



DATA SHEET
FOR
INNOVATIVE DEVELOPMENT
PROGRAM
of PJSC InterRAO for 2020-2024 with a view
to 2029

Moscow 2021

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1. INNOVATIVE DEVELOPMENT GOALS AND KEY PERFORMANCE INDICATORS

The Innovative Development Program of PJSC Inter RAO¹ (IDP) is a long-term planning and management document integrated into the strategic planning and development system of the company.

IDP shall be developed and updated with consideration to:

- Decree of the President of the Russian Federation No. 204 dated May 7, 2018, "On National Goals and Strategic Development Objectives of the Russian Federation through 2024 dated May 7, 2018;
- National programs and projects approved by the Presidium of the Presidential Council for Strategic Development and National Projects, including national program "Digital Economy of the Russian Federation", national projects "Science", "Labor Efficiency Improvement and Employment Support", "International Cooperation and Export", "Small and Medium Entrepreneurship and Support of Individual Entrepreneurial Initiatives", "Education", "Environment";
- Action plans (Roadmaps) of the National Technological Initiative (NTI), approved by the Presidium of the Council for Economic Modernization and Innovative Development of Russia;
- Strategies for the scientific and technological development of the Russian Federation until 2035, approved by Decree of the President of the Russian Federation No. 6421 dated of December 1, 2016.

The IDP brings in sync the activities of national projects and programs with the initiatives of PJSC Inter RAO, and ensures performance starting from the activities financed out of the budget of the company.

Fundamental principles of IDP comprise:

- Comprehensive support to satisfy the requirements of strategic documents, national projects and programs approved by the state authorities of the Russian

¹ For the purposes herein, PJSC Inter RAO and all of the subsidiaries controlled by PJSC Inter RAO shall have identical functions, rights and obligations in relation to the Innovative Development Program. The designation "Inter RAO Group" is used along with the designation "Group". In some cases, the IDP acronym is used (Innovative Development Program).

Federation, as well as technological and social initiatives of the President and the Federal Executive Authorities (FEA);

- Compliance with the current strategic documents, organization standards and regulations (local regulations or LR) of PJSC Inter RAO;
- Use of own experience of innovative development and expertise of peer companies;
- Application of the best (Russian and international) available innovative development technologies (BAT) and practices;
- Novelty, the practical and economic feasibility of IDP measures aimed at improvement of technologies, processes and methods of the Group companies management;
- Priority of Russian innovative technologies, equipment and materials.

Within the framework of the IDP, time horizons for planning activities and indicators have been determined:

- horizon of medium-term planning (component of the project) - 2020-2024,
- long-term planning horizon (strategic component) - 2025-2029.

IDP extends to PJSC Inter RAO and its subsidiaries (Subsidiaries) by activity lines comprising Electric Power Generation, Heat Generation, Heating Networks and Sales (Table 1.1).

IDP scope is exclusive of subsidiaries which principal activity comprise consulting, engineering, trading, drafting of project documentation and repairs, as well as subsidiaries registered abroad.

Table 1.1.

List of Subsidiaries of Inter RAO Group participating in IDP implementation

No.	Subsidiary	No.	Subsidiary
1.	PJSC Inter RAO	12.	LLC Omsk Power Supply Company
2.	JSC Inter RAO Electric Power Plants	13.	JSC Petroelectrosbyt
3.	JSC Nizhnevartovskaya GRES	14.	LLC Orel Energy Distribution
4.	JSC TGK-11	15.	LLC ESV (Energosbyt Volga)
5.	JSC Tomsk Generation	16.	LLC ESCB (Bashelectrosbyt)

6.	JSC OmskRTS	17.	JSC Mosenergosbyt
7.	JSC TomskRTS	18.	PJSC Saratovenergo
8.	LLC BGC	19.	PJSC Tambov Energy Supply Company
9.	BashRTS, LLC	20.	JSC Tomskenergosbyt
10.	Altayenergosbyt JSC	21.	LLC SSK
11.	JSC Saint-Petersburg Energy Supply Company	22.	Energy without Borders Foundation

1.1. Goals and Objectives of Innovative Development

The goals of innovative development for 2020-2024 with a view to 2029 have continuity with respect to those stated in the previous IDP versions.

Provided, however, for the purposes of the current IDP, the goals listed in Table 1.2 have been updated and supplemented with consideration to changes in the macroeconomic situation in the Russian Federation, industry priorities and refinement of the development strategy of PJSC Inter RAO.

Table 1.2.

Goals and objectives of PJSC Inter RAO

No.	Goals	Objectives
1.	Creating competitive advantages of Inter RAO to maintain its leading positions in the Russian power industry and ensure an increase of the company's value	1. Improvement of operational and energy efficiency, environmental safety of production assets
		2. Improvement of the operational efficiency of energy retail assets
		3. Business diversification through the development of additional paid services (APS) provided by energy retail companies
		4. Development of a scientific, technical and production base for innovative development of PJSC Inter RAO
		5. Labor efficiency improvement and headcount optimization
		6. Improvement of the regulatory framework for the development of APS, including application of the state of art digital technologies
		7. Provision for the company's shareholder value growth
		8. Monitoring of innovative solutions and products to assess the feasibility of entry into new markets
2.	Promotion the innovative development of the energy sector of the Russian Federation	9. Development and implementation of innovative technologies of industry-wide importance
		10. Industry-wide organizational innovation
		11. Long-term forecasting of needs, development of competencies and change management in relation to

		innovative technologies (including digital transformation technologies)
		12. Development of an expert assessment system for development plans
		13. Provision for reliability, safety and quality of energy supply based on innovative technologies (including end-to-end digital technologies)
3.	The improvement of the reliability, safety and quality of energy supply to consumers, customer-oriented services offered by energy retail companies	14. Expansion of the customer base and improvement of the customer service quality
		15. Optimization and improvement of the production business processes efficiency

The ecosystem of IDP goals and objectives covers the long-term priorities and purposes of corporate strategic documents of PJSC Inter RAO within the top to the bottom cascading scheme.

The IDP goals and KPIs, the projects selection method and the efficiency assessment criteria take into account the specifics of the company's activities focused on the internal application of the results of innovative projects and R&D in the Group companies.

1.2. Key performance indicators of IDP and the organizational component efficiency indicator of innovative activities

Indicators reflecting the efficiency of innovative activities within IDP are grouped into two types:

Key performance indicators (KPIs) reflect the ultimate efficiency and effectiveness of innovative projects and activities that are consistent with the general strategy and business goals of PJSC Inter RAO;

Performance indicators (PIs) reflect mainly the organizational projects and activities aimed at the promotion of innovation management system, infrastructure and mechanisms for interaction with third-party organizations.

The planned target values of KPIs and PIs are determined based on the results of the technological audit findings and benchmarking inline with the requirements of the program documents of the Russian Federation (Tables 1.3 and 1.4.).

The KPI targets are set by the IDP and reflect the contribution of innovation to the achievement of corporate goals, ensuring conformity between the IDP KPIs and the deliverables of the innovative project.

Table 1.3.

KPIs of the IDP of PJSC Inter RAO

Name of indicator	Unit of measurement	Fact	Plan	
		2020	2024	2029
KPI₁ CO ₂ emission per unit of production volume	gCO ₂ / kWh	440.8	443	441
KPI₂ Intellectual property (IP)	units	36	47	65
KPI₃ Labor productivity	RUB mln per person	32.4	41.4	42
KPI₄ Profit from sales of additional paid services (APS) on the retail market	RUB mln	633	2,746	5,963
KPI₅ Share of R&D expenses in the Group's generation entities revenues	%	0.12	0.15	0.17
KPI₆ TPP average operating efficiency	%	41.5	41.45	41.8

PIs were specified by lines of business:

- indicators of IDP organization structure and management framework development (PI₁ and PI₂),
- indicators of development of the innovative products and technologies R&D and implementation system (PI₃ – PI₅),
- indicators of development of mechanisms for cooperation with SMEs as sources of innovative technologies and suppliers of innovative products (PI₆ and PI₇),
- indicators of development of education and science cooperation PI₈ – PI₁₄),
- indicators of development of cooperation with technological platforms (PI₁₅),
- indicators of implementing innovative potential of regions and developing interaction with innovative regional clusters (PI₁₆),
- indicators of development of international innovation trade and cooperation (PI₁₇).

Table 1.4.

PIs IDP of PJSC Inter RAO

Name of indicator	Unit of measurement	Fact	Plan	
		2020	2024	2029
PI1 Sectoral expertise base, at least	persons	21	25	35
PI2 Number of issues in innovations considered by authorized collegial and advisory bodies	units	16	13	16
PI3 Number of patent research conducted by the Inter RAO Group companies	units	36	40	55
PI4 Share of completed R&D projects recommended for implementation at the Inter RAO Group facilities, at least	%	100	85	85
PI5 Share of innovative solutions implemented by Inter RAO Group companies, at least	%	14	14	17
PI6 Number of suppliers of innovative solutions that have passed the review procedure under the Window of Innovation system	units	9	8	12
PI7 Number of suppliers of innovative solutions among small and medium-sized enterprises/start-ups ² that have passed the review procedure under the Window of Innovation system	units	6	5	7
PI8 Share of funding R&D carried out by HEIs, at least	%	13.4	11.4	11.4
PI9 Share of funding R&D carried out by scientific institutions, at least	%	31.7	11.4	11.4
PI10 Number of the Company's employees who have undergone advanced training at HEIs ³	persons	611	415	421
PI11 Funding of advanced training for the Company's employees at HEIs	RUB mln	7.2	8.71	10.06
PI12 Number of the Company's employees being re-trained at HEIs	persons	110	114	119
PI13 Funding of re-training for the Company's employees at HEIs	RUB mln	4.19	4.36	4.95
PI14 Number of regions where the Company has reference HEIs ⁴ and chairs therein	units	21.0	19.0	20.0
PI15 Participation of the Inter RAO Group companies in technology platforms	units	2	2	2
PI16 Number of constituent entities of the Russian Federation involved in the Company's implementation of the regional innovative potential	units	7	9	10
PI17 Number of international events attended by representatives of the Inter RAO Group	units	4	5	9

² Startup means an emerging small innovative business.

³ An HEI (higher education institution) is an educational organization that performs, as its core activities, educational activities under educational programs of higher education, as well as scientific activities.

⁴ The reference HEIs shall be an institution partnering the company in its educational and scientific activities (as defined by the Ministry of Education and Science of Russia).

2. PRIORITIES OF INNOVATIVE DEVELOPMENT, INNOVATIVE PROJECTS AND EVENTS

IDP states the priorities for innovative development of PJSC Inter RAO on the basis of the following fundamental principles:

1) Focus on participation in solving real strategic technological, economic and organizational goals and objectives facing the Russian electric power and utility sectors;

2) Compliance with requirements and consideration of projections and recommendations contained in federal and sectoral regulations;

3) Compliance with the sustainable development priorities of PJSC Inter RAO stated in corporate strategic documents;

4) Compliance with the requirements of software technological, environmental, organizational documents at corporate and subsidiary levels;

5) Prioritizing the use of the BATs published in information and technical guides approved by Rosstandart of Russia, as well as domestic equipment, materials and information technologies (IT) for the purposes of innovative projects and events;

6) Focus on the digital transformation of the company by planning and implementing projects developed as part of the federal project Digital Technologies of the national program Digital Economy of the Russian Federation implementation.

2.1. Key areas of innovative development of PJSC Inter RAO for the long-run

The key areas of innovative development of the Company for the **long-run** are:

1) Within the line of electrical and thermal (combined cycle) energy generation at TPPs and provision of services to ensure system reliability:

- improvement of the energy efficiency and environmental safety of electrical energy production, as well as the combined production of electrical and thermal energy at the Group's TPPs.

- the use of the best Russian technologies and industrial products during the modernization of generation equipment for thermal power plants, including power boilers, steam turbines, the implementation of gas turbine add-ons, water treatment plants, technical water supply plants, heating plants, flue gas and wastewater treatment plants, auxiliary equipment for gas and steam and water ducts, control systems;

- economically justified increase in the share of medium and high power condensing and combined cycle cogeneration plants and gas turbines in the structure of gas generating capacities (including the use of Russian gas turbine engines) with energy efficiency (performance factor or fuel equivalent consumption) and environmental safety (specific emissions) at the level of the best world counterparts;

- improvement of the reliability and mobility of the existing steam-power equipment of condensing and cogeneration power units to the best international practices, including technical and technological minimums, speed of set-up and discharge of the planned load, and start-up time in various thermal conditions;

- full-scale implementation and maintenance of the best world analogues of life cycle management systems for equipment, technological systems, buildings and facilities on the basis of the digital transformation technologies;

- improvement of the degree of automation, professional training quality and reducing human errors in activities of TPP operational personnel and personnel of generation and management companies, in particular with respect to walk-around checks and inspections of equipment and its primary diagnostics;

- improvement of the degree of industrial and occupational safety of operational and contracted personnel at thermal power plants, the accuracy of control of its location and operations.

2) In the line of electricity sale (supply, distribution) services:

- improvement of the efficiency of services related to electricity sales to households and other consumers (continuous increase in satisfaction with the services among consumers, reducing receivables to a minimum reasonable level);
- extension of the range and the scope of additional maintenance services provided to electricity consumers, including in the field of energy-saving and better energy efficiency.

The key areas of innovative development of the Company for the mid are:

- modernization of generation equipment of thermal power plants, including under the program of competitive selection of modernization projects (KOMMOD) using domestic equipment, hardware and IT;
- improvement of technical and environmental indicators, as well as the operation level of existing generation entities before the end of their economically feasible life cycle;
- improvement of technical and environmental indicators, as well as the operation level of existing boiler and heating networks using domestic equipment, hardware and IT;
- improvement of the quality, financial and economic efficiency of energy and heat energy and heat carrier sales, including provision of additional maintenance services;
- continuous improvement of organizational, financial and economic management of production and non-production tangible and intangible assets, including IP, as a result of end-to-end digital technologies implementation.

2.2. Key innovative projects of PJSC Inter RAO for the medium term are

This section presents key innovative projects (Table 2.1), which serve as the basis for the company's development and implementation of new technologies and have the greatest impact on key performance indicators.

Table 2.1.

Key Innovative Projects of the IDP of PJSC Inter RAO

Project name	Timeframe, years	Project goal	Results and effects	KPIs influenced by the project:
<p>Key project No. 1 <i>"Implementation of an automated information system for standard maintenance and repair, equipment retrofitting and upgrading and integration with related business processes of LLC Inter RAO – Management of Electric Power Plants, JSC Inter RAO – Electric Power Plants, JSC Nizhnevartovskaya GRES and assets of LLC Kaliningradskaya Electric Power Plant (Standard Maintenance Repair and Overhaul)"</i></p>	2019 - 2022	Automation of planning, accounting, execution, monitoring and analysis of maintenance, repair and overhaul (MRO), retrofitting and upgrading of equipment, as well as related business processes	<p>1. Improved reliability of equipment and facilities of TPPs. 2. Reduced costs of ensuring the life cycle of equipment and facilities. 3. Increased revenue from sales on the wholesale electricity and capacity market. <i>AIS will allow to:</i></p> <ul style="list-style-type: none"> - standardize the business processes of MRO, retrofitting and upgrading based on common analytical features and regulatory and reference information; - provide online reporting with a preset discretization level; - develop a single source of reliable, consistent and verified information for decision-making at all levels; 	<ul style="list-style-type: none"> - the average operating efficiency of TPPs (indirectly, through preventing the degradation of generation equipment performance or decreasing its pace).
<p>Key project No. 2 <i>"Development and implementation of a prototype of the Russian software and hardware complex for the automatic control system of a gas turbine unit at the Sochinskaya TPP Power Unit No. 2"</i></p>	2020	Design and development of a hardware and software solution for the automatic control system of a gas turbine plant based on modern equipment and software of Russian manufacturers with higher characteristics, providing	<p>1) Industrial design of SHS of ACS for GTP based on domestic controller and software. 2) Software of an ACS for GTP, replicated to other facilities,</p> <p><i>Effects of the project:</i></p> <ul style="list-style-type: none"> - improvement of the safety and reliability of the TPP gas turbine equipment, 	<ul style="list-style-type: none"> - The number of RIAs (IPOs) - Share of R&D expenses in relation to revenue of generation entities

Project name	Timeframe, years	Project goal	Results and effects	KPIs influenced by the project:
		increased operational and economic efficiency of power plants, as well as increasing the information and functional safety of energy facilities, increasing the reliability of the main and auxiliary power equipment, preventing erroneous actions of personnel	<ul style="list-style-type: none"> - implementation of the import substitution government policy, - reduced life cycle costs for equipment and facilities due to less expensive upgrades of the ACS, - increased revenue from sales on the wholesale electricity and capacity market. 	
Key Project No. 3 <i>"Modernization of the Power Unit No. 2 at the Kostromskaya TPP, a branch of JSC Inter RAO – Electric Power Plants"</i>	2019 - 2023	Improving economic and energy efficiency, environmental safety of electricity production at the Kostromskaya TPP by comprehensively replacing the K-300-240 steam turbine with the new upgraded turbine having higher technical and economic indicators and higher power	The project performance shall ensure: <ul style="list-style-type: none"> - power unit capacity increase from 300 MW to 330 MW - decrease in specific reference fuel consumption from 314.2 g/kWh to 302 g/kWh - boiler steam output increase from 950 to 990 t/h - increase in revenues from sales on the wholesale electricity and capacity market, including increasing the installed capacity of Unit No. 2 - reduction of the cost for providing equipment life-cycle 	<ul style="list-style-type: none"> - CO₂ emissions per unit of production volume - Operational efficiency; - Average operating efficiency of a TPP
Key Project No. 4 <i>"Modernization of Power Unit No. 1 at the Permskaya TPP, a branch of JSC Inter RAO – Electric Power Plants"</i>	2019 – 2023	Improving economic and energy efficiency, environmental safety of electricity production at the Permskaya TPP by	The project performance shall ensure: <ul style="list-style-type: none"> - power unit capacity increase from 820 MW to 850 MW 	<ul style="list-style-type: none"> - CO₂ emissions per unit of production volume - Operational efficiency

Project name	Timeframe, years	Project goal	Results and effects	KPIs influenced by the project:
		comprehensively replacing the K-800-240 steam turbine with the new upgraded turbine having higher technical and economic indicators and higher power	<ul style="list-style-type: none"> - decrease in specific reference fuel consumption from 306.7 g/kWh to 295.5 g/kWh - improvement of the efficiency of electric energy generation and reducing the negative environmental impact - increase in revenues from sales on the wholesale electricity and capacity market, including increasing the installed capacity of Unit No. 1 	Average operating efficiency of a TPP

3. DEVELOPMENT OF INNOVATIVE MANAGEMENT SYSTEM AND INNOVATIVE INFRASTRUCTURE, INTERACTIONS WITH THIRD-PARTY ORGANIZATIONS

The innovation management system is focused on forecasting and goal-setting in the innovative development area, on implementing comprehensive innovative projects, creating tools to improve the operational efficiency of the company, retaining the leadership on the Russian energy market, as well as boosting digital transformation processes. The development of the system is directed by the enhancement of the synergetic effect of innovation, the increase of the flexibility of responding to dynamically emerging challenges from external factors of various nature.

The objectives of the innovation management system are:

1) In the line of innovations strategic management:

- analysis of the external environment for influencing factors and potential opportunities aimed at ensuring effective and efficient development of activities;

- analysis of the internal environment to determine the potential for the development of innovative activities at the cost of internal reserves, as well as weaknesses of the Company that need to be adjusted;

- determination of strategic goals and objectives of the innovative development, taking into account the analysis of the external and internal environment, as well as strategic goals and objectives of PJSC Inter RAO innovative development.

2) In the line of IDP, R&D and IP rights management programs:

- development, coordination, approval, monitoring of implementation and adjustment of the programs.

3) In the line IP management:

- determination of the principles of organization of activities for creation, legal protection, accounting and commercialization of intellectual property;

- planning, implementation and control of activities for the use of IP,

4) In the line of innovative solutions register management:

– development, coordination, approval and adjustment of the innovative solution register;

– planning, monitoring and analysis of the innovative solutions implementation results.

5) In the line of innovative projects management:

– determination of the goals and objectives of innovative projects;

– planning, implementation, monitoring and analysis of the results of innovative projects;

– innovative project budget management.

6) In the line of innovation collaboration management:

– planning, implementation and control of innovation interaction and cooperation with scientific and educational institutions, technology platforms, development institutions, territorial clusters and other innovative infrastructure.

7) In the line of management of HR training and motivation in the field of innovation:

– planning, implementation and control of activities on motivation, material incentives and training of personnel in the field of innovative development.

3.1. Developing partnership in education and science (HR needs of PJSC Inter RAO for the purposes of innovative development)

The corporate personnel training and development system of PJSC Inter RAO is aimed at solving the following tasks:

– compliance with the mandatory state requirements for the level of personnel training for the fuel and energy complex;

– ensuring the level of professional and technical competence of Inter RAO Group employees;

- strengthening the management competencies of the company, including through the development of an internal talent pool;

- staffing of the strategic projects of the company with trained personnel.

The company offers three types of training: intracorporate (the company acts as the provider), external (conducted jointly with universities and other educational institutions) and remote.

Training and development of personnel of Inter RAO Group companies (in addition to mandatory programs) is carried out in the most relevant areas for Inter RAO Group companies, including:

- additional professional training (improving and maintaining professional competencies of employees);

- simulator-based training for operating staff;

- training for the development of a set of non-specialized and general skills required for successful participation in operating process and high labor efficiency (project management, planning, time management, and situational management);

- training for candidates to talent pool (development of managerial competencies of the succession pool members).

Personnel training takes various forms, including full-time, on-the-job training and internships. Additionally, the company actively uses distance forms like webinars and online courses, as well as micro-training.

The company develops and implements programs of additional professional education for its employees on the basis of two corporate educational centers:

- Private educational institution of additional professional education "Energetik Center for Vocational Education", Ufa;

- Private educational institution of additional professional education "Center for Corporate Training", Dobryanka, Perm Territory.

The companies of Inter RAO PJSC annually hold competitions and contests of professional excellence. The events serve the platform for the assessment of the technical training of specialists, and individual and collective competencies. The

company further plans to organize competitions and contests of professional excellence in subsidiaries and on the platforms of the two corporate educational centers.

Inter RAO Group companies have organized work and are actively working with youth and schoolchildren. In order to popularize the professions of the energy sector and raise awareness of the production activities of the Inter RAO Group among schoolchildren and young people in the regions of the company presence, the company regularly arranges thematic lectures, contests and competitions as part of the project "Your Choice of a Profession".

To provide for the development and implementation of innovations and new technologies, to increase the level of competence of employees, the company has implemented and develops a knowledge management system which allows employees to share best practices, lessons learned, results of technical expert reviews, as well as builds the ground for the development of professional competencies and career growth.

The corporate culture is based on the principles of priority of the overall result, mutual assistance and mutual respect of employees, regardless of the position, gender, or any other features. The Code of Corporate Ethics of PJSC Inter RAO sets the guidelines for behavior and ethical principles aimed at the development of the corporate culture and communication with stakeholders through the improvement of the high standards system of corporate behavior. The Company plans to continue developing a common space of values among employees and creating an atmosphere of honesty and openness and a favorable psychological climate which contributes to the achievement of Inter RAO Group's strategic goals and increases the efficiency of its operations.

The main forms of cooperation with HEIs comprise:

- educational and scientific cooperation,
- research, development, survey and applied work for the company.

The main forms of cooperation with scientific institutions comprise:

- research, development, survey and applied work for the company,
- interaction with specialized testing centers under scientific institutions.

3.2. Development of interaction with third-party organizations, application of the "open innovation" principles

Open innovation is a modern approach to technical and technological solutions, which enables enterprises to reduce the time for the development, replication and commercialization. The Group continues to work on the transition to the "open innovation" model, creates mechanisms for obtaining innovative solutions from the outside on the "one contact" principle, including by building mechanisms for interaction with suppliers of goods, work, services, including from among SMEs.

3.2.1. Development of procurement mechanisms

The procurement activities of Inter RAO Group companies are carried out in accordance with the requirements of Federal Law No. 223-FZ “On Procurement of Goods, Work, Services by Certain Types of Legal Entities” (Federal Law No. 223-FZ) dated July 18, 2011, based on the principles of openness, competitiveness and transparency.

Inter RAO Group in the framework of improving the procurement system has implemented and applies:

- a unified base of regulatory and reference information of the supply system, including unified classifiers of goods, works and services (created in 2017, regularly updated);
- a unified procurement information system (ongoing expansion of functionality);
- a unified approach to the marketing of manufacturers/suppliers of goods, works and services and the formation and application of an analytical framework to ensure the effectiveness of the supply system;

- a unified system of accreditation of suppliers, preferences for certain suppliers in accordance with the legislation of the Russian Federation and the laws of the countries of presence of foreign subsidiaries;
- program to improve the quality of procurement management;
- a list of certain types of goods and services with established requirements and limits on expenses for certain types of goods and services intended for own needs and not subject to commercial resale (annual monitoring and updating are carried out).

As part of its interaction with electronic trading platforms, the Inter RAO Group created a Corporate Internet Store of Inter RAO Group companies on the basis of the Unified Electronic Trading Platform JSC and supports its functioning.

In order to improve and develop the electronic procurement tool, Inter RAO Group, together with TEK-Torg JSC created a special section, Inter RAO Procurement Procedures. One of the features already implemented is simplified participation in the procurement procedure for participants of the Partnership Program of Inter RAO Group companies with SMEs by automatically using the main supplier documents from the registry of the Partnership Program, synchronized with the base of TEK-Torg JSC.

Inter RAO Group has established an advisory body which operates on ensuring the efficiency of procurement of Inter RAO Group companies (Advisory Body). The Advisory Body is responsible for auditing the effectiveness of procurement. The structure of the Advisory Body comprises representatives of independent organizations. The Advisory Body holds its meetings on regular basis. Information on the activities of the Advisory Body, including relevant documents governing activities, meeting minutes, meeting plans, is available in the public domain at https://www.interrao-zakupki.ru/purchase/edinoe-okno-po-vzaimodeystviyu-s-postavschikami/SMP/Soveshchatelnyi_organ/index.php.

In accordance with the state policy of import substitution, Inter RAO Group implements measures aimed at the planned and phased substitution of the purchase of foreign products with the purchase of domestic products.

Interaction with third-party organizations, potential suppliers of innovative solutions at Group companies is carried out, inter alia, using the "one contact" system. The "one contact" area in terms of import substitution, supplier accreditation, and the windows of innovation and interaction with SMEs, which have been developing at Group companies for more than four years, were merged into the "One-stop point for interaction with suppliers". The consolidation of the four areas in a single direction ensures the removal of administrative and information barriers, facilitating access to information for potential suppliers.

Informing of the external innovative environment subjects on the lines of the Group's innovative development is ensured by publication of the information on the official websites. Inter RAO Supplier Day introduced. The event is held twice a year in the format of annual conferences, which provide up-to-date information on conventional and new procurement activities arrangements, as well as in the format of a presentation to suppliers of the options for supply of goods, works and services. Information on this issue can be found on the website at <https://деньпоставщика.рф/irao>.

The company regularly interacts with SMEs with consideration to clauses 4.2, 4.5, 5.1 of the objectives and results of the federal project "Acceleration of Small and Medium-Sized Enterprises" of the national project "Small and Medium-Sized Entrepreneurship and Support of Individual Entrepreneurship Initiatives", requirements of regulatory legal acts and internal regulatory documents. Competitive procurement with participation of SMEs is carried out electronically on the electronic trading platforms TEK-Torg JSC (<https://www.tektorg.ru/>) in the personal section of the company (<http://irao.tektorg.ru/>) and JSC Unified Electronic Trading Platform (<http://etp.roseltorg.ru>).

As part of the development of interaction between Inter RAO Group and SMEs, the company approved a Partnership Program with SMEs, which sets

measures aimed at the development of qualified and responsible partners that supply the companies of Inter RAO Group with the necessary goods, work, services. The Partnership Program is regularly amended to simplify the procurement process for participants in the Partnership Program. After passing through the registration and verification procedures, SMEs are entered into the register of SMEs that have joined the Partnership Program. Participation in the Partnership Program provides a number of benefits to SMEs within three years from the date of their accession to the Program.

3.2.2. Developing interaction with technological platforms

IDP provides for building interaction with the external circuit – participants of the national innovation system, including the development of cooperation with technology-specific platforms for the company.

Along with the implementation of R&D by scientific organizations and HIEs, the technological platforms (TP) are one of the tools to create a link between fundamental, sectoral science and production. In addition, TPs for Inter RAO PJSC are an instrument of industrial cooperation of several companies in the industry for joint development.

Interaction with TPs is performed on the basis of the strategic development priorities of the company and is aimed at improving the efficiency of production activities in the long-run.

Inter RAO PJSC together with other companies working in the sphere of electric power engineering is the co-initiator of creation of two TPs:

- High-Efficiency Environmentally Friendly Thermal Power;
- Small Scale Distributed Power Generation.

The main areas of cooperation between Inter RAO Group companies and TPs are both the formation of joint projects and the participation of representatives of Inter RAO Group companies in TP activities.

As part of the IDP, it is planned to implement the following forms of cooperation with specialized TPs:

- participation in updating strategic research programs for specialized TPs;
- participation in examination of projects in the field of research and development carried out within the framework of TPs;
- participation in the development and coordination of draft technical regulations and standards;
- engaging specialized TPs for organization and holding the companies events;
- participation in the forecasting and monitoring of scientific and technological development carried out under specialized TPs;
- participation in the activities of specialized TPs to improve existing and develop new federal state educational standards for higher specialized education;
- inclusion of representatives of TPs in the expert and advisory bodies of the company (Science and Technology Council of PJSC Inter RAO), expert panels;
- company's representatives membership in the relevant advisory bodies of TP;
- participation in the preparation of reporting materials on TP activities.

3.2.3. Achieving the innovative potential of regions, developing interactions with innovative regional clusters

The PJSC Inter RAO Group actively interacts with regional executive authorities in the regions of its presence, with the innovative infrastructure of the regions (innovative territorial clusters), with development institutions.

Inter RAO Group has signed a variety of agreements with the Governments of the Kaliningrad, Yaroslavl, Sverdlovsk and Tomsk Regions, Altai and Khabarovsk Territories on mutually beneficial cooperation in the energy sector, which include the following activities:

- conducting joint R&D in the energy sector;

- implementation of R&D results and innovative activities of the Group in the execution of infrastructure projects;
- providing electrical and thermal energy to new enterprises;
- involvement of enterprises that are participants in the clusters in the implementation of IDP projects and events.

For the purposes of cooperation with Russian institutes of innovative development (RIID), the IDP states the key lines of action as follows:

- informing the RIID on the plans, needs and key innovative activities of Inter RAO and its subsidiaries;
- support for the implementation of RIID projects and recipient companies of RIID financing in terms of guarantee of demand, financial support, provision of pilot sites, etc. (in case of joint interest);
- arrangement and conduct of joint professional and industry events, competitions of innovation projects, provided for by the concept of "open innovation".

3.3. Development of foreign economic activities and international cooperation in the innovation sector

The purpose of the development of the Group's international cooperation in the innovation area is the incorporation of the Company into international science and technology chains and networks, filling in the missing competencies and the scientific and technological groundwork.

The IDP provides for some key areas of foreign economic activity that are to some extent related to innovation, including:

- cooperation with foreign and international organizations, development and conclusion of international agreements with foreign partners on the implementation of joint projects;
- construction and retrofitting of generating capacities abroad;

- participation in international technology alliances, consortia, strategic partnerships, including in the field of innovation;
- participation in information and exhibition events.

One of the strategic goals of the Group is to expand its presence in the target foreign markets, as well as to promote Russian practice and innovative solutions in the energy sector to foreign markets.

In the mid- and long-term prospective, the company is considering the development of markets for presence abroad in regions such as Latin America, South and Southeast Asia, the Middle East and Maghrib, Sub-Saharan Africa.

For several years, the Group has been actively participating in the activities of the largest international scientific and technical association in the field of electric power industry – the Council on Large Electric Systems – CIGRE (Conseil International des Grands Réseaux Electriques).

Since 2016, a Member of the Management Board, Head of the Engineering Unit of PJSC Inter RAO has been heading one of the key governing bodies of the CIGRE Russian National Committee – the Technical Committee, which is responsible for strengthening research activities and expanding research areas that meet current trends in the development of the electric power industry in the world. This is intended to strengthen Russia's position in the global energy markets, including in the development of international standardization documents.

The company has joined the United Nations largest international initiative in the field of corporate social responsibility and sustainable development – the United Nations Global Compact, which brings together global business that seeks responsible business practices and good standing.

3.4. Development of social responsibility mechanisms

Social responsibility⁵ is one of the key principles of corporate governance of Inter RAO Group which plays an important role at all stages of preparation and management decision taking.

The Group's activities in the field of corporate social responsibility are systematic in nature and are aimed at the result. The company not only cares about the preservation of the environment and provides financial assistance to certain categories of citizens or institutions, but builds a system in which all activities become as effective as possible.

The Group operates in accordance with generally accepted business standards and strives to comply with international best standards in the field of *Corporate Social Responsibility* and ensuring *Sustainable Development*.

In the field of sustainable development, Inter RAO Group currently implements and will implement the following principles:

- increase in economic efficiency in the interests of shareholders;
- responsibility for the quality, reliability and safety of operations;
- taking into account the needs of the population when forming a business development strategy;
- promoting sustainable functioning of the economy and social sphere in the regions of presence;
- promoting the development and dissemination of effective, environment friendly and resource-saving technologies;

⁵ According to GOST R ISO 26000-2012 "Social responsibility: responsibility of an organization consultantplus://offline/ref=6A0218BDE8F1008452FD8ECF5B0110E52C8E451F4E4206626322486378A073F1E6009697E0A516AB772D9E156CD1648487505F7EB467fFe1L for the impact of its decisions and activities on society and environment through transparent consultantplus://offline/ref=6A0218BDE8F1008452FD8ECF5B0110E52C8E451F4E4206626322486378A073F1E6009697E0A418AB772D9E156CD1648487505F7EB467fFe1L and ethical behavior, which:

- contributes to sustainable development, including health and well-being of society;
- takes into account expectations of stakeholders;
- complies with applicable law and is consistent with international standards of conduct consultantplus://offline/ref=6A0218BDE8F1008452FD8ECF5B0110E52C8E451F4E4206626322486378A073F1E6009697E0A51AAB772D9E156CD1648487505F7EB467fFe1L;
- is integrated into the activities of the entire organization and is applied in its relationships."

- preservation of life, health, labor activity and professional longevity of employees;
- ensuring safety of workers;
- growth of well-being of workers;
- creating conditions for consistent growth of a professional career and increasing the level of professional knowledge and skills of employees;
- support for young families;
- care for children of employees and retired persons;
- respect for human rights and non-discrimination in all its manifestations;
- development of the institution of social partnership;
- anti-corruption;
- spreading the principles of sustainable development in the business community;
- interaction with internal and external stakeholders based on maintaining a balance of interests and mutually beneficial cooperation.

The company pays special attention to ensuring the safety of production processes. This applies to both the trouble-free operation of equipment and environmental standards, as well as the safety of personnel. The development of the Group's activities in these areas is due not only to the desire to become one of the leading energy companies in the world, but also to the voluntarily assumed social responsibility and focus on implementing the best world standards and practices.

One of the main tasks is to promote the sustainable development of the regions in which the Group's production assets are located, which consists of both achieving economic growth and ensuring favorable environmental conditions of life.

At the same time, one of the key principles of the company's corporate policy is that its main asset is employees. Therefore, the Group companies focus on labor protection issues, ensuring maximum protection and safety of their employees engaged in production.

The environmental impact management is based on international standard ISO 14001: 2015. The environmental management system of PJSC Inter RAO was certified according to international standard ISO 14001: 2004 for the first time in 2014; the certification was performed according to the new version of international standard ISO 14001: 2015 in 2017. The compliance of the environmental management system with the international standard ISO 14001: 2018 was confirmed in 2018, according to the results of the supervisory audit conducted by DQS GmbH. The Group established Work Safety Protection Committees, whose task is to improve methods for the safe arrangement of work and check the status of workplaces. The Committees include 623 employees of the Group.

The strategic priority of the Group in the sphere of health, safety, and environment is the continuous improvement of processes that ensure safe work performance, which is inextricably linked with the adaptation of the best practices in the sphere of industrial safety.

The *priority area* in the field of occupational and industrial safety is a constant decrease in the level of industrial injuries and accidents.

This will be achieved, first of all, by solving the problem of strengthening control over the activities of enterprises in the field of occupational, industrial, fire and environmental safety.

An equally important task is to identify the actual levels of harmful occupational factors in the framework of a special assessment of labor conditions (SALC). There are plans to continue this work, which began in 2018 – 2019, both in the direction of clarifying harmful factors in workplaces that have already been evaluated, as well as when new jobs arise or change.

Much attention will be paid to training workers in the field of labor protection and health. The traditional types of Group compulsory training courses are emergency and fire fighting training of operational personnel, which are carried out in accordance with the developed schedules and programs. The training programs are updated annually, and the results of investigations of accidents occurred at power

facilities are taken into account. The fire training is carried out with the participation of the fire departments, providing the fire protection of energy facilities.

Striving for sustainable development, integration of electric energy markets of Russia, CIS countries and the European Union increase the importance of ecological aspects of the Company's operations for reaching its strategic goals. The level of impact of the production activity on the environment and the level of risks associated with the environmental aspects produce a growing impact on the level of market capitalization, affordability and cost of credit funds, and also is an important feature of sustainability of development and the extent of social responsibility of business to the society, and become a real factor in the company development.

The strategic goals of Inter RAO Group in the field of environmental protection and environmental management are detailed in the Declaration on Environmental Responsibility. They are aimed at reducing harmful emissions and discharges in the production of electrical and thermal energy and, above all, emissions of sulfur oxides, nitrogen and greenhouse gases. It is planned to verify non-financial indicators published as part of the Annual Report for shareholders, in connection with which the following activities will be carried out:

- 1) The identification of medium and long-term goals to reduce specific greenhouse gas emissions with analysis of measures and projects that will contribute to the implementation of these goals;
- 2) Formulation of goals to reduce atmospheric emissions of significant types of pollutants and solid waste.

The Group will develop and adopt a standard for verification of direct and indirect greenhouse gas emissions based on international ISAE standard (3410)⁶, which will make it possible to:

- identify and monitor liabilities, resources and risks associated with greenhouse gas emissions;
- build trust with stakeholders;

⁶ International Standard for Assurance Engagements (ISAE) 3410 "Assurance Engagements for Reporting on Greenhouse Gas Emissions" (Order of the Ministry of Finance of Russia dated January 9, 2019, No. 2n).

- establish robust corporate mechanisms for the quantification, planning and reporting of greenhouse gas emissions;
- contribute to the development and implementation of an emission management strategy.

The Group, as a socially responsible company, assigns a significant role to organizational measures on environmental safety – advanced training in the field of environmental management and public awareness.

Successful implementation of activities that bring into action key areas of the Group's social responsibility will not only contribute to the achievement of strategic production goals, but will also lay a solid foundation for its long-term sustainable development as one of the world leaders among energy companies.

3.5. Concept of the Digital Transformation of PJSC Inter RAO Operations

The need for the digital transformation of the Group is explained by the active development and penetration of modern digital technologies, such as artificial intelligence, machine learning, machine vision, blockchain technologies, digital twins, the industrial Internet of Things, in industry and energy sector, which opens up new opportunities for activities in energy and related markets.

The purpose of digital transformation is to enhance the operational efficiency of the Group through the optimization of existing business processes using modern digital solutions and to obtain a strategic market advantage by introducing new business models based on the value of data.

The Group has digital reserves (digital "deposits"), such as the existing customer database and accumulated data on the history of relationships with counterparts, data on the experience of equipment operation, data on relationships with personnel, etc. These arrays of existing "raw" data give the potential to build digital platforms on their basis and to implement new business models.

The digital transformation of the Group will involve working out the most significant changes from the point of view of their potential impact on the existing business of the Group.

The following areas for working out business hypotheses have been chosen:

- Demand Response (DR) and Virtual Power Plant (VPP);
- Smart home ecosystem, household service aggregator;
- Development of energy storage technologies; electric transport infrastructure, including as a potential subject of microgeneration.

Introduction of new business models is not the only or the main objective of the digital transformation of the Group. There is significant potential for enhancing the operational efficiency of existing business areas and enhancing the efficiency of production and corporate processes. For this purpose, five programs will be developed.

"Digital Production." The program will ensure the delivery of projects for creation of digital twins of assets and production processes to optimize simulation of operation modes and to optimize repair impacts on equipment using a risk-oriented approach and predictive analytics. These projects will use augmented reality, machine vision, industrial Internet of Things, and wearable smart devices to improve the efficiency of operational and repair personnel. The use of big data and predictive scenarios for modeling and forecasting the wholesale market will provide an opportunity to build an end-to-end process for managing the investment cycle using information modeling (BIM) technologies and organizing interaction between all participants in the full life cycle of the asset. Objective monitoring tools (drones, laser scanning, and unmanned aerial vehicles) will be introduced to monitor the progress of construction and the volume of work performed, as well as to forecast the timing of project delivery.

"Digital Sales." The program is aimed at improving the efficiency of energy sales activities through the robotization of routine operations and processes (RPA), operations with big data and predictive analytics for modelling customer behavior. It provides for the use of industrial Internet of Things technologies for remote

collection of indicators and automation of preprocessing, tools for organizing omnichannel⁷ interaction with customers using, among other things, social networks, messengers, personal accounts, targeted advertising, mobile applications, and so on.

"Digital Office." The program provides for the use of advanced analytics and big data technologies to supply the corporate center and heads of functional units of the Group with tools for forecasting, scenario simulation, optimization planning and analysis. The projects will widely use RPA to automate routine operations and big data tools to maximize the talent capacity of each employee of the Group.

The digital transformation of the Group will be associated with an increased risk level because of the novelty of the technologies used, high sensitivity to cybersecurity issues, absence of market-tested business hypotheses, and high requirements for response time during the implementation of innovation projects and timely corrective actions.

For the purposes of the projects within the above programs, the company will use a product approach. It assumes the step-by-step approach starting with the development of the prototype, then a minimally viable product (MVP), and only after efficiency confirmation, the product shall be turned to the fully functional product implementing the totality of the customer requirements, including for the information security, user interfaces, results recording, etc.

Digital transformation also involves the transformation of the Group's corporate culture. The arrangements introduced comprise mechanisms for "open digital innovation" and tools for fostering the development of human resources with new competencies.

The digital transformation strategy will be introduced with the maximum use of internal resources of the Company and the active involvement of representatives of business areas and functional units, both at the stages of introduction and at the stage of project initiation and generation of ideas. The Digital Transformation Unit

⁷ Omnicality is a mutual integration of disparate communication channels into a single system in order to ensure seamless and continuous communication with clients.

(DTU) of PJSC Inter RAO will create a digital laboratory whose main task will be to build a system for extracting value from data and to provide the business with advanced analytics tools.

Taking into account high concentration of information systems, all new initiatives will be synchronized with the development plans of the Information Technologies Unit (ITU) of PJSC Inter RAO. Technologies already used and funds invested in the development will be taken into account as well, an environment and tools for involving external resources in innovative activities (startups, advanced scientific and research groups, technology vendors and integrators) will be created.

The Company constantly monitors new advanced digital technologies and analyzes their potential impact on all areas of production.

4. IDP FUNDING

Mid-term IDP implementation plan (MTP) structure comprises the following:

1. Innovation projects and measures, R&D (research and development), including:

- 1.1. Innovative digital transformation projects and measures;
- 1.2. Other innovative projects and events;
- 1.3. R&D (research and development).

2. Development of the innovation management system and innovation infrastructure, interaction with third-party organizations, including:

2.1. Development of the corporate structure and Innovative Development Program management arrangements;

2.2. Improving the system for development and introduction of innovative products and technologies;

2.3. Development of interaction with third-party organizations and application of open innovation principles, including:

2.3.1 Development of the procurement mechanisms for innovative solutions and interactions with suppliers of innovative technologies and products, including SMEs;

- 2.3.2. Development of partnership in education and science;
- 2.3.3. Development of interaction with technological platforms;
- 2.3.4. Achieving the innovative potential of regions, developing interactions with innovative regional clusters;
- 2.3.5. Development of foreign economic activities and international cooperation in the innovation sector;
- 2.3.6. Development of financing and investment mechanisms in the area of innovation.

However, in the current editions of the MTP for some sections, funding may not be provided due to the inexpediency of the corresponding costly measures.

Innovation in the period 2020 – 2024 is financed at the expense of Inter RAO Group companies own funds, without raising budget funds. Subject to condition precedent IDP also provides for the option of co-financing of R&D by external partners in joint ventures.

Funding of MTP planned for 2020 – 2024 by lines of innovative development and projects by years are presented in Table 4.1.

In the course of the approval of new projects funding within the corporate procedures for the annual planning and budgeting cycle, the financing of R&D operations in 2020 and thereafter will be refined and adjusted.

Table 4.1

IDP Financing Broken Down by Areas of Innovation Development and MTP Sections by
Years, RUB mln

No.	Areas and names of projects and measures	Planning period, years				
		2020 fact	2021 plan	2022 plan	2023 plan	2024 plan
TOTAL innovative projects and IDP measures (clause 1 + clause 2)		7,123.2	14,779.5	14,521.7	13,093.6	11,750.4
1.	Innovation projects and measures, R&D (research and development), including:	7,073.9	14,752.8	14,502.7	13,074.4	11,730.7
1.1.	<i>Innovative digital transformation projects and measures</i>	1,092.6	744.2	292.4	81.1	96.2
1.2	<i>Innovative projects and measures</i>	5,586.7	13,479.5	13,956.2	12,877.5	11,564.1
1.3	<i>R&D projects</i>	394.6	529.1	254.1	115.8	70.3
2.	Development of the innovation management system and innovation infrastructure, interaction with third-party organizations, including:	49.4	26.7	19.1	19.2	19.7
2.2	<i>Improving the system for development and introduction of innovative products and technologies</i>	12.6	13.1	5.3	5.3	5.6
2.3	<i>Development of interaction with third-party organizations and application of open innovation principles, including:</i>	36.7	13.6	13.8	13.9	14.1
2.3.2	<i>Developing partnership in education and science</i>	24.7	12.6	12.8	12.9	13.1

5. CONTACT DETAILS

For more on the innovative activities of PJSC Inter RAO please visit the official corporate portal at

<http://www.interrao.ru/activity/investing/>

For cooperation with PJSC Inter RAO within the framework of innovative development, it is necessary to contact the *Foundation for the Support of Scientific, Scientific-Technical and Innovative Activities Energy Without Borders* please contact:

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