

# Think deeply in energy questions of our country during the “Eleventh Five-Year Plan”

## REFLEXION APPROFONDIE SUR LES PROBLEMES D’ENERGIE DE NOTRE PAYS DURANT LE 11<sup>E</sup> QUINQUENNAT

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**Abstract:** At industrialized previous stage that our country finished walking at last during the State's Tenth Five-Year Plan period, and per capita GDP topped 1000 dollars in 2003, indicate our country has already stepped foot on the heavy industrial stage of chemical industry, has begun economic transition. But meanwhile, the foundation stone of economic development –Energy, which has presented a series of questions. "Energy crisis " " Energy shortage ",etc. wording all let people have a lingering fear so far. In the paper, the author retrospect the energy state of "Tenth Five-Year Plan period" and combine the quantitative analysis method and qualitative analysis method together, draws the problem that the energy of our country may face of in "Eleventh Five-Year Plan period "and put forward the corresponding settlement measure.

**Key words:** the “Eleventh Five-Year Plan”, energy question, solution measure

**Résumé:** Dans la période industrialisée antérieure, le constat que notre pays a fini de marcher le dernier pendant le 10<sup>e</sup> quinquennat et le PIB par personne a dépassé 1000 dollars en 2003 indique que notre pays a déjà accéléré le pas sur la scène d’industrie lourde et a commencé la transition économique. Mais en même temps, la pierre angulaire du développement économique –énergie – a présenté une série de problèmes. Des termes significatifs, comme « crise d’énergie », « insuffisance d’énergie », provoquent chez nous une peur constante. Dans l’article présent, l’auteur, en passant en revue la situation énergétique pendant le 10<sup>e</sup> quinquennat et en combinant les méthodes d’analyse quantitative et qualitative, dégage les problèmes que notre énergie pourrait affronter durant le 11<sup>e</sup> quinquennat, et propose des solutions correspondantes.

**Mots-Clés:** 11<sup>e</sup> quinquennat, problèmes d’énergie, solutions, mesures

Following " Tenth Five-Year Plan " developing fast and heavy arrival of stage of chemical industry of our national economy, our country economic growth of new round raise the curtain already, but extensive capital construction investment demand cause two let common people note purpose economic phenomenon: Price rise and energy shortage. Among them it is very person particularly, its influence even involves the whole world. The energy-consuming intensity of our country all topped 1 in 2003 and 2004, up to historical height of 1.16 and 1.32 respectively, it means the degree of dependence to the energy of economic growth of our country is too strong. The energy question has already become the big problem of concerning the overall situation in economic construction of our country. After entering "Eleventh Five-Year Plan ", our country will face the new economic construction task, the energy

question will be like the shadow following the person too, come by chance. How should we know the energy question of our country, how to do? Let us see the energy state of our country "Tenth Five-Year Plan " at first.

### 1. THE ENERGY SITUATION OF OUR COUNTRY DURING THE “TENTH FIVE-YEAR PLAN”

#### 1.1 Energy productive consumption

In the earlier period of Tenth Five-Year Plan, Regardless of is our country's energy production or the energy expends all maintains relatively stably, the supply and

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demand balances. But after 2002 year, along with energy demand strong growth, the energy production promotes, may go far beyond in the supplies rate of rise situation in the demand rate of rise, In the nationwide scale still appeared energy supplies comprehensive tense aspect. The coal shortage, the oil shortage, the electricity uncultivated land follows on somebody's heels. The coal while output rise, the price also rapidly rises. Petroleum import volume speed rise 15.4% after 2000. To 2004 year once reached 1.41 billion ton. As a result of electric power short, the nationwide scale can not but pull the floodgate to limit power consumption, and implements in some big cities and the factory" rest in turns system", In order to can alleviate our country electric power short question. Picture 1 and picture 2 has reflected our country energy production and expense special details.

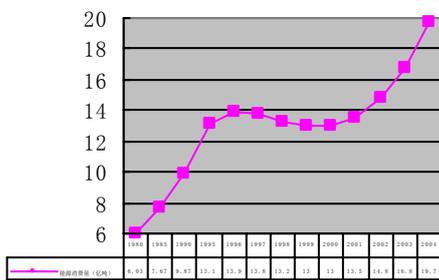


Fig 1:our country energy production

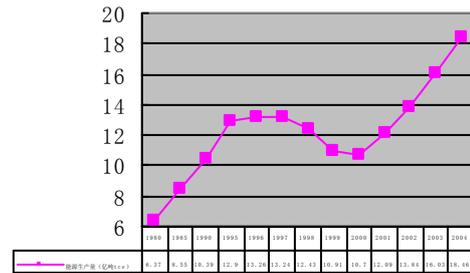


Fig 2.our country energy consumption

The material originates: National Development and Planning Commission: <<Our country electric power profession sustainable development and way >> 2005. 4 Gao Shi-xian

From Fig 1 and Fig 2, we can see, during Tenth Five-Year Plan, Our country energy production consumption quantity all suddenly grows, Respectively grow 1.09 and 1.30 billion tons of 2000 year to 2.06 and 2.22 billion tons of 2004 standard coals. The energy production and the consumption quantity all nearly become time to grow, but the growth tendency had still not stopped sign. In addition, according to the situation of the economy development and energy supply of our country in recent years, National development Reform Committee Energy Research institute has carried on "tendency as usual (BUA)" situation of our country's energy demand studies and analyzes. According to scene analysis result, to 2010 year our country energy will expend achieves 2.44 billion ton, In 2020 our country's energy demand total quantity will reach 3.16 billion ton. Forecasts result (high plan) is as picture 1.

Form 1: Our country minute variety energy expense total quantity forecasts (BAU)

	unit	2000	2005	2010	2020
Coal	hundred million ton	14.5	19.2	22.8	31.8
Petroleum	hundred million ton	2.3	3.1	4.1	4.55
Natural gas	hundred million cubic meter	239	483	863	1701
Electric power	hundred million kilowatt-hour	3930	7575	9227	15858
Energy expense total quantity (counts according to the hot equivalent value)	Hundred million ton standard coal (tce)	14.4	19.6	24.4	31.6

The material originates: National Development and Planning Commission Energy Research institute: 《Our country energy supply and demand medium and long-term trend of development and sustainable development》

But, let us turn head to have a look at special details again of Tenth Five-Year Plan, We can discover 2005 our country energy expends the actual data greatly has already surpassed in BAU scene 2005 forecast data, achieves 2.2 billions ton standard coal. All outdoes 2.60 billion ton standard coal compared to the forecast result high plan. According to the above we may say, our country studies the formulation at present of the energy forecast and the judgment, all is somewhat low. Therefore grows in the economy does not occur in a big way recedes, still maintained continues to grow fast, readjustment of the economic structure and in energy conservation measure also effects completely, the

period of "Eleventh Five-Year Plan" our country energy faces how was the most important question still guaranteed the energy supply and demand balances basically.

## 1.2 Energy structure

The badness of energy structure was unsolved problem which our country energy production and the expense faced. The coal holds absolute superiority status in the energy productive consumption, but is restrained the reserves structure and the level of renewable energy

technical. It has been only accounting for about 30 of the total amount of energy-consuming of our country, the use of the regenerated energy has not formed the great climate either at present. Since middle period of the 1990s of last century, because the putting and relaxing of the increasing on function of the government relatively of economic growth rate of our country, the proportion of consumption of coal of our country has been reduced to some extent for a time , dropped all the way by 76.2% in 1990, drop to 65.3% in 2001 directly. The energy consumption structure is improved to some extent to a certain extent. After entering "15", in a situation that it can be limited that the energy demand has increased and produced with the oil gas fast, coal

proportion in production and consumption rebound again. Coal proportion in energy-consuming raise 67.7% for 2004 to again from 65.3% for 2001, raise 75.6% for 2004 to from 68.6% for 2001,even more in production of energy. The opposite petroleum proportion in the energy-consuming drops22.7% to the year 2004 from 24.6% in the year 2000, from 21.4 % in the year 2000 to 13.5% in the year 2004 in the production of energy, the consumption structure of production of energy is aggravated, make the diligent achievement in this respect of last century of our country basically irrevocably lost, the detailed conditions are easy to find out by Table 2.

**Form 2:1990 --Energy consumption structure of our country of 2004**

year	Total amount of the energy-consuming	Proportion of the total amount of energy-consuming				Energy production	Proportion of the energy production			
		coal	Petroleum	Natural gas	Water and electricity		coal	Petroleum	natral gas	Water and electricity
1990	98703	76.2	16.6	2.1	5.1	103922	74.2	19.0	2.0	4.8
1995	131176	74.6	17.5	1.8	6.1	129034	75.3	16.6	1.9	6.2
1998	132214	69.6	21.5	2.2	6.7	124250	71.9	18.5	2.5	7.1
1999	130119	68.0	23.2	2.2	6.4	110000	68.2	20.9	3.1	7.8
2000	130297	66.1	24.6	2.5	6.8	109000	67.2	21.4	3.4	8.0
2001	134914	65.3	24.3	2.7	7.7	120900	68.6	19.4	3.3	8.7
2002	148222	65.6	24.0	2.6	7.8	138369	71.2	17.3	3.1	8.4
2003	167800	67.1	22.7	2.8	7.4	160300	74.2	15.2	2.9	7.7
2004	197000	67.7	22.7	2.6	7.0	184600	75.6	13.5	2.6	7.9

The source of the materials: State Statistics Bureau

### 1.3 Energy efficiency

Energy efficiency is used for weighing a country the energy utilized the state effectively in some time, the major indicator has energy processing conversion ratio, energy intensity, coefficient of elasticity of energy-consuming, coefficient of elasticity of production of energy,etc.. Among them, it refers to energy processing, changes, the warehousing and transportation and terminal efficiency that utilize that the energy processes the conversion ratio. Can consumption intensity refer to unit energy consumption of GDP in a steady stream, the energy coefficient of elasticity of production and consumption refers to the ratio of growth rate of consumption of production of energy to GDP growth rate. The energy efficiency situation of our country in latter stage and during the State's Tenth Five-Year Plan period of " the Ninth Five-Year Plan " is as shown in Table 3.

We can find out, the energy efficiency of our country is the same as energy structure state during Tenth Five-Year Plan from the form, aggravate too. It is the energy intensity at first: Though drop 13,900 tons of standard coal / a hundred million yuan by 2001 from

16,900 tons of standard coal / a hundred million yuan in 1998, but later the symptom that rebounded appeared again, reached 14,100 tons of standard coal / a hundred million yuan and 14,300 tons of standard coal / a hundred million yuan respectively in 2002 and 2003; Secondly it is the energy coefficient of elasticity: It is comparatively steady to only in charge of producing the coefficient of elasticity in the high position of about 1.70, but the coefficient of elasticity of the energy-consuming is from 0.02 1.42 rising violently to 2004s in 2000, reach the unprecedented height, indicate the dependence on energy of economic growth of our country is stronger and stronger. It is the energy that processes the conversion ratio finally: Drop from 70.96 in 2000 continuously, has been dropping to 69.42 in 2003 all the time. As for why energy efficiency state of our country is aggravated during the State's Tenth Five-Year Plan period, I think the main reason lies in the energy efficiency integral level of our country does not increase with the minimum consumption of coal of the energy efficiency during the State's Tenth Five-Year Plan period too fast high, thus make the overall efficiency level of utilization of energy drop to some extent.

**Form 3:1998 –2003 Energy efficiency of our country**

year	Gross domestic product increases compared with that of last year (%)	Energy intensity per unit GDP amount (ten thousand tons of standard coal / a hundred million yuan)	Festival of unit GDP energy (ten thousand tons of standard coal / a hundred million yuan)	The production of energy increases compared with that of last year (%)	The energy-consuming increases compared with that of last year (%)	Coefficient of elasticity of production of energy	Coefficient of elasticity of the energy-consuming	Energy process the conversion ratio(%)
1998	7.8	1.69	0.16	-6.2	-4.1	-	-	69.44
1999	7.1	1.59	0.10	-12.2	-1.6	-	-	70.45
2000	8.0	1.46	0.13	-2.0	0.1	-	0.02	70.96
2001	7.5	1.39	0.07	13.0	3.5	1.73	0.47	70.41
2002	8.3	1.41	-0.02	14.4	9.9	1.73	1.19	69.78
2003	9.3	1.43	-0.02	15.8	13.2	1.70	1.42	69.42

The source of the materials: State Statistics Bureau  
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### 1.4 Energy and environment

According to the materials of International Energy Agency (IEA.2002), CO2 emission of our country was about  $35 \times 10^8$ T in 2001, accounted for 13 that the global energy-consuming CO2 discharged the total amount, already been become second only to the second largest CO2 discharge country of U.S.A. in the world. SO2 emission had been already with the first place in a contest that " the honour occupied " of purpose amount of  $1165 \times 10^4$ T (not count Hong Kong, Macao and Taiwan) in 2000. Went still one step further to reach  $2159 \times 10^4$ T in 2003. The industrial emission of waste gas and emission of smoke and dust of our country reached 19,900 billion cubic meters and  $1048 \times 10^4$ T respectively in 2003. In addition our country have over half northern city and 1/3 more than southern city threaten SO2 density ultra target, the area of rain belt of acid has reached about 30 of the areas. And " root of the trouble " of the environmental problem of all these things is energy volume of consumption, energy consumption structure relying mainly on coal increased severely and crosses the low energy efficiency. The CO2, SO2 and emission of smoke and dust of the energy-consuming of our country account for 85, 90 and 70 that discharged the total amount at home respectively at present, this brings great loss to social economy of our country. In addition, it is because already in " Kyoto Protocol " come into force formally at February 16 2005, according to "it is together responsibility to have difference "principle, stipulate the concrete one, have a goal of reduction of greenhouse gas discharge of the legal engagement for " attachment I country " (developed country and economic transition country),

require the level was reduced by 5.2 on average than 1990 generally for the gas emission of greenhouse within 2008-2012 years in " attachment I country ". So the environmental problems of our country of " eleven five " not merely hold the ability question facing one's own environment, must fulfil one's own international.

### 1.5 The safety of energy

Accompany by " 15 " of our country fast growth of energy-consuming, appear another deserve new problem which we must pay close attention to during this time, that is that energy of our country is safe (mainly point the petroleum). Though clarify according to Department of Commerce, the degree of self-sufficiency of the energy of our country is up to 94%, depend on degree and have 6 only to the outside, should be higher many percentage points of 20 when being 70 than the national average degree of self-sufficiency of Organization for Economic Cooperation and Development (OECD). But because of the reason of the structure of supply and demand, the import volume of petroleum of our country reached 141 million tons in 2004, the petroleum has depend on degree and up to 41.3 to the outside, has influenced the economic development of our country seriously. First of all, because there is no strategic reserves system of petroleum, our country must buy in a large amount when the petroleum is tense, and is often the highest time of price of petroleum at this moment, so during the State's Tenth Five-Year Plan period, our country presents the strange phenomenon of " the price amount is increased together " for a time, cause the direct loss to

economy of our country. Because international geopolitics turbulence district and of our country petroleum mainly person who import coincidence degree to no small extent secondly, make the economy of our country have great potential risks. Fig. 3 and Fig. 4 have reflected petroleum import volume and petroleum of our country depend on the situation of degree to the outside.

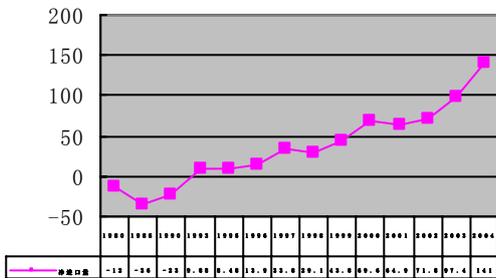


Fig.3: Change of net import volume of petroleum of our country



Fig.4: The petroleum of our country depends on one degree of changes to the outside

The source of the materials: National development and reform committee: <<Our country electric power profession sustainable developmental strategy and way>>April of 2005, the generation constitution 2005. 4  
Gao Shi-xian

## 2. ENERGY QUESTION COUNTERMEASURE MEASURES OF OUR COUNTRY OF “ELEVENTH FIVE-YEAR PLAN”

### 2.1 Deepen the reform of the field of energy supply

Regard the reform and system innovation as motive force, solve a large number of systematic contradictions existing of field of energy supply conscientiously, make economic efficiency and social benefit of the energy supply system unified, it is a problem to be solved at first of energy supply of our country 'Eleventh Five-Year Plan' period. Among them in the coal trade, because of reasons such as production safety question, environmental problem and coal trade's own lasting

development problem, etc., the raising the output of the coal of our country will be more and more difficult 'Eleventh Five-Year Plan' period. So, can further advance the coal trade in the integration policy since middle period of "Tenth Five-Year Plan", accelerate the construction of the coal production base, encourage the integration of the medium and small colliery to annex. So on one hand can improve the stability that coals supply, guarantee the steady development of national economy; On the other hand can popularize the wide application of the coal technology, improve the utilization ratio of coals resources and emergence of reduction incident. In the field of oil gas, the entry that can consider further unlocking the petroleum gas trade 'Eleventh Five-Year Plan' period is controlled, encourage non-state-owned economy to enter petroleum natural gas exploration and development. Strengthen the supervision of the oil gas trade at the same time, improve the management of resource deposits right, break the demarcation, ore right of exploring the area to register, the market of exploration and development that sets up orderly, competition, promote exploration and development of domestic oil gas resources. In addition will emancipate the mind 'Eleventh Five-Year Plan' period, remove and restrict artificially, go all out to develop the nuclear power, make the nuclear power of our country get onto the right track of extensive commercial development. Enable over ten million kilowatts of new commencement scale as much as possible, and should form the nuclear power in the mechanism put into operation fast continuously. And can promote its investment subject's pluralism through the preferential policy in respects such as the law, tax revenue, price, etc. to regenerated energy fields such as the wind energy, solar energy, etc., encourage research and development and popularization of relevant technology, make great efforts to increase its energy delivery volume.

### 2.2 Strengthen energy traffic demand and energy-conservation and plan to implement

During 'Eleventh Five-Year Plan' period, our country, while deepening the field reform of energy supply, guaranteeing the energy is supplied, must strengthen rational guide and management of the energy demand, because this is two different respects of the same questions. First of all, on the basis of scientific research and analysis, proved and reached common understanding in many ways, set up national sustainable energy total demand and social control goal of the energy efficiency, make control goal and multi-level and multi-field efficiency technology and economic goal of the total amount of the energy-consuming be implemented in an all-round way. Secondly, through adjusting the economic structure (including industrial structure, product structure) constantly, reduce the highly energy-consuming trade and proportion of the high energy consumption products. Through strong marco-economic regulation and control, change social

terminal developing direction of consumption, change domestic demand and proportion of external demand, thus reach the goal of controlling the total amount of the energy-consuming. Third, make great efforts to improve the energy efficiency. 'Eleventh Five-Year Plan' period, our country should further improve industry's development policies, and strengthen the efficiency concept in the industrial policy, regard energy efficiency index as the importance quantization index of industry's development policies, implement to industry's development strategy, planning and engineering design, confirm in the index system. In highly energy-consuming industry's evolution such as the metallurgy, building materials, nonferrous metals and petrochemical industry, improve the technological threshold of introducing projects and newly building project, restrain efficiency from requiring the operation of the project below standard strictly, improve the energy efficiency level from source, reduce the energy-consuming. Fourth, is in eliminating the backwardness of the position and introduction of less effective technology and products abroad through stopping, stop the starting of new highly energy-consuming project domestically, advocate the development, introduction, popularization of first-class, high-efficient technology, promote industry's engineering level of our country to advance in the direction of sustainable development, reduce the dependence on energy-consuming of the economic growth, thus reach the goal of controlling the total amount of the energy-consuming. Finally, for reach energy control of total demand, must through legislate, policy guide, economy encourage and educate means of propagating etc., to impel people to practise strict economy. If concrete measure steps up studying the feasibility of the energy consumption tax, pursue in right time; Guide the national policy bank and offer the discount loan for energy-conserving project, lead the commercial bank to invest in the energy-conserving field; Make the energy-conserving products and encourage the catalogue, to the policy of producing and using products and enterprise of the catalogue to reduce or remit the taxes; Arrange for certain financial resources to support developing the activity of extensive propaganda, educate the public to save the energy, establish the public awareness of saving energy; Make and encourage introducing and digesting, researching and developing, the policy of demonstrating and popularizing the advanced power-saving technology, promote production domesticization and marketization of the advanced power-saving technology, improve the integral level of the power-saving technology of our country.

### **2.3 Promote the development in pluralism of energy and pay close attention to the development of the unconventional energy**

In the face of the high growth of energy demand of "15", and the actual conditions that the energy structure

further worsen, we must strengthen development and use of the clean energy 'Eleventh Five-Year Plan' period, the development in pluralism implementing energy, increase the proportion in our country's energy-consuming of clean energy, in order to optimize the structure of energy-consuming of our country. Include, strengthen our country petroleum, development and utilization of natural gas, raise proportions in the energy-consuming of regenerated energy such as hydroenergy, wind energy, nuclear energy, etc., and pay close attention to the coalbed methane from strategy, exploration and development and use of unconventional oil gas resources such as marsh gas, flammable ice, petroleum associated gas, liquefied petroleum gas, oil sand, oil shale, etc.. First of all, our country can further unlock the entry to control 'Eleventh Five-Year Plan' period, encourage nonstate-owned economy to enter natural gas exploration of petroleum and develop the field, in order to promote exploration and development of domestic oil gas resources, make relevant policy in order to support petroleum natural gas exploration development and utilization technology study (explore technical research, improving the technology of rate of extraction of petroleum etc. such as the research, complicated area and southern marine facies stratum of the geological theory of petroleum), promote the construction of the petroleum gas infrastructure, solve the bottleneck problem of limiting development of oil gas of our country from angles such as supplying with and warehousing and transportation, etc.. Secondly, to nuclear energy and hydroenergy, compared with average level in the world, they proportion seem too little of our country's energy-consuming. If the average level of world of the proportion is 6.11 in nuclear energy and hydroenergy are in the energy-consuming, but the proportion of our country is only 0.9 and 7.35 (though the hydroenergy is higher than the average level in the world separately, but the hydroenergy reserves of our country occupy first place in the world, the potentiality of development is still very great), so will emancipate the mind 'Eleventh Five-Year Plan' period, remove and restrict artificially, go all out to develop nuclear power, water and electricity, make the nuclear power in our country and proportion in the energy-consuming of water and electricity reach the level of 3, 10 of 1.5, 9.0 and 2020 years of 2010 respectively. Third, to the use of the wind energy, solar energy, consider it is mainly limited by capital and technology, can encourage the entry of the folk capital on one hand in a more cost-effective manner, on the other hand it strengthen, study and popularize to their development and utilization technology (such as world major wind-power electricity generation for 1000-2000W, and our country is only 750W). Finally, reach 34,500 billionM<sup>3</sup> total amount it is of our country coalbed methane resource, can quarrying amount about 10,000 billionM<sup>3</sup> (distribute at Erdos basin and the Qinshui basins of Shanxi mainly, distribute and have very great overlay with coals resources of our country) (reach 95) than

much nearly half the and main components similar to natural gas of natural gas reserves of our country. In addition China have nearly land oil half the flammable ice (distribute in north, the South China Sea of our country, mainly), oil sand, oil shale, etc. unconventional energy, and they are all clean energy, so in a situation that the oil gas resources of our country are insufficient, " eleven five " our country should mention them strategic height come on, consider, make relevant law, the development and utilization of them carries on rational planning, take charge of science severely and progress from the standing of industry development, strengthen the use intensity to them, expect to exert a positive influence on the energy consumption structure of our country, relieve the tense situation of energy of our country.

#### **2.4 Advances clean coal technology in a more cost-effective manner**

Of our country energy inborn defect (coal account for energy total more than 95 of reserves) deposited to compose determine our country is behind entering the serious stage of chemical industry, the productions of energy and consumption structures can't be like other countries in the world, appear from taking coal as the core to the transition relying mainly on petroleum and natural gas. But our country can change the energy consumption structure of our country by means to make changes according to specific conditions --Develop clean coal technology (mainly include: Motive force coal washing process technology, coal liquefaction technology, gasification technology, coal catalyze technology, coal clean to burn and generate electricity technology, etc.), regard it as, solve of our country energy strategic means of problem use in " eleven five ". Its main reason has the following several respect: First, the coal of our country is considerable in output, but quality is not high, if can adopt clean coal technology to wash selecting, screens, processing, shaping, gasification, liquefaction to the coal, make coal transform, utilize behind the clean energy, can in order to reduce the terminal consumption of the coal on one hand, improve the utilization efficiency of the coal, save the energy, reduce the energy-consuming intensity; Second, having removed a large number of in coals and is harmful to the composition because of washing technology of selecting, clean to burn etc., so the extensive application of clean coal technology can relieve the environmental pressure that our country faces; Finally, one that is on the basis of coal direct liquefying indirectly, coal gasification, coal make methanol, coal make alkene coal-based fuel coal technology, can also produce a large amount of petroleum, natural gas substituting fuel --Water coal slurry, methanol, ethylene, etc, can supplementary of our country supply of clean fuel insufficient to a certain extent in this way, and has optimized the structure of energy-consuming of our country. So 'Eleventh

Five-Year Plan' period, our country should advance the development of clean coal technology in a more cost-effective manner, raise the entering and washing the proportion, proportion selected of the coal, make coal the methanol, coal to make technology of coal industry such as alkene type coal-based fuel to develop as an industry, strengthen its support correctly.

#### **2.5 Petroleum safe problem settlement measures**

To petroleum safe problem of our country, we think 'Eleventh Five-Year Plan' period what our country can make and work that must do have following odd: First of all, the resources which strengthen the domestic oil gas are explored, the exploration of the especially western and maritime petroleum resources, it increase reserve for reserves, it raise store adopt than. Plan the strategy of domestic oil gas resources well to take over, strive to keep the output of domestic crude oil increasing continually and steadily, strengthen domestic deliverability, guarantee the oil gas is basically supplied. Secondly, develop alternative energy source in a more cost-effective manner, this mean in the front mention through developing clean coal technology in a more cost-effective manner already mainly, transform the coal into the technology that petrol, diesel oil, aviation kerosene, etc. substitute the petroleum directly, and will pay more attention to it to following and studying the potential research of substituting energy technology or subsequent energy technology from now on. Third, improve energy efficiency, promote and save the oil gas. Improving energy efficiency has important positions in the energy strategy of the countries all over the world. " eleven five " we want, regard improving efficiency and energy-conservation as, remedy medium and long-term in short supply energy, especially the important measure in short supply of oil gas. Fourth, set up pluralistic oil gas supply channel. Utilize international and domestic two market is diplomatic to launch energy in many ways, energy talk fully, impel the petroleum to supply the source place and especially import the pluralism of source place. In importing passway and facility, should import etc. and consider port, pipeline importing and maritime passway by land synthetically too, so as to ensure energy supply and disperse the risk to a certain extent. Finally, set up petroleum storage system, it should be to supplying the ability to cut off to improve. Considering the petroleum gap of our country and depending on degree too big to the outside, we must accelerate the strategic reserves ground of first batch of petroleum 'Eleventh Five-Year Plan' period --New construction pace of harbour, Mount Dai, Zhen-jiang, Huang Island, Qing-dao in Zhenhai of Zhejiang, Dalian, strive to make it complete ahead of time and come into operation as soon as possible, change the situation of our country " a strategic oil reserve ", in order to deal with the supply crisis that may appear.

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