts with potential consumers of Transneft subsidiaries' products and services, as well as to position Transneft Group as an active participant in the market for high-tech oil and gas equipment and services.

The main priority in the exhibition area will be to build sustainable relationships with major oil and gas companies, involving Transneft subsidiaries in the execution of works, services provision and supply of equipment on behalf of such customers. In addition, the Company's subsidiaries will collect information on advanced foreign technologies and technological solutions for future use.

Transneft and its subsidiaries will continue to actively participate in meetings of international and European technical standardisation committees, professional associations, institutes and specialised standardisation conferences.

6. The list of Transneft subsidiaries (TS) participating in the implementation of the innovation development programme

Item No.	Subsidiaries and Affiliates Name	Contact Details	Official website
1	Transneft Urals, JSC	10 ul. Krupskoy, Ufa, Republic of Bashkortostan, 450077 +7 (347) 279-21-07 / 272-96-44	http://www.ural.transneft.ru
2	Transneft Western Siberia, JSC	111 ul. Krasny Put, bldg. 1, Omsk, 644033 +7 (3812) 65-35-02 / 65-98-46	https://westernsiberia.transneft.ru

3	Transneft Kama Region, JSC	20 ul. Patrisa Lumumby, bldg. 1, Kazan, Republic of Tatarstan, 420081 +7 (843) 279-04-20 / 279-01-12	https://kama.transneft.ru
4	Transneft Siberia, JSC	139 Respublika str., Tyumen, 625048 +7 (3452) 32-27-10/20-25-97	https://siberia.transneft.ru
5	Transneft Druzhba, JSC	113 Uralskaya str., Bryansk, 241020 +7 (4832) 74-76-52 / 67-62-30	http://druzhba.transneft.ru

Item No.	Subsidiaries and Affiliates Name	Contact Details	Official website
6	Chernomortransneft, JSC	Sheskhari, Novorossiysk, Krasnodar Territory, 353911 +7 (8617) 60-34-51 / (8617) 64-55-81	http://chernomor.transneft.ru
7	Transneft Upper Volga, JSC	4/1 Granitny per., Nizhniy Novgorod, 603600 +7 (831) 438-22-70 / 438-22-05	https://upervolga.transneft.ru
8	Transneft Baltic, LLC	11 Arsenalnaya naberezhnaya, lit. A, St. Petersburg, 195009 +7 (812) 380-62-25 / 660-07-70	https://baltic.transneft.ru
9	Transneft Volga Region, JSC	100 Leninskaya str., Samara, 443020 +7 (846) 333-44-98 / 999-84-46	https://volga.transneft.ru
10	Transneft North, JSC	2/1 prospekt A. I. Zeryunova, Ukhta, Komi Republic, 169313 +7 (8216)77-13-00 / 76-01-71	https://north.transneft.ru
11	Transneft East, LLC	14 ul. Olimpiyskaya, residential district Energetik, Bratsk, 665734 +7 (3953) 300-737/300-703	https://vostok.transneft.ru
12	Transneft Far East, LLC	1 ul. Zaparina, Khabarovsk, Khabarovsk Territory, 680020 +7 (4212)40-11-01 / 40-11-99	https://fareast.transneft.ru
13	Transneft Primorsk Port, LLC	7 Portovy proezd (Primorsky Massiv Territory), Vyborg District, Leningrad Region, 188910 +7 (81378) 78-778 / 78-720	https://primorsk.transneft.ru
14	Transneft Kozmino Port, LLC	78 ul. Nizhne-naberezhnaya, Vrangeli city district, Nakhodka, Primorie Territory, 692941 +7 (4236) 77-10-00 / 77-10-15	https://kozmino.transneft.ru
15	Transnefteproduct, JSC	8A prospekt Vernadskogo, Moscow, 119311 +7 (495) 915-98-07 / 915-94-37	http://transnefteproduct.transneft.ru
16	Transneft UW Service, JSC	19-A ul. Larina, Nizhny Novgorod, 603152 +7 (831) 437-77-63/ 437-77-79	https://tps.transneft.ru
17	Svyaztransneft, JSC	12 ul. Nametkina, Moscow, 117420 +7 (495) 950-80-70/ 950-80-75	https://svyaz.transneft.ru
18	Giprotruboprovod, JSC	24 ul. Vavilova, building 1, Moscow, 119334 +7 (495) 950-86-50 / 950-87-56	http://giprotruboprovod.transneft.ru
19	Transneft Diascan, JSC	7 ul. Kuybysheva, Lukhovitsy, Moscow Region, 140501 +7 (496) 635-09-14 / 635-09-13	http://www.diascan.transneft.ru
20	Transneft R&D, LLC	47a Sevastopolskiy prospekt, Moscow, 117186 +7 (495) 950-82-95 / 950-82-97	https://niitn.transneft.ru
21	Russian Electric Motors, JSC	8 ul. Eniseyskaya, Chelyabinsk, 454010 Tel./Fax: +7(351)204-44-45	http://red.transneft.ru
22	Transneft Oil Pumps, JSC	8 ul. Eniseyskaya, Chelyabinsk, 454010 Tel./Fax: +7 (351) 216-88-93 / 216-85-70	https://pumps.transneft.ru

Item No.	Subsidiaries and Affiliates Name	Contact Details	Official website
23	Transneft Synthesis, LLC	Special Economic Zone Alabuga, SH-2, building 4/1, Elabuga, Republic of	—

		Tatarstan, 423600 Tel./Fax +7 (987) 181 45 98	
--	--	--	--

7. Contact Details

1. Implementation of the innovation development programme - Head of the R&D and Innovations Directorate Solovyov A.N., tel. (495) 950-89-32.

2. Implementation of environmental activities, participation in the technological platform “Technologies for Sustainable Ecological Development” - Head of the Environmental Safety and Rational Nature Management Section: Radchenko E.Ya., Tel. (495) 950-81-78 (ext. 1560).

3. Development of power equipment - Chief Power Engineer Kopysov A.F., Tel. (495) 950-81-78 (ext. 1170).

4. Development of mechanical and power equipment, development of own companies, implementation of the Programme for Setting Up Manufacture of Imported Products in the Russian Federation - Chief Mechanics Officer Shoter P.I., Tel. (495) 950-81-78 (ext. 1197).

5. Implementation of projects on automation and business processes management - Director of the IT Department Novikov D.V., Tel. (495) 950-81-78 (ext. 1693).

6. Education and advanced training, interaction with higher education institutions - Head of the Training and Refreshment Section of the Personnel Management Department Apaev E.V., Tel. (495) 950-81-78 (ext. 1753).

7. Procurement of innovative and high-tech products, including at SMEs - Deputy Vice President and Director of Tender Organization and Conduct Department Kutsik M.A., Tel. (495) 950-81-78 (ext. 2877).

8. The “single window” system operation - Director General of Transneft R&D Naumov A.O., Tel. +7 (495) 950-86-77.

(https://niitn.transneft.ru/innovacii/innivation_form/).

9. Foreign economic activity (international cooperation, export of innovative products) - Director of the External Communications Department Kutsik N.P., Tel. (495) 950-81-78 (ext. 1421).

10. Participation in international events – Head of the Image Events Section of the External Communications Department Koroleva S.A., Tel. (495) 950-81-78 (ext. 1555).

11. Provision of charitable assistance to higher education institutions - Head of the Directorate for Government and Public Organisations Relations Zinoviev V.V., Tel. (495) 950-81-78 (ext. 1038).