Ministry of Energy of the Russian Federation

THE SUMMARY OF THE ENERGY STRATEGY OF RUSSIA FOR THE PERIOD OF UP TO 2020

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Aims, tasks and guiding lines of a long-term energy state policy and phases of its realization

Russia possesses great energy resources – its territory contains 1/3 of the world natural gas reserves, 1/10 of oil reserves, 1/5 of coal reserves and 14 % of uranium reserves – and a powerful fuel and energy complex, which is the basis of economic development and the instrument of carrying the internal and external policy. The economic growth forms the expectation of increasing demand for energy resources within the country. For providing all kinds of energy for the country and population we need a long-term energy policy, well-grounded and accepted by the society and government institutes.

The aim of energy policy is to make most effective use of the natural fuel and energy resources and of the potential of energy sector for economic growth and improvement of life quality.

The Energy Strategy of Russia for the period up to 2020 is a document which concretizes aims, tasks and the main trends of a long-term energy state policy during the concerned period of time. The main task of Energy Strategy is to determine the ways of reaching a new quality of fuel and energy complex, the growth of competitive ability of its production and services on the world market. The key solution to this task lies in forming of civilized energy market and nondiscriminatory relations between its members. While the state, limiting its functions of a main subject, strengthens its role in forming market infrastructure as a regulator of market relationship.

The strategic guiding lines of the long-term state energy policy are the energy safety, energy effectiveness, budget effectiveness and ecological energy security. Attainment of these guiding lines and strengthening of control under the energy development call for forming and realization of the main components of state energy policy. Subsoil use and management of the state subsoil fund, development of internal fuel energy markets, forming of rational fuel energy balance, regional

and external energy policy, social, scientific and technical and innovation policy in the energy sector are among these lines. The main instrument of their realization will be a number of measures of economic regulation such as prices, customs, taxes and antimonopoly regime. Creation of a consistent and flexible system of economic regulation is one of the main tasks and suppositions of economic effectiveness of the energy policy.

A constantly developing normative and legal base will serve as the basis for implementing the energy state policy. Its perfection will proceed along the path of regulating different aspects of energy sector activity by rules of direct action, further formation of legislation providing the stability, completeness and consistency of normative and legal field of this important area of society life.

The implementation of the Energy Strategy in Russia will result in an effectively developing fuel and energy complex and competitive energy market which will satisfy the demands of developing economy in energy resources and will integrate into world energy markets.

The predictable dynamics of social and economic development of our country presupposes two different phases of realization of the long-term energy state policy.

It is foreseen that by the end of the first phase (2009-2010) the initial phase of energy sector reforming will be completed resulting in a creation of a basis for its progressive development with different scenarios of social and economic development in Russia, including:

- formation of an integral and approved normative and legislative base, removing all the barriers on the path to transparent highly competitive energy markets with fair trade principles;
- completion of transformations in the adjacent sectors of economy, placing them to a new level of energy effectiveness;
- realization of the export potential of oil and gas complex and attainment of stable positions of energy companies at the internal and external fuel and energy markets;
- transition from the impellent role of the fuel and energy complex in Russian economy to the role of an effective and stable supplier of fuel and energy resources for needs of economy and population.

During the second phase the formation of a new fuel and energy complex of Russia will be characterized by:

- further growth of openness and competitiveness of energy markets in the framework of market infrastructure (first of all, energy and transport one), formed during the previous phase;

- rapid use of the existing odds in nuclear power and hydro energy sectors, coal industry, development of petrochemistry and gas chemistry; creating necessary basis for implementing prospective projects (including development of new provinces in the Eastern Siberia, Far East, Yamal and offshore) along with the corresponding growth of annual investments into the fuel and energy complex (no less than 1,5 times more compared to the previous period);
- abrupt increase of contribution of the scientific and technical and innovation potential to the Russian energy sector;
- creation of basis for a substantial increase of the renewables share in the forthcoming period and transition to the energy of the future.

Energy Safety

Nowadays there are some factors in the fuel and energy industries which adversely affect their functionality and development and pose threat to the energy safety of Russia:

- high degree of wear of the main funds (more than 50 %);
- remaining shortage of investment resources in the fuel and energy sectors (except for the oil industry) and their misallocation. With the high investment potential of fuel and energy complex industries, the influx of foreign investments is less than 13% from financing of all the capital investments. At the same time 95% of these investments account for the oil industry;
- deformation of price ratio regarding the interchangeable energy sources resulted in the absence of competition between them and led to such a demand structure that is characterized by excessive orientation toward gas and reduction of coal share;
- lag of the productive potential of fuel and energy complex from the world science and technology level;
- lag of the development and objective growth of costs for developing prospective raw materials base for hydrocarbons production, especially regarding the gas industry;
- lag of the market infrastructure and civilized, competitive energy market;
- remaining high stress on the environment resulting from fuel and energy industry activity;
- great dependence of oil and gas sector, and as a result of state incomes, on the world energy market conditions;
- absence of a developed and stable legislation that would fully take into account all the specifics of fuel and energy industries functionality.

For ensuring energy safety, at first, it is necessary to upgrade the technological base of the fuel and energy complex and to provide the reproduction of its

manufactured resource base. In the current decade, because of limited nature of investments (except for the oil industry) the technological modernization will first of all take place at the existing industry capacities, and later on by means of its cardinal reconstruction and creation of new capacities. Secondly, the pattern of consumption and distribution of fuel energy sources will have to be modified. We foresee the increase in consumption of atomic and hydro power and coal and renewable sources, and the redistribution of hydrocarbon production in the Western Siberia along the other regions of the country (Eastern Siberia, the Far East, European North and Caspian region).
In order for the state to timely and adequately respond to the arising threats to energy security and to analyze the safety conditions in the regions we ensure the development and implementation of a system of measures for preventing and addressing internal and external threats; the use of criteria (indicators) of such safety; the creation of a safety monitoring system and mechanisms allowing to stabilize the situation.

Ecological Safety of Energy

Functioning and development of energy face a lot of ecology problems. The greatest one is the environment pollution. Development of new hydrocarbon fields in the Northern and Eastern parts of the country (Timano-Pechora region, Yamal peninsula, Eastern Siberia, the Far East) calls for the preservation of the vulnerable ecosystems of these distant regions with inclement climate. Another important problem is the environment protection during the development of oil and gas fields, located offshore in the Arctic sea and Sakhalin island, fields of Caspian and Baltic seas. These projects are being carried out in the regions rich in bio resources, including valuable species of fish and other fishery objects.

The aim of the ecology policy is to gradually limit the stress on the environment caused by the fuel and energy complex and to come closer to the European ecological standards.

The mechanisms of this policy are:

- economic stimulation of highly ecological productions, ecologically clean low-waste and wasteless technologies of production and consumption of energy resources by means of rigid ecological requirements for the fuel and energy complex activity, creation of system of compensation payments for breach of these requirements (the principle of such compensations will be legislatively secured and play the role of economical payments, including insurance funds of preventive measures), rationalization of payment sizes for exploitation of natural resources, conducting and legal regulation of ecology insurance principles;
- strengthening of control regarding the meeting of ecological requirements during the implementation of investment projects, the perfection of system of the state ecological expert commission.

Energy Strategy originates from the necessity of fulfillment by Russia of its international ecological commitments. According to Kyoto protocol to the UN Framework Convention on Climate Change, Russia, in case of its ratification, engages itself to keep the emission level of greenhouse gases in the period of 2008-2012 as low as they were in 1990. According to the estimates, by the year 2010 the greenhouse gases emissions will make up 75-80% of the 1990 level, and even in 2020 that level will not be reached which will help Russia to fulfill its obligations.

The main tendencies and estimated factors of Russian economic development, and energy effectiveness

Two scenarios of social and economic development of Russia lie at the heart of the Energy Strategy: moderate and optimistic.

Optimistic scenario is characterized by the growth of GDP 3,3 times more of the level of 2000 by 2020, by a seven times increase of physical investment into the fixed capital for this period, by high world prices for Urals oil (up to 30 $/bbl in 2020) and gas (138 $/thousand cubic meters in 2020). Such a scenario comes from carrying out of economic reforms and intensive liberalization of prices and rates on production and natural monopoly services and foresees fast creation of competition environment at the markets of goods and natural monopoly services. Respectively, this scenario is noted for the active use of energy-saving and energy effective technologies and high rates of lowering power intensity in GDP: twice as much as it was in 2000 by the year 2020.

The moderate scenario is characterized by the GDP growth 2,3 times more to the level of 2000 by 2020, the increase of physical investment into the fixed capital 3,6 times more for the concerned period, fixed prices for Urals oil at the world market on the level of 18,5 $/bbl, average contract prices for gas which are no more than 118,5 $/thousand cubed meters. This scenario foresees the decrease in the power intensity of GDP by 2020 by 42-44% compared to 2000. Rise in prices in the natural monopoly industries, surpassing industrial inflation, will lead to the redistribution of yield in favor of natural monopolies and create conditions for saving of energy resources.

Along with these scenarios the Energy Strategy takes into account the possibility of economic development of Russia by favorable (intermediate between the two scenarios mentioned above) and critical scenario.

The critical scenario - one of the most difficult for Russia - is characterized by an unfavorable combination of external and internal conditions and, first of all, by low world oil prices, decrease in demand for Russian raw products and other difficulties. This scenario foresees intensive carrying out of economic reforms in unfavorable external conditions with the purpose of fast diversification of economy

and lowering of social load on the budget. This includes the implementation of a whole complex of reforms by 2010, including the reformation of natural monopolies, housing and communal services, tax structure, bank sector and administrative reform. In combination with the assumption about unfavorable condition of external factors, such liberalization can lead to negative rates of economic growth and worsening of social situation. But this will allow to relieve the economy of reformation expenses in future and will form competitive environment in natural monopoly spheres. It will help to improve the dynamics and quality of economic growth and to change the fuel-charge model of development for the innovative one.

In order to achieve the optimal economic development factors it is necessary to increase the effectiveness of energy use. Orientation toward power-consuming growth can lead not only to technological backwardness and loss of competitiveness of national economy, but also to the growth of internal demand for energy resources. As a result, even with the highest possible growth of their production, the demand can be secured by means of import expansion and/or limitation of export.

The contemporary economy of Russia is wasteful in energy. The power intensity of Russian GDP (if to estimate according to parity of money purchasing power) is 2,3 times more of that in the world, and 3,1 times more than in EU countries. The reason for this is not only the inclement climate and territorial factor, but also the structure of industrial production, formed during the long period of time, and increasing technical backwardness of power-consuming branches of industry and housing and communal services, and the underestimate of energy resources value (first of all, the value of gas), which does not stimulate the energy saving. The existing potential of power supply makes 39-47% of the current energy consumption. About 1/3 of it is concentrated in the fuel and energy industries (including ¼ in power industry and heat supply), 35-37% in industry and 25-27% in housing and communal services.

The aim of the state policy in this sphere is to absolutely meet the strategic guiding lines of energy effectiveness growth, using the wide range of methods of influence, ensuring:

- structural rebuilding of economy in favor of low power consuming manufacturing industries, knowledge industry and human services, carried out by means of purposeful industrial policy;
- use of potential in the field of technological energy saving.

It is expected that rebuilding of economic structure and technological measures of energy saving will decrease the power intensity of GDP by 26-27% by 2010 and from 45% to 55% by the end of the concerned period. The containment of development of power-consuming industries and intensification of technological

energy saving makes it possible to limit the growth of energy consumption at a factor of 1,25-1,4 and of electric power consumption at a factor of 1,35-1,5 taking into account that in the course of 20 years the economy will grow by 2,3 – 3,3 times.

For intensification of energy saving we need: well-grounded increase in domestic prices for energy carriers at such rates which are economically-warrantable and acceptable for consumers; gradual liquidation of cross financing in rate formation, first of all, in the power sector; continuation of reformation of housing and communal services. Therewith, effective price regulation is a quite necessary, but an insufficient condition of energy saving intensification. It is necessary to implement a complete system of legal, administrative and economic measures which stimulate the effective energy use.

Such a system foresees:

- changing of the existing norms, rules and regulations, which determine the spending of fuel and energy in the line of toughening energy saving requirements; perfection of the rules of control under the power consumption, and the establishment of power consumption standards and maximum levels of energy degradations, obligatory testing of energy-consuming devices and mass consumption equipment for their correspondence to the norms of energy consumption;
- carrying out the regular energy audits of enterprises (obligatory for budget enterprises);
- creation of additional economic incentives for energy saving which turn it into an effective business;
- wide state popularization of effective use of energy among population; mass staff training; accessible databases, containing the information about energy saving events, technologies and equipment, normative and technical documentation and so on.

The task is to create a sustainable and effective system of interest among energy consumers so that they start investing into the energy saving sector.

Another instrument of state policy is the support of a specialized business sector in the field of energy saving that is still underdeveloped in Russia. The support for the energy saving business foresees transition from direct financial aid from the state to a system of implementing effective business projects in a corresponding field as well as insurance of commercial and noncommercial risks.

Budget effectiveness of energy and state investment policy

Energy sector is characterized by complex and different relations with the state budget, being at the same time the main source for filling its profitable part

(providing about half of federal budget income), and the recipient of the state funds. Ensuring civilized and effective relations is a major task of the state and the main goal of the budget efficiency policy in the energy sector.

The main principles of this policy are:

- stable prospect – an early and well-founded state evaluation of necessary estimated volumes of budget income from energy sector enterprises (taking into account not only the fiscal aims, but also the guiding lines of energy development, specified by the Energy Strategy);
- complex estimation of budget effectiveness – taking into account current and prospective budget effects from the change of structure and state property value, reduction of expenses, effects in the adjacent spheres and so on;
- equilibrium of budget effectiveness policy – correspondence of energy sector capitalization growth to the volume of budget earnings provided by it;
- consecution and purposefulness in the use of the state funds and investments made under the state control – the budget effectiveness management with the use of contemporary selection procedures, creation and implementation of joint business projects.

Bowels' Use and Management of the State Bowels' Fund

The current condition of mineral and raw base of fuel-energy complex indicates the necessity of cardinal changes in the mechanisms of reproduction of raw base of carbohydrates. The imperfection of state control system in the sphere of reproduction and use of strategic kinds of raw material can lead to the forced labour-rent of the best supply, slow rates of new fields' development, non-observance of projects of development, slow rates of supply preparing and other negative tendencies, threatening the energy safety of Russia.

The main task of the public energy policy in this sphere is the reproduction of the mineral-raw base of hydrocarbon and other fuel-energy resources and rational use of Russian bowels for providing the stable economic development of the country.

For solution of this task we provide:

- perfection and coordination of management of mineral-raw base development on the basis of long-term and half-term programs of bowels' study, taking into account the estimated levels of consumption of inflammable minerals;
- coordination of executives of all the levels, securing by the executives authorities on the strategy of mineral-raw complex development, the main control functions, differentiation of the executive and management functions in the state regulation of bowels use; ;
- perfection of Russian legislative branch, connected with the bowels use. This provides the opportunity for use of the bowels plots both on the administrative and on the civil and legal basis, including concession

contracts, regulation of the mechanism of bowels use with the explicit regulation of all the stages and phases of the process of license making, simplification of the procedure of license issuing on the small fields for providing the local needs in fuel-energy resources, making the licenses and contracts about bowels users' engagements, connected with the bowels use, stages and terms of field developments, checking of financial state of the client when giving him right for bowels use;

- development and realization of programs for the use of bowels plots, including the carrying on the auctions on bowels use and the issuing of transparent licenses for search and development of resources;
- creating the stable legal conditions for taking by bowels users

the long-term investment decisions on development of the unique hydrocarbon fields and building of the transport systems for their assimilation and exploitation;

- redistribution of 6the main work geological studying and search of fields of the useful minerals in regions with developed infrastructure from state to the bowels users, including taking the simultaneous measures on stimulation of investments in the reproduction of mineral-raw base of Russia;
- providing of the most complete extraction of hydrocarbons, use of the new techniques and technologies, which risen the final oil taking;
- development of fields of the useful minerals according to the affirmed technological documents of the development under the condition of obligatory accomplishment of taken decisions;
- revaluation of the raw base of hydrocarbons and coal according to the new developed classification;
- using the sanctions against the bowels users, which breach the conditions of bowels use, including sanctions against the planned conservation of useful fossils fields and separate mines, development of measures on the increase of economic responsibility of the bowels users for the breach of investment obligations and non-effective use of mineral-raw resources;
- increase of control under the effective development of supply and providing of their rational assimilation during the long period of time.

Regional Energy Policy

The Energy strategy takes into account the main differences of conditions of energy supplying and the structure of fuel-energy balances of such Russian macro regions, as northern, southern and central regions of European part of the country, Urals, Siberia, the Far East, regions of the Far North. The priority in the development of energy is given to the regions with the high cost of energy sources and their low security (the Far East, Baikal region, North Caucasus, Kaliningrad region, Altaj region and so on).

Regional energy politics provides:

- legal distinction of authorities and responsibility in the sphere of regulation of energy sector between the federal and regional organs of government, enterprises of energy sector and consumers of energy resources;
- taking into account the geographical asymmetry in providing with the natural resources and in the structure of consumption of energy resources in different regions of Russia, and also the great differences in the energy supplying of such zones; subsidizing of the creation of seasonal fuel supply in the "critical" regions;
- the most possible, but economically effective use of local energy resources in regions.

While carrying the regional energy policy the optimal use of renewable energy sources has an important meaning. The necessity of development of the renewable energy is determined by its role in the solution of the following problems:

- providing of the stable warm and energy supplying of population and manufacturing in the regions of decentralized energy supplying, first of all, in the regions of the Far North and territories where the situation is the same;
- providing the minimum of energy supplying of the population and manufacturing in the regions of centralized energy supplying, where there is a deficit of energy, preventing the damages from emergency and limited disconnecting;
- lessening of the volume of harmful substances, thrown out from the energy arrangements in towns and settlements with difficult ecological situation, and also in the rest places of population.

Social Energy Policy

The high cost of energy supplying for poor population, insufficient level of social support of reforms show the necessity of active social policy, the aim of which is minimization of negative consequences of the growth of prices for energy resources for socially unprotected groups of population. For reaching this aim we need:

- to provide the growth of population income no less than 3,4-3,7 times more for us to compensate the expenses for fuel and energy supplying (2,3-2,4 times more);
- to provide the coordination of domestic and communal reforms, budget relations and liquidation of the cross subsidizing;
- to create the institutes, responsible for providing with necessary volumes of energy resources the population, objects of life securing, strategic objects;
- to create the effective system of social protection of poor population;
- to realize the rationalization of system of expending of budget funds, intended for social needs;
- to create, at the expense of the finance sources, the spare supplies of energy resources, intended for the supplying of the socially important and strategic consumers.

The External Energy Policy

The State energy policy must be directed on the change from the role of supplier of raw resources to the role of substantive member of the world energy market. The strengthening of Russian positions on the world oil markets and on the gas markets is a strategically important task nowadays. During the forthcoming 20 years, we have to realize the export abilities of Russian fuel energy complex and secure the economic safety of the country, remaining the stable and reliable partner for the European countries and for the whole world community. The new factor for the period up to 2020 will be the participation of Russia, as a large supplier of energy resources, in securing of the world energy safety.

Forming of the common energy and energy and transport infrastructure in the regions of Europe and Asia, development of the international energy and transport systems, providing of the undiscriminatory transit of energy answer the strategic interests of Russia. In order to reach these aims, the state will foster the participation of Russian joint-stock companies in development and realization of the great international projects of transport of gas, oil and energy both in western and eastern lines.

For Russia, which has a unique geographical and geopolitical position, problems of transit have a special meaning. According to this, Russia ahs all the necesary premises for being provided with energy resources, their effective export and receiving of a good ncome from its transit functions.

Russia, being one of the greatest producers, exporters and consumers of energy resources in the world, will have a dialogue both with the countries-producers and countries-consumers, taking part in the work of International energy conferences, cooperating with the industrially-developed countries on the basis of declaration about cooperation with IEA and in the framework of G8, cooperating with the leading contries-exporters of oil – independent and the members of OPEC in order to provide the fair prices for energy resources.

Effective external trade policy must be based on the estimation of prospective energy markets, the active attendance of which will be profitable for the country. The market of Central and Western Europe remains one of the greatest markets in the forthcoming 20 years. USA can become the long-term market of sale of oil industry production. The American capital can become the source of investments in the development of industry and export trends of Russian oil transport. Besides, the USA is a prospective sale market of Russian energy atomic industry, and later – LNG. Our main partners in the economic cooperation with the Asia-Pacific region and Southern Asia will be China, Korea, Japanese, India – the prospective markets of gas, oil, energy, atomic technologies and fuel and nuclear production sale. The part of APR-countries in the export of Russian oil will rise from 3% nowadays up to the 30 % in 2020. As for the natural gas, its part will rise up to 25%. The markets of the Middle East, Southern America and Africa can interest us as the consumers of services of Russian energy companies, and also as the importers of energy technologies and equipment for fuel energy complex.

Forming of Rational Fuel and Energy Balance (FEB)

Energy strategy is formed according to the optimization of fuel and energy balance of Russia by the structure and in the regard of industries and regions.

Developed fuel and energy balance presupposes the growth of export of energy resources (with implicit compliance of internal needs) according to the dynamics of world prices and change of food structure of deliveries and the possibility of import. The external demand for fuel and energy resources is determined, first of all, by the rates of world economic development. By estimation, the rates of economic development for the forthcoming 10 years will reach 2,5 –4%. So, the annual demand for the hydrocarbon raw material in the world will be also growing with the medium rates: 2-4% a year and 1,5-2,5% in Europe.

By estimation, after the stabilization of prices to 18-20 dollar for the bar, the Russian export of fuel and energy will increase to 23-25% by 2010 and to 25-30% by 2020, and with the regular growth of prices – up to 30 dollars for the bar. So, the economically effective growth of export of all kinds of energy from Russia will reach 30-35% and 45-50%. If the oil prices in the current decade will reach 13-15 doll for the bar, and the export of energy resources will have to be reduced to 10-15%.

The export of Russian oil products is expected lower. This is connected both with the bad quality of some oil products and the high cost of their delivery to the external markets (first of all, the automobile petrol and diesel fuel) and with the lowering of export resources of the others (first of all, …petrol) as a result of increasing demand for them on the external market. By 2020 the export of oil products can make from 30 to 50 mln.t. (remember 75 mln.t. in 2002).

The increase of export of Russian gas up to 275-280 billion meters in cube is expected by 2020. (Compare: it was 185 billion meters in cube in 2002).

The basis of internal demand for fuel and energy resources is the natural gas. Its part in the expenses for energy resources will lower from 50% nowadays to 45-46% in 2020. The liquefied fuel (oil and oil products will make 20-22%, the hard fuel – about 19-20%. The internal demand for non-fuel resources will be stable enough (including the electric energy, ГЭС, АЭС, and renewable energy sources).

In the forthcoming period the consumption of motor fuel will increase – on 15-26% by 2010 and on 33-55% by 2020. During this period the liquefied and compressed natural gas will be used as a motor fuel (up to 5 mln.t. of oil products by 2010 and 10-12 mln.t. in 2020). The spreading of electric drive, hydrogen engines and fuel elements is expected in mobile energy by 2020. In spite of the high rates of growth of energy consumption, the power capacity of GDP during this period of time will be lowering automatically.

The territorial structure of energy consumption during the described period of time will not change. The main consumers of primary energy resources will remain Volga and Central Federal regions (about 22 an 20%) and also the Siberian and Urals region (18 and 17%). The energy consumption in NorthWestern and

Southern regions will be 9-10% from each region, the Far East Federal region – 5%.

Prospective of Development of Fuel Energy Complex Industries

The optimization of fuel energy balance of Russia has determined the following aims of fuel energy complex industries:

- growth of electric energy output from 878 billion kV/h in 2000 (892 billion kV/h in 2002) up to 1015-1070 billion kV/h in 2010 and 1215-1365 billion kV/h in 2020;
- increase of oil production from 324 mln.t in 2000 (379 mln.t in 2002) up to 445-490 mln.t in 2010 and 450-520 mln.t in 2020;
- growth of motor fuel production from 83 mln.t in 2000 (88 mln.t in 20020 up to 100-110 mln.t in 2010 and 115-135 mln.t in 2020;
- increase of gas production from 584 billion m. In cube in 2000 (595 billion m.in cube in 2002) up to 635-665 billion m.in cube in 2010 and 680-730 billion m.in cube in 2020;
- growth of coal production from 258 mln.t in 2000 (253 mln.t in 2002) up to 310-330 mln.t in 2010 and 375-430 mln.t in 2020;
- increase of warm supply from 1452 mln.Gkal in 2000 (1437 mln. Gkal in 2002) up to 1570-1625 mln. Gkal in 2010 and 1720-1820 mln.Gkal in 2020.

Oil Complex

The oil production will be realized and developed in the traditional regions of Russia – such as Western Siberia, North Caucasus, Volga region and in the new oil and gas provinces: on the European North (Timan-Pechora region), in the Eastern Siberia and on the Far East and the south of Russia (North-Caspian province). The main oil base of the country for the regarded period of time will be the Western-Siberian oil and gas province.

The priority lines in the oil production are:

- creation and wide assimilation of technologies and equipment, providing the great development of oil supply;
- development and assimilation of technological complexes on mining and production offshore in Arctic, Far Eastern and Southern seas;
- perfection of technologies of building and exploitation of oil objects in zones with difficult climate conditions;
- perfection and wide assimilation existing and creation of the new methods of influence on the sheets and increase of oil output.

The main source of capital investments during the regarded period of time will be the own funds of companies. During the assimilation of new regions of oil production, we suppose to draw the credit funds on the conditions of project financing. Borrowed and joint-stock capital can make 25-30 % from all volume of investments.

The main trend of oil reproduction development is the modernization and reconstruction of НПЗ with building of capacities for improving of oil reproduction, improving of oil products quality and production of catalizators.

The task of this industry is providing with the raw material (…petrol, petrol for chemistry and so on) petrochemical industry, the cost of production of which is more than the cost of oil reproduction. The growth of demands of chemical and petrochemical industry in the hydrocarbon raw material, even using the energy saving technologies, in 2010 will be 2,0-2,5 times more than in 2002.

The priority trends in the STP in oil reproduction are:

- development and creation of catalizators for hydrogen processes with the high …activity and …capacity, highly-effective reacting substances, adsorbents, absorbents and new additions to the petrol, containing oxygen and great proportion of octane and the technologies of their production;
- rise of quality of diesel fuels and aviation kerosene on the basis of big hydro purification and hydro automatization;
- production of boiler fuel and raw material with the low content of sulphur for the destructive reproduction;
- development of technology and modul equipment for reproduction of the heavy oil remains at the expense of thermal influence up to 430C without an oxygen;
- technologies of coke production of acicular structure and hydrogenization technologies for the production of oil components, assimilation of the processes of izocrecking and isodeparafinization.

The own funds of vertically integrated companies will be the main investment sources.

We provide the following main trends of development of oil transport:

North-Baltic trend – building of the second BTS with the increase of capacity up to 50 mln.t a year and creation of the new oil pipeline system with transferring complex on the Kolsky peninsula (up to 120 mln.t a year);

Caspian – Black Sea – Mediterranean trend – development of oil transit routes in countries, located near the Caspian Sea by way of broadening of Atirau- Samara trend to 25-30 mln.t a year, strengthening of export line capacity through the oil sea terminals in Novorossysk and Tyapse to 59 mln.t a year and broadening of the system “Caspian Pipeline Consortium” up to the planned capacity (67 mln.t a year);

Central – European trend – connecting of the pipeline systems “Friendship” and “Adria”M with the aim of step-by-step (5-10-15 mln.t a year) increase of oil export from Russia and the CIC- countries through the oil terminal in Ormishal (Horvatia). Integration of pipeline systems of Central and Eastern Europe in the “United system”;

Eastern – Siberian trend – forming of the new centers of oil production in the East Siberia and in the republic Saha (Yakutia) and participation of Russia in the Asian- Pacific Ocean energy market determine the necessity of creation of oil pipeline system on the line of Angarsk-Nahodka (with the capacity to 80 mln.t a year) with a branch directed to China. (town Datsin);

Far Eastern trend – creation of transport main roads for the delivery of hydrocarbon raw material from Sakhalin to the markets of Asian-Pacific region and Southern Asia. In the framework of project "Sakhalin 1" we provide the construction of oil pipeline with the capacity of 12,5 mln.t a year with sea passage through Tatarian strait to the terminal in De Castry (Habarovsky region). According to project "Sakhalin II", first of all, we should realize the building of 2 land pipelines with the length 800 km for oil and gas pipeline from the northern to the southern part of island.

Realization of these trends needs the construction of new ones and development of active sea oil terminals.

For the optimization of oil exports from the main oil reproduction factory of Russia, ignoring the customs territory of adjoining countries, we provide the building of oil pipelines "Sizran – Saratov – Volgograd – Novorossysk", "Andreevka – Almetevsk" and the pipeline "Ketovo – Yaroslavl – Kirishi – Primorsk" and the transfer complex in Primorsk.

The priority trends of STP in pipeline transport are:

- creation of safe resource saving ecologically clear technologies, equipment and devices for providing the high quality of building work, exploitation and reconstruction of pipeline transport systems;
- development of new technical means of revealing, localization and liquidation of pipeline breakdowns.

The possible trend of perfection of economic relations in the sphere of pipeline transport is the introduction of "Bank of oil quality", which allows to compensate for companies the losses from the shift of different oil raw materials during their transport.

The sources of investments will be the own funds of OSC "SC<Transneft>" and OSC "Transnefteproduct" and the funds of investors with the providing of economic income of investment capital in the regulated prices.

Gas Industry

The gas production will be realized and developed both in the traditional gas producing regions, the main of which is the Western Siberia, and in the new oil and gas producing provinces: in the Eastern Siberia and on the Far East, on the European North (and offshore in the Arctic seas) and on the Yamal peninsula.

Alike with assimilation of big fields it's expediently to include in the development the so-called "little" gas fields, and, first of all in the European part of

the country. By estimations, only in these regions – Urals, Volga and the NorthWest we can get annually up to 8-10 billion m. in cube of gas.

In the long-term prospective we can foresee the growth of volumes of gas production by the independent producers: from 73 billion m. in cube in 2002 (12% from the whole production) up to 105-115 billion m. in cube (17%0 in 2010 and 140-150 billion m. in cube in 2020.

The priority trends of natural gas use are the domestic and communal needs (heating, hot water supply, preparing of food) with the corresponding development of gas supply; state needs (defense, reserves and so on), providing of non-fuel needs (production of mineral fertilizations, material for the gas chemistry and so on) and export of gas on the long-term contracts. Support of change of gas use from fuel to raw material aims will provide the production with the more high cost.

Development of helium fields in the Eastern Siberia and on the Far East will need the development of helium industry and building of the great ГПЗ and underground store-houses of helium concentrate in the Irkutsk region, Krasnojarsk region and republic Saha (Yacutia).

Technical rearming and reconstruction of acting gas producing plants will be directed on the increase of extracting of valuable components from gas, growth of economic effectiveness and ecological security of enterprises. The whole volume of gas reproduction will increase 2 times more. As a result of this policy, we will see the growth production of motor fuel, liquefied gases and sulphur, production of polyetilen and may be – methanol. The use of natural gas – methane for the non-fuel needs will be 1,5-2 time more.

The priority trends of scientific-technical progress are:

- development of equipment and contemporary technological devices in the block-complete set form for the concrete objects of production, transport and remaking of hydrocarbon raw material;
- development of mine constructions, providing the …with different debits of production aiming the creation of the highly-safe mines for assimilation, first of all, hardly-built fields of Yamal peninsula and Undercaspian;
- development and introduction of technique and technologies of the capital reconstruction of exploitation mines without productive sheet;
- creation and introduction of methods of mine liquidation with the aim of lowering of risk of ecological loading on the bowels and environment;
- use of technology and technique of return … of gas or another agents in the sheet during the exploitation of fields, and the change to processes going on with low temperature, what will help to rise the components return of bowels;
- creation and assimilation of technique and technology for the sea gas pipelines on the shallow water and great depths, necessary for assimilation of new fields in Obsk-Tasovsk … and Yamal peninsula;
- rise of effectiveness of creation and exploitation of underground gas stock-houses;

- introduction of technique and technology of liquefying of natural gas and its transport, including "pic sheving" – arrangement for taking away of the loading;
- development of the Russian variants of technique and technology of natural gas conversion into the liquefied products (synthetic oil, petrol, diesel fuel and so on);
- creation of safe non-corrosive pipes for the main road gas pipelines on the basis of the new pipe steels and polymer materials with the aim of continuation of their exploitation.

  So, the main source of capital investments during all the regarded period will be the own funds of the companies, and also the credit funds, also on the conditions of project financing.

Coal Industry

Production of coke coals in our country will be growing with lower rates than production of energy coals. The development of consumption and production of energy coals will e determined with the following economic, naturally-geological factors and territorial priorities:

- growing of coal production, first of all, in Kuznetsky and Kanchko-Achinsky basin, where there are the most favorable conditions for providing the country with high quality and economic coal fuel;
- continuation of coal production on the fields of the East Siberia, Buryatia, Jakutia, Far East, and in the European part of Russia – Eastern Donbass and Pechora as an important factor of energy supplying of western regions of the country with the fuel deficit.

The long-term state policy in the coal sector is directed on the creation of conditions, providing the stable development of industry and foresees the 3 different stages:

- in the period from 2003 to 2005 – finishing of privatization of coal industry, improvement of finance state of coal enterprises, continuation of liquidation of the most unprofitable enterprises of the coal industry, realization of measures of social security of the former workers, measures on social and ecological rehabilitation of miners' towns using the means of state support;
- in the period form 2006 to 2010 – finishing of liquidation of the most unprofitable enterprises, movement of the former workers of liquidated organizations from the regions of the Far North and areas of the same level, rise of competitiveness of the coal fuel with the natural gas at the expense of state price policy, realization of technical rearming and intensification of production;
- in the period from 2011 to 2020 we estimate the cardinal change of technical and economic level of coal industry at the expense of move of production center to the new capacities, equipped with the technique of the new generation, creation of the production with the high quality, including the

production on the base of coal-metal, energy technological and coal chemical complexes.

The state support of industry will be restricted by the financing of finishing of the liquidation of the most unprofitable mines, subsidizing, on the first stage, of the percent rates on the attracted credits for the development of production and finance improving of enterprises. Besides, in the period up to 2010 the projects of creating of the pure coal technologies and coal chemical industries will need the state support (gas, too pure fuel, hydrogen, carbon threads…).

The scientifically-technical and innovation policy in the coal industry provide the solution of the following tasks:

- development and introduction of the system of measures on the rise of quality of the coal production (including the change to the international system of control providing and monitoring of the coals quality, establishment of national standards of quality in the coal consumption, certification of production, introduction of the International system of quality providing ИСО – 9000);
- cardinal technical rearming of the coal industry, including reequipment of slits with the highly-productive mining transport technique of continuous effect, also for the selective cultivation of coal sheets, introduction of cyclic-stream and stream technology, providing of development of underground coal production technology with the use of long purification pit-faces of the new technical level with mechanization complexes, and also short-faced technique with the use of combines with continuous effect and self-working means of transport of coal, technique supplying of industrial scrapping of the mine metan;
- increase of the volume of the coke coal concentration up to 100% and energy coal (except for the brown one) up to 50%;
- introduction of technologies of the deep coal remaking on the basis of soft pirolis with the getting of liquid hydrocarbons and ecologically pure liquid hard fuel, carbon threads, sulphur-coal and the super clean energy;
- development and introduction of energy saving technologiesand equipment for the production and transport of hydro-coal fuel, gasification of coals and their remains after concentration;
- development of the new technologies and equipment for the effective degasation of the coal sheets;
- development and realization of program of creation of the competitive mining technique.

Power Engineering

Development of power engineering during the regarded period of time will come from the following economically – grounded priorities of the territorial placement of generative capacities in the industry:

- in the European part of Russia – technical reequipment of fuel energy station working on gas with the replacement of steam-forth turbines on the steam-gas ones and maximal development of atomic energy station;
- in Siberia – development of fuel energy station working on coal and hydro Electro stations;
- on the Far East – development of hydro Electro stations, ТЭЦ working on gas in the big cities.

The basis of power engineering for all the regarded period will be the thermal Electro stations, the specific gravity of which is in the structure of fixed capacity will be on the level of 60-70%. The production of energy on the thermal Electric stations in 2020 will be 1,4 times more than in 2000.

The development of thermal energy calls for the introduction of Scientific Technical Revolution achievements and the new technologies in the power engineering. For the electric stations, working on gas, such technologies are the steam-gas cycle, gas and turbine superstructures of the steam-force blocks and gas turbines with the utilization of warm. On the electric stations, working on hard fuel, - ecologically pure technologies of coal burning in the burning layer, and later – gasification of coal using the generation gas in the steam-gas arrangements. The new coal thermal electric stations in big cities, regions with great population and agricultural regions must be equipped with the arrangements of sulphur purification.

Hydropower engineering will be developing in Siberia and on the Far East, providing the basis regime of thermal energy stations' work. In the European regions, where the economically effective potential of hydro energy is exhausted, the building of small hydroelectric stations and the construction of small pique hydroelectric stations will be developing on the North Caucasus.

The investment sources will be:

- for thermal and generating companies – the own funds of companies (amortization calculations and income), borrowed and share capital;
- for hydro generative companies with the state participation – with the named sources the creation and use of investment funds, formed at the expense of hydro electric station income.

The main trends of atomic energy development are determined by the Strategy of atomic energy development, accepted by Government of Russian Federation in the first half of XXI century. The part of energy production on the atomic electric station will increase from 16% in 2000 to 23 % by 2020 (up to 32 % in the European country). To achieve such indexes we'll have to increase the capacity of atomic electric stations and energy production 2 times more (the rate of creation of new capacities up to 2 GV a year). The main source of investments in this industry will be the own funds of enterprises and state budget, investment and finance structures, attracted on the conditions of project financing with the state guarantees.

Warm supply

Hard climate conditions in Russia make the warm supply the most socially significant and the most fuel capacious sector of economy: the consumption of energy sources in it is about 40% of all volume, used in the country, and more than half of these sources is in the domestic-communal sector.

In the nearest time we estimate the growth of thermal energy: on 9-13% in 2010 and in 2020 on 22-34% more than in 2000. Therewith we provide the growth of real thermal energy consumption 1,4-1,5 times more at the expense of loss shortening and use of the high potential of energy saving in this energy sector.

The outlined levels of warm supply development, cardinal modernization and technical reequipment of industry will call for the growth of investments. The main source of capital investments will be the own funds of enterprises, state financing, borrowed credits, including the credits of investment and finance structures, attracted on the conditions of the project financing.

Expected Results of the Realization of Energy Strategy

The main results of realization of Energy Strategy are characterized by the following:

- double reduction of the specific energy capacity of GDP with the correspondent growth of energy effectiveness of economy – the part of consummated energy resources in GDP will lower from 22% in 2000 to 13-15% in 2020;
- moderate growth of expenses for fuel and energy supply of population in 2001-2020 (2,3-2,4 times more) with the increase of real population income (3,4-3,7 times more);
- annual income from the fuel and energy complex activity will increase 1,5 times more by 2010 with the lowering of fuel energy complex part in the industrial production from 30% nowadays to 25-26% in 2010 and 18-20% in 2020 with the growth of scientific and remaking sectors with low energy capacity;
- export of energy resources can grow on 45-64% by 2020, what corresponds the demands of payment balance of the country, strengthening of its economical position and geopolitical influence, and takes into account interests of the following generation of Russian population.

The whole volume of capital investments in the reconstruction and development of energy sector can make from 260 to 300 billion dollars of USA in 2001-2010 and from 400 to 510 billion dollars USA in the forthcoming decade. The part of fuel energy complex in the common investments, estimated in 33-35 % in 2001-2005 will reduce to 31-33 in 2006-2010 and to 20-24% in 2020.

The growth of capital investments in the energy sector, including the influx of different foreign investments, must spread on the other industries of economy

thanks to the growth of demands for their production and services and as a result of accumulation of capital in the manufacturing industries of economy.

Monitoring of Energy Strategy

The system of realization of Energy strategy provides the introduction of monitoring of Energy strategy. This means the system of continuous observation under the real state of affairs in the fuel energy complex and realization of the state long –term energy policy, and also receiving of operative information for the timely revelation and system analysis of changes with the aim of avoiding of negative tendencies, which influence on the energy safety of the country, timely and well-grounded correction of thesis's of Russian Energy strategy.

The obligatory result of activity on monitoring of Strategy should become the presentation to the Government of Russian Federation of the special report "About realization of Energy strategy for the period up to 2020" and its improvement and amplification (no less than once in 5 years) with forming of the main guiding lines for the long-term perspective.

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