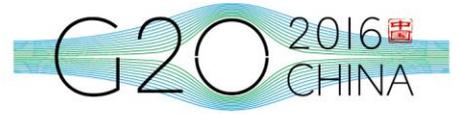


**G20 Voluntary Peer Review by China and
the United States on Inefficient Fossil Fuel Subsidies
that Encourage Wasteful Consumption**

China Self-review Report



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Submitted to the peer review panel by China

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Abbreviations

CPC	Communist Party of China
CHP	Combined heat and power
CNOOC	China National Offshore Oil Corporation
CNPC	China National Petroleum Corporation
CNY	Chinese yuan
G20	Group of Twenty
GDP	Gross domestic product
GSI	Global Subsidies Initiative
GSP	Generalized System of Preference
IEA	International Energy Agency
IMF	International Monetary Fund
LNG	Liquefied natural gas
LPG	Liquefied petroleum gas
MOF	Ministry of Finance of the People's Republic of China
NDRC	National Development and Reform Commission
NEA	National Energy Administration
OECD	Organization for Economic Co-operation and Development
SAT	State Administration of Taxation
UNEP	United Nations Environment Programme
VAT	Value added tax
WB	World Bank

Introduction

Fossil fuel subsidies reform under the G20 framework

Fossil fuel subsidies are important policy tools that could have rapid and powerful impacts on energy market. Subsidies have been widely existed and remained controversial. For recent years, international community identifies subsidies as one of the reasons of wasteful consumption of fossil fuels. Reforming inefficient fossil fuel subsidies is getting more importance and attention in international agenda of addressing climate change.

G20 is one of the first inter-governmental organizations that make the commitment of fossil fuel subsidies reform. In the *Leaders' Statement* of the Pittsburgh Summit in September 2009, the G20 leaders promised to “*phase out and rationalize over the medium term inefficient fossil fuel subsidies while providing targeted support for the poorest*”.

Since the Pittsburgh commitment, recent G20 summits have all reiterated the commitments on subsidies reform. A voluntary reporting mechanism has been established under the G20 framework on member countries' current status of inefficient subsidies and related reform plans. However, under this voluntary reporting mechanism, real-term reform results of member countries proved limited and measures toward implementing reform proved insufficient, due to the differences in their definitions of inefficient subsidies, the insufficiency of data, the lack of information transparency, and the varying conditions among member countries, together with other causes and difficulties. In February 2013, Finance Ministers of G20 members further committed, on the basis of the voluntary reporting mechanism, to the development of “voluntary peer reviews on rationalizing and phasing out inefficient fossil fuel subsidies”.

A peer review is an innovative model of global governance that is still evolving. Its distinctive feature is that it facilitates mutual policy assessment and experience sharing on the basis of equality and mutual trust among nations. The results of G20 voluntary peer reviews are not subject to any punitive mechanism, nor do they substitute other collaboration mechanisms on climate change mitigation.

The purpose of G20 peer reviews is to encourage G20 members and facilitate their efforts to rationalize and phase out inefficient fossil fuel subsidies that encourage wasteful consumption and achieve the development goals the G20 Leaders calls for, including reducing wasteful energy consumption, enhancing the efficient functioning of markets, strengthening energy security, taking into consideration such reforms' impacts on poorer

communities and boosting efforts on addressing climate change. The proposition of peer reviews marks a fundamental shift in how G20 promotes fossil fuel subsidies reforms. More focus will be placed on sharing best practices in subsidy reforms so as to promote international collaboration in energy subsidies to propel members to learn from peers and proceed with solid reform.

Background, significance and progress of China and U.S.'s participation of the peer review

On the basis of related G20 commitments, China and the US committed in the *Joint Fact Sheet on Strengthening U.S.-China Economic Relations* published in December 2013 that “the United States and China commit to undergo fossil fuel subsidies peer reviews under the G20 process, and rationalize and phase out inefficient fossil fuel subsidies that encourage wasteful consumption over the medium term, while providing targeted support for the poorest”. China and the U.S. are the first nations to commit to participating in voluntary peer reviews under the G20 process.

Inefficient fossil fuel subsidies may cause wasteful consumption of fossil fuel, exacerbate environmental pollution and result in loss of government income and weaken the efforts of addressing climate change. China’s leadership devotes much attention on international collaboration on reforming inefficient fossil fuel subsidies. In March 2014, President Xi Jinping expressed at the meeting with President Barack Obama in Hague that “phasing out inefficient fossil fuel subsidies and improving the efficiency of energy use are in line with China’s own needs and one of the key agendas of its reform. At the same time, China is a developing powerhouse with unbalanced regional developments, thus the reform will be a gradual process. China and the U.S. could conduct policy exchanges and technical discussions on phasing out fossil fuel subsidies and enhancing collaboration.”

Even G20 members themselves demonstrate varying development phases and uneven conditions in economic and social development levels, energy and industry structure, as well as regional development. China is a transitioning economy undergoing reform, of which an important agenda is fossil fuel subsidies reform. Such reform shall help to propel the progress of China’s energy marketization reform and further reflect the scarcity of energy resources and their commodity properties. Enhancing the building of an ecological civilization is a key target identified at the Third Plenary Session of the 18th Communist Party of China (CPC) Central Committee. Incorporating domestic energy reform plans into the reform commitments made under the G20 process and optimizing reform plans with

sufficiently taking into account China's status of development will further promote sustainable energy development of China. Meanwhile, China is willing to strengthen collaboration with G20 members, including the U.S., on fossil fuel subsidies reforms, in an effort to promote the joint efforts of addressing climate change under the G20 framework.

Instruction of the self-report

Upon the Sino-U.S. commitment to peer reviews on fossil fuel subsidies under the G20, led by the Chinese Ministry of Finance, together with the National Development and Reform Commission (NDRC) and the National Energy Administration (NEA), China has formed "Chinese Expert Team of G20 voluntary peer reviews by China and United States on inefficient fossil fuel subsidies", which consists of Chinese Expert Panel, Chinese Expert Working Group, Industry Specialists Committee and International Research Group. Han Wenke, Director General of the Energy Research Institute of National Development and Reform Commission, and Su Ming (Director General), the Deputy Director General of Research Institute for Fiscal Science of Ministry of Finance, are appointed as the co-chairs of the Chinese Expert Team. Members on the panels include senior experts from various research institutes, academia and energy industry.

The following main efforts are made by the government bodies such as the Ministry of Finance and the Chinese Expert Team during the preparations for the peer review:

1) China and the U.S. have convened multiple video conferences to discuss the terms of reference of voluntary peer reviews, work plans, peer reviews methodology and self-reviewing framework, among others.

2) Related departments within the Ministry of Finance, NDRC, NEA and the Chinese Expert Team worked together in carrying out relevant research on China's fossil fuel subsidies policies.

3) The Chinese Expert Team and government delegation visited relevant international institutes in respect of fossil fuel subsidies issues, exchanged policy experiences and conducted academic discussions.

4) The Chinese Expert Team held international seminars and academic exchange events on inefficient fossil fuel subsidies reforms, where participants from the World Bank, IMF, OECD, IEA, GSI, G20 Energy Sustainable Working Group and other international organizations, as well as delegates from Chinese government departments, research institutions, Foreign Embassies in Beijing exchanged their thoughts on subsidies reform, best

practice and lessons learnt, methodologies, as well as pertinent theories and fiscal/taxation subsidy policies.

This report illustrates, to the best possible extent, the current status of fossil fuel subsidies by China's central government in sectors including petroleum, natural gas, coal and electricity, and provides details of the background behind each policy, information on the government agencies implementing the subsidy measures, the outcomes of implementation, reform objective and measures, among other aspects.

The main sources of the information and data of fossil fuel subsidies policies in this report include the policy documents and data published by the General Office of the State Council, National Development and Reform Commission, Ministry of Finance, State Administration of Taxation, National Energy Administration, Ministry of Environmental Protection, Ministry of Housing and Urban-Rural Development, Ministry of Transport, National Bureau of Statistics, among other central government departments and local governments, among others.

The following statements are hereby made for the purposes of this report:

- All related policy documents in this report are sourced from publicly announced policy documents by Chinese government departments and materials from other related agencies. Those departments and agencies reserve the right of final interpretation on pertinent policies.
- This report is a dedicated report with respect to the voluntary peer review on fossil fuel subsidies carried out by China and the U.S. under the G20 process, and by its nature is a report aimed at intergovernmental policy experiences exchange. Without the prior permission of Chinese supervisory bodies, no content contained in this report can be used in any intergovernmental agreement negotiations beyond the aforesaid scope.
- The statistical capacity and research proficiency levels of energy subsidies are being improved continuously. The greatest care has been taken in compiling this report. However, due to the level of complexity of the nature of subsidy policies, the availability of data, the market timeliness of energy policies and other factors, the team that prepared this report reserves the rights of interpretation and amendment to the conclusions of this report.

I. Concept of fossil fuel subsidies and the necessity of reform

1.1 Relevant concepts of fossil fuel subsidies

There is no consensus on the scope and framework of fossil fuel subsidies nor a standard definition in the international community. Major international organizations have made extensive efforts in the research on energy subsidies and accumulated valuable research results. UNEP, World Bank, IMF, OECD, IEA, GSI and other institutes have proposed relevant definitions, scopes or frameworks of energy subsidy policies.

Opinions also divide as to the understanding of inefficient fossil fuel subsidies. The *Leader's Statement* of the G20 Pittsburgh Summit in 2009 pointed out that inefficient fossil fuel subsidies “encourage wasteful consumption, reduce our energy security, impede investment in clean energy and undermine efforts to deal with the threat of climate change”. International organizations like the IEA (2010) are of the opinion that “inefficient fossil fuel subsidies” have the following side effects: exacerbate energy price fluctuation, abet fuel adulteration and smuggling, increase the fiscal burdens of energy importing nations, accelerate the draining of energy resources for the exporters, reduce their long-term income from export, increase energy imports, pose a threat to energy security, reduce domestic investment in energy infrastructure, unreasonably boost the interests of the wealthy and the middle class, weaken global response to high energy price levels, increase pollution, among others.

Although in principle the G20 members understand inefficient fossil fuel subsidies in the same manner under the G20 framework, there remain certain disparities in terms of specific wording and identifying inefficient subsidy provisions. The Chinese government fully respects the definitions of fossil fuel subsidies proposed by G20 members as per their own circumstances, and supports more effective efforts to promote improving global energy subsidy mechanisms by focusing on a reform-oriented recognition of inefficient fossil fuel subsidies, on the basis of a preliminary common ground with respect to the concept of subsidies. The Chinese Expert Team has concluded preliminarily on the scope and framework of China's fossil fuel subsidies as the following government actions:

- 1) Fiscal expenditure subsidies. It refers to the various forms of direct fiscal transfer of the government, including direct fund disbursements to consumers and producers, and related special funds.
- 2) Tax preference provisions. It refers to the reduction in government income caused

by the tax reductions and special taxation provisions under tax system arrangements, including tax deduction and exemption, preferential tax rates, tax rebates and tax credits, etc.

- 3) Relevant subsidies arising out of other market regulatory measures. It refers to the subsidies triggered by market regulation and control policy mechanisms.

Under the above scope, we focus on inefficient fossil fuel subsidies and identifies the subsidy provisions for the peer reviews with the following instructions:

- 1) According to the G20 commitments, “inefficient fossil fuel subsidies” primarily refers to fossil fuel subsidies policies that lead to wasteful consumption. A major consideration of the Chinese government when developing the policy inventory is the subsidy policies that may encourage wasteful consumption of fossil fuels. In addition, inefficient fossil fuel subsidies also runs the risk of not being conducive to fully reflecting the commodity attributes of energy and the negative environmental externalities of fossil fuel consumption, of not being conducive to targeted support of the poor, and of resulting in fiscal burdens for the government. The subsidy policies that might contribute to the negative impacts listed above and trigger a reduction in economic, social, energy and environmental protection development efficiency have also been incorporated into the policy inventory in accordance with the specifics.
- 2) The fossil fuels in the policy inventory refer to coal (including raw coal, solid fuels, coal gases, coal bed methane, etc.), petroleum (including crude oil, natural gas liquids, petroleum products, etc.), natural gas (including associated gases, non-associated gases, etc.) and heat and electricity generated by the above fossil fuels. Fossil fuel sectors mean the production, consumption and other sectors relating to the fossil fuels as aforementioned.
- 3) The policy provisions selected are specific to the fossil fuel sectors, that is, the policies are directed specifically at the fossil fuel sectors and not applicable to other sectors. Fiscal and taxation policies generally applicable to multiple sectors are considered general policies and usually not incorporated.
- 4) Main consideration is given to the national-level subsidy policies and case studies shall be conducted on local policies. The main fiscal and taxation policies in China are promulgated by the central government, which leaves relatively little authority over fiscal and taxation administration for the provincial and municipal governments. In addition, local data will not be given major attention in peer

reviews for being difficult to obtain and inconsistent statistical measures.

- 5) Given the fact that fossil fuels used for fuel purposes are the main sources of greenhouse gas emissions, it is advisable that major attention be given thereto at the preliminary stages of reforms. At this time, this report will not take into account to policies of other application sectors of fossil fuels, including the raw material attributes, physical properties and solvent properties.
- 6) Only policy terms currently in effect are incorporated; the subsidy policies that are no longer in effect are not incorporated.

1.2 Necessity of fossil fuel subsidies policy reform and the implications for China

The importance of fossil fuel subsidies reform in the global agenda of climate change mitigation is becoming increasingly apparent. Fossil fuel subsidies reform is also a key component to China's domestic energy reform efforts. The excessive total fossil fuel consumption in China is, to a certain degree, linked to the unsatisfactory system and mechanism relating to energy subsidies.

At present, China's fossil fuel subsidies mechanism is facing the following main problems. Firstly, the fossil fuel subsidies mechanism has not been fully and effectively linked to China's policies on energy saving and emission reduction, control of total energy consumption, promotion of clean energy use, among others. Secondly, the fossil fuel taxation mechanism is not fully reflecting the negative externalities of fossil fuel consumption on the environment. Thirdly, the design of the subsidy mechanism is crippled by lack of effectively identified target, inequality and non-compliance with market rules. Some subsidies catering to low-income demographics have failed to reach their targets. Fourthly, the regulatory mechanism adopted for subsidies is flawed and may leave the government bodies executing the subsidies finding in a difficult position. Fifthly, underdeveloped reform of price-related subsidy mechanism, is not sufficiently assisting China in its efforts of rolling out price reform of resource-type products and does not conform to the trend of marketization. Lastly, inter-industry subsidy policies are laden with defects including unsatisfactory coordination between policies, failure of meeting policy targets, to name but a few. All of the problems stated above have contributed to the losses of government income and the slowed progress in China's energy marketization reform. Therefore, enabling energy products to return to their commodity attributes, reforming the pricing, fiscal and taxation mechanism in relation to fossil fuels, have become imperative in energy reforms.

Improving fossil fuel subsidies mechanisms has great significance to China's energy development. Reforming and phasing out inefficient fossil fuel subsidies whilst improving the energy supporting policy framework is conducive to an energy production and consumption revolution in China, optimizing energy mix, ensuring energy security; it is conducive to deepening energy system reform and further promoting the marketization of the energy sector; it is conducive to enhancing international energy collaboration, learning from international experience in an open environment and propelling the pace of reform; it is conducive to propelling energy saving and emission reduction, improving the environment, achieving sustainable economic and environmental development; it shall be conducive to alleviating fiscal stress, optimizing financial spending structure, as well as improving public welfare.

China is prepared to closely incorporate the topics of subsidy reform under the G20 process into its domestic reforms, enhance the top-level design and carry out in-depth research on the reform roadmap. President Xi Jinping called for "four revolutions" and "one collaboration" in China's energy development in 2014. Promoting an energy consumption revolution, energy supply revolution, energy technology revolution and energy system revolution, as well as comprehensive strengthening of international collaboration, have become the key tasks of China's energy security strategy and, in that process, fossil fuel subsidies reform could play an important role.

On one hand, China intends to propel energy production and consumption revolution from fossil fuel subsidies reform. As China's economic, social and systemic reforms continue to evolve, economic and social transformation is facing new environmental variables. Extensive use of fossil fuels in China's previous industrialization and urbanization cycles had a direct bearing on the accelerated growth in greenhouse gas emissions, air pollution and other problems plaguing China today. Fossil fuel subsidies reform cannot be independent efforts. The subsidy policies are closely linked to energy price, fiscal and taxation system reforms, and are also associated with public welfare, diplomacy and environmental policies, which must be incorporated into the overall economic and social reform of China. The progression from "market to play a decisive role in resource allocation" to "enable the market to play a decisive role in allocating resource" (*Decision of the CCCPC on Some Major Issues Concerning Comprehensively Deepening the Reform*, the Third Plenary Session of the 18th CPC Central Committee) indicates the resolve of China in promoting the development of a market economy. President Xi Jinping also pointed out in 2014 that "[we shall] firmly roll out reform, restore the commodity attributes of energy, construct a market structure and system allowing effective competition, form a mechanism where the market is the primary deciding factor in energy price, shift government regulations

on energy, build and improve on an energy legislative system.” It is imperative to herald a revolution in energy system and reform the inefficient fossil fuel subsidies. The savings from subsidies can be used in social welfare and in supporting the low-income groups, or be invested in new energy and renewable energy sectors, with the aim of optimizing energy mix and promoting low carbon growth.

On the other hand, China hopes to make use of the opportunity of the peer reviews under the G20 framework to deepen international collaboration in areas including energy and climate change. The government hopes to establish an international exchange platform for inefficient subsidy reforms where experiences can be shared and good partnerships can be fostered. China advocates a voluntary and flexible peer review mechanism and intends to partner up with nations sharing similar subsidy reform pursuits to come up with reform plans, and calls for more G20 members to join the peer review initiative to share their experience.

II. Overview of China energy policy

China is the world's largest energy producer and consumer, and has preliminarily developed a comprehensive energy supply system of coal, oil, natural gas, electricity, new energy and renewable energy. The general energy service level and residents living conditions of energy have been greatly improved. Energy development provides a strong guarantee to eliminate poverty, improve people's livelihood, and maintain long-term stable and prosperous economic development in China.

China's energy development is facing many challenges. The natural endowment of energy resources is not high, the coal, oil, natural gas reserve per capita is relatively low. Energy consumption has increased rapidly in recent years, and the pressure of energy supply security increased. The large-scale development and utilization of fossil energy has made certain impact on the ecological environment.

As the largest developing country in the world, China is facing the daunting tasks of developing its economy, improving its people's livelihood, and building a moderately prosperous society. It is an important strategic task of the Chinese government to maintain long-term, stable and sustainable use of energy resources. China's energy policy will continually adhere to the strategic approach of “saving, clean, safe”, vigorously promote energy production revolution, energy consumption revolution, energy technology revolution and energy system revolution, strengthen all-round international cooperation in energy, adapt to the “new normal” in economic development, implement new initiatives, focus on promoting the transformation and upgrading of energy, committed to building a safe, stable,

diversified and clean modern energy system.

2.1 All-round promotion of energy conservation and energy efficiency

China always puts energy conservation as a priority. In the early 1980s, China put forward the development policy of “stressing both development and conservation, with priority given to conservation”. The Chinese government issued the *Decision on Strengthening Energy Conservation* in 2006. It issued the *Comprehensive Work Plan on Energy Conservation and Emission Reduction* in 2007, making an all-round plan for the major energy consumption sectors, such as industry, building and transportation. In 2011, the State Council released the *Comprehensive Work Plan on Energy Conservation and Emission Reduction during the 12th Five-Year Plan Period*, which proposed the major targets and key actions in the fields of energy conservation and emission reduction during 2011-2015. The plan aims to establish a “reverse coercion mechanism” through the dynamic integration of the efforts in lowering the intensity of energy consumption, reducing the total emissions of major pollutants, and rationally controlling total energy consumption. The “reverse coercion mechanism” helps promote the strategic restructuring of the economy, push forward the optimization of the industrial structure, and strengthen all aspects of energy utilization management in industry, building, transportation, and public organizations, as well as in the fields of urban and rural construction and consumption, thus contributing to the construction of a resource-conserving and environment-friendly society.

Strengthening the appraisal work regarding energy conservation. All regions and sectors have insisted on saving energy and reducing consumption as an important grasp on adjusting the industrial structure, changing the development mode, promoting scientific development, constructing ecological civilization, and have taken a series of strong policy measures. In 2014, the State Council issued the *Energy Conservation, Emission Reduction and Low-Carbon Development Action plan 2014-2015*, comprehensively arranged and deployed the energy-saving emission reduction work in the last two years of the "12th Five-Year Plan".

Enhancing energy conservation in the industry sector. Industry is the major energy consuming sector in China. The state has drawn up catalog of advanced and applicable technologies in the fields of energy conservation and emission reduction for key industry sectors such as steel, petrochemicals, non-ferrous metals and building materials, for the purpose of eliminating backward technologies, equipment and products, and developing

energy-saving and high-value-added products and equipment. It has established and improved a mandatory standards system of quotas for energy consumption per-unit product in key industries, and strengthened the energy-saving evaluation and supervision system. It has undertaken key energy-saving projects, including combined heat and power generation, recycling of industrial by-product gas, and fostering of energy-saving industries, so as to increase enterprises' energy utilization efficiency.

Promoting energy conservative technologies and products. In order to accelerate the progress and promote the popularization of energy-saving and low-carbon technology, guide energy consumption units to adopt advanced energy-saving new technology, new equipment and new manufacturing process, NDRC released the seventh batch of the *Promotion Catalogue of National Key Energy Conservation Technology* in the end of 2014, covers coal, electricity, steel, nonferrous metals, petrochemical, chemical, building materials, machinery, light industry, textiles, building, transportation, communications and 13 other industries. A total of 218 key energy-saving technologies was listed. Ministry of Industry and Information Technology released the *Catalogue of Energy efficiency star product 2014* with a total of 128 model products of 25 types of 10 categories. Ministry of Science and Technology issued the *Promotion List on the Industrialization of Energy Conservation, Emission Reduction and Low Carbon Technologies (the first batch)*.

Boosting energy conservation in the construction sector. According to the *Green Building Action Plan* released in January 2013, NDRC, Ministry of Housing and Urban-Rural Development are promoting green building actions, at the same time continuing to carry out the transformation of existing buildings. Now, new urban buildings are fully implemented with the mandatory standards on energy saving. North heating area, hot summer and cold winter area, hot summer and warm winter area are fully implementing higher levels of energy efficiency design standards, and actively carrying out demonstration of passive ultra low energy consumption and green building.

Promoting energy conservation in the field of transportation. The regulatory capacity on energy saving and emission reduction, and the service levels in the transport sector is constantly improving. Positive progress is being made in the construction of low carbon transportation system of green circulation. In August 2013, Ministry of Transport issued the *Notice on Carrying out Low-Carbon Transportation Project in One Thousand Firms in Automobile, Ship, Road, and Port*, identified a list of 981 participating companies, improved the reporting system in terms of energy consumption and carbon emissions, put forward the evaluation index system to participating companies, initially set up a long-term mechanism for the thousands participating companies.

After all efforts, the energy consumption per 10,000 CNY GDP decreased by 4.8%, and achieved the best results in the 12thFive Year Plan in 2014.

2.2 Vigorously optimizing the nation's energy structure.

Worldwide, fossil energy, such as coal and oil, will continue to play a dominant role in energy supply for a long time to come. China is no exception. Therefore, China will continue to plan fossil energy exploitation and utilization with concerns on environmental protection. It will speed up the construction of advanced production capacity, eliminate outdated capacity, push forward the clean development of fossil energy, protect the ecological environment and cope with climate change, so as to attain the goal of energy conservation and emission reduction. Vigorously developing new and renewable energy is a key strategic measure for promoting the multiple and clean development of energy, and fostering emerging industries of strategic importance. It is also an urgent need in the protection of the environment, response to climate change and achievement of sustainable development.

Promoting clean utilization of fossil energy. Ministry of Environmental Protection, NDRC and other relevant departments jointly issued the *Rules on Implementing the Action Plan on Prevention and Control of Air Pollution in Beijing-Tianjin-Hebei and Neighboring Area*, put forward clearly that by the end of 2017, Beijing City, Tianjin City, Hebei Province and Shandong Province should cut coal consumption by 83million tons. In March 2014, NDRC, NEA and Ministry of Environmental Protection jointly issued the *Work Plan on Enhancing Prevention and Treatment of Air Pollution in Energy Industry*, proposed to strengthen the control of total energy consumption and gradually reduce the proportion of coal consumption from the perspective of the development of the energy industry. NDRC, Ministry of Environmental Protection, NEA jointly issued the *Action Plan on Upgrading and Transforming the Energy Conservation and Emission Reduction of Coal-Fired Power (2014-2020)*, proposed to implement a more strict energy efficiency standards for environmental protection, accelerate the upgrading and transformation of coal-fired power generation, further promote the development of high efficiency and clean coal. In addition, the relevant departments have been released the *Opinions on Establishing A Long-Term Mechanism for Ensuring The Stable Supply of Natural Gas*, the *Notice on accelerating the air pollution prevention action plan 12 key power transport corridor construction*, the *Notice on Planning of 12 Key Power Transport Channel Construction for Accelerating The Air Pollution Prevention Action*, the *Notice on The Strict Control of Key Areas of Coal-fired Power Generation Project Planning and Construction*, the *Action plan for Prevention and Control of Air Pollution And Upgrading of The Quality of Oil Products*, and the *Interim*

Method in Managing the Quality of Commercial Coal.

Actively developing non-fossil energy. Various departments formulated policies to promote the use of non-fossil energy. Since 2013, NEA has approved the third and fourth batch of wind power projects to be undertaken under the *Twelfth Five-Year Plan* to extend the coverage of wind power projects. In June 2014, NDRC issued an on-grid pricing policy for offshore wind power, advancing the development of a number of viable offshore wind power projects. In order to promote the photovoltaic industry, NEA has published the *Interim Method in Managing Photovoltaic Power Plant Projects*, *Several Opinions on Promoting the Sound Development of the Photovoltaic Industry*, the *Interim Method in Managing Distributed Photovoltaic Power Generation Projects*, the *Notice on the Newly Added Construction of Photovoltaic Power Generation in 2014*, the *Notice on Building the Demonstration Area for Distributed Photovoltaic Power Generation*, the *Opinion on Supporting the Financial Service for Distributed Photovoltaic Power Generation*, and the *Notice on Further Implementing the Policies on Distributed Photovoltaic Power Generation*.

Regarding biomass energy, NEA and the Ministry of Environmental Protection has issued the *Notice on Carrying out Demonstration Projects on Biomass Fuel Boilers*, which calls for the construction of 120 demonstration projects nationwide. In 2014, the hydropower newly-installed capacity of the country is nearly 20GW, the total generation capacity reached about 300GW. There are 5 nuclear power units of the new investment, the country's running nuclear power units reached 22 units, nuclear energy generation capacity reached 20.1 GW. On-grid wind power capacity reached the installed generating capacity of wind power has exceeded 90GW. Solar power capacity reached 30GW. Biomass, geothermal power capacity exceeded 9.2GW.

2.3 Improving universal energy service

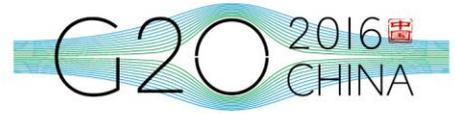
The fundamental objective of China's energy development is to guarantee and improve the livelihood of its people. China makes great efforts to equalize access to basic energy service for its entire population. It balances the energy development in both urban and rural areas, enhances energy infrastructure and improves the energy conditions in the vast rural and border areas and areas inhabited by ethnic minorities in compact communities, so that energy development can benefit all Chinese people.

Providing universal access to electric power. In order to provide the people who have no access to electricity yet in the Tibet, Xinjiang Uygur and Inner Mongolia autonomous regions, as well as Qinghai, Yunnan and Sichuan provinces with electric power, the Chinese

government increases fiscal investment to expand the coverage of the power grids and develop distributed renewable energy sources. In areas without grid connection, China establishes and completes the universal electric service system. By 2015, most of the people who at present don't have electricity in China will gain access to it.

Boosting energy development in rural areas. Energy development in rural areas is of great significance for the betterment of farmers' living standards and modern agricultural progress. Adhering to the principle of comprehensive and effective utilization of diverse energy sources according to local conditions, China increases financial input in energy infrastructure in rural areas and ameliorates rural energy management and services. It upgrades rural power grids to improve electric power conditions for rural life and production, and hence establish new-type rural power grids, which, backed by advanced technology and management, are safe, reliable, efficient and eco-friendly. The Chinese government will put great efforts into developing renewable energy sources in rural areas, and launch various green energy demonstration projects in accordance with local conditions. By 2015, a total of 200 green-energy counties and 1,000 villages using solar energy will be set up as examples. China rebuilds old hydropower stations in rural areas to increase their capacity and efficiency. It accelerates the electrification of hydropower-based rural areas, and builds more small-sized hydropower stations, so as to get rid of the use of wood as fuel in some rural areas. In addition, the Chinese government promotes the use of solar water heaters around the country.

Enhancing energy development in border regions. Since 1978, when China launched its reform and opening-up drive, great progress has been witnessed in both the society and economy of the country's border regions. However, the energy conditions in these areas, despite great improvement that has been made, still lag far behind the eastern and central regions. The Chinese government will appropriate financial funds to improve energy infrastructure and build energy projects that have a direct bearing on the people's livelihood in the border regions, especially in Tibet and Xinjiang, to support leapfrogging development there. It will accelerate the electrical grid construction in Tibet and Xinjiang as well as the Tibetan-inhabited areas in Qinghai, Sichuan, Yunnan and Gansu provinces, enlarge the coverage of the distribution grid, and strengthen the reliability of power supply. The government will draw up and implement the Tibet Energy Development Plan, and provide funding to Tibet for its electric power development - the direct investment during the 12th Five-Year Plan period to exceed 900 million yuan. The energy projects to improve the people's livelihood, such as the "*Electrification of Southern Xinjiang*" and "*Electrification of Northern Xinjiang*", will be sped up. The state will press on with the project to connect Xinjiang power grid to the northwest China grid so as to form an energy channel as soon as



possible to get Xinjiang's redundant electric power transmitted to other parts of China to generate more funds for the development of Xinjiang. The government will build a group of solar power and solar-wind hybrid power plants in the farming and herding areas far from towns to improve the quality of life of the farmers and herdsmen there.

Improving energy conditions in urban areas. The Chinese government will upgrade the urban grids to raise the quality and reliability of power supply in urban areas. It guarantees urban power supply, especially household electricity consumption. The state accelerates natural gas development. Natural gas supply networks will be built or improved in cities so that more urban residents will gain access to natural gas. In northern cities, where the district heating system is applied, the government will develop co-generation units based on local conditions to improve the heating quality.



III. Inventory of fossil fuel subsidies in China

Policy name: A policy of excise tax exemption for oil consumed by refined oil manufacturing enterprises for own use

Policy number: T-c-1

Overview of the subsidy program: The refined oil consumed as fuel, power and raw materials during the production of refined oil, which is independently produced by refined oil manufacturing enterprises, shall be exempted from excise tax.

Description of policy effect: The policy allows exemption of excise tax on oil produced by refined oil manufacturing enterprises for the consumption demand of fuel, power and raw materials during the production, thus reducing the costs for crude oil exploitation and refined oil production. However, on the contrary, it has caused the wasteful use of crude oil and refined oil to a certain extent, so it belongs to inefficient fossil fuel subsidies.

Relevant ministries or government bodies involved in implementing the subsidy program: MOF, SAT

Eligible subsidy recipients: refined oil production enterprises

Duration of the subsidy program: since 2009

Annual cost estimates: CNY 100 million

Policy basis: *The Notice of the Ministry of Finance and the State Administration of Taxation on the Exemption of Excise tax on Oil Produced by Refined Oil Manufacturing Enterprises for Their Own Use (Cai Shui [2010] No.98)*

Information sources: websites of MOF and SAT

Policy name: An excise tax policy of "refund after payment" for refined oil produced by oil (gas) field enterprises for own use

Policy number: T-c-2

Overview of the subsidy program: For refined oil which is purchased by oil (gas) field

enterprises at home for the consumption of crude oil exploitation, the excise tax amount of refined oil temporarily paid upon actuality shall be rebated in full amount.

Description of policy effect: The policy allows "refund after payment" for refined oil produced by oil (gas) field enterprises for their own use, thus reducing the costs for crude oil exploitation and refined oil production. However, on the contrary, it has caused the wasteful use of crude oil and refined oil to a certain extent, so it belongs to inefficient fossil fuel subsidies.

Relevant ministries or government bodies involved in implementing the subsidy program: MOF, SAT

Eligible subsidy recipients: oil (gas) field enterprises

Duration of the subsidy program: since 2009

Annual cost estimates: CNY 2.7 billion

Policy basis: The *Notice of the Ministry of Finance and the State Administration of Taxation on the "Refund after Payment" Policy of Excise tax on Oil Produced by Oil (Gas) Field Enterprises for Their Own Use* (Cai Shui [2011] No.7)

Information sources: websites of MOF and SAT

Policy name: A policy of exempting China National Petroleum Corporation (CNPC) from land use tax¹

Policy number: T-c-3

Overview of the subsidy program: The land, which is used for the specified oil-gas production and construction of the affiliated companies and units of CNPC and specified for oil-gas production and living use in the industrial and mining areas outside cities, counties and established towns, shall be exempted from land use tax for the time being.

Description of policy effect: The policy for exempting CNPC from land use tax in cities and towns has reduced its costs for oil-gas production, stimulated producers to enlarge scale

¹ Note: all the terms of "land use tax" in this report also refer to urban land use tax.

of production, thus leading to excessive production of fossil fuels, so it belongs to inefficient fossil fuel subsidies.

Relevant ministries or government bodies involved in implementing the subsidy program: MOF, SAT

Eligible subsidy recipients: CNPC

Duration of the subsidy program: since 1989

Annual cost estimates: N.A.

Policy basis: *The Regulations of the State Administration of Taxation on Exempting Affiliated Units of China National Petroleum Corp from Land Use Tax* (Guo Shui Di Zi [1989] No. 88)

Information sources: websites of MOF and SAT

Policy name: A policy of land use tax exemption for China National Offshore Oil Corporation (CNOOC)

Policy number: T-c-4

Overview of the subsidy program: The land of CNOOC and its affiliated companies for the following purposes (construction land for offshore structures like jackets and platform modules; wharfs; oil and gas transportation pipelines; communication antenna; road, railway, special line and airport outside the office and living areas) shall be exempted from land use tax for the time being.

Description of policy effect: The policy for exempting CNOOC from land use tax in cities and towns has reduced its costs for oil-gas production, stimulated producers to enlarge scale of production, thus leading to excessive production of fossil fuels, so it belongs to inefficient fossil fuel subsidies.

Relevant ministries or government bodies involved in implementing the subsidy program: MOF, SAT

Eligible subsidy recipients: China National Offshore Oil Corporation

Duration of the subsidy program: since 1990

Annual cost estimates: N.A.

Policy basis: The *Regulations of the State Administration of Taxation on Exempting China National Offshore Oil Corporation and its Affiliated Units from Land Use Tax* (Guo Shui You Fa [1990] No.3)

Information sources: websites of MOF and SAT

Policy name: A preferential tax rate policy of value-added tax (VAT) on coal gas and liquefied petroleum gas

Policy number: T-c-5

Overview of the subsidy program: This policy refers to a preferential tax rate of 13% for value-added tax on coal gas and liquefied petroleum gas.

Description of policy effect: The existing preferential VAT rate of 13% for coal gas and liquefied petroleum gas pertains to a preferential VAT policy for domestic living. However, the existing policy fails to discriminate different income groups and applies to all social residents. Actually, this will trigger the excessive use of coal gas and liquefied petroleum gas, so it belongs to inefficient fossil fuel subsidies.

Relevant ministries or government bodies involved in implementing the subsidy program: MOF, SAT

Eligible subsidy recipients: production enterprises of coal gas and liquefied petroleum gas

Duration of the subsidy program: since 1994

Annual cost estimates: N.A.

Policy basis: The *Interim Regulations on Value-added Taxes* (Article 2 (ii))

Information sources: websites of MOF and SAT

Policy name: A policy of exempting thermal power stations from land use tax in cities and towns

Policy number: T-c-6

Overview of the subsidy program: The land, which is used for ash yards, ash transport pipelines, oil (gas) pipelines and special railway lines outside fence of thermal power stations as well as specified for water supply outside the thermal power stations and heating supply pipelines of thermal plants.

Description of policy effect: This is a policy of exempting thermal power stations from land use tax in cities and towns, reducing the power generation costs of thermal power stations. This subsidy policy has stimulated producers to enlarge the scale of production and thus caused the excessive production of fossil fuel, so it belongs to inefficient fossil fuel subsidies.

Relevant ministries or government bodies involved in implementing the subsidy program: MOF, SAT

Eligible subsidy recipients: thermal power enterprises

Duration of the subsidy program: since 1989

Annual cost estimates: N.A.

Policy basis: *The Regulations of State Administration of Taxation on Issues Concerning the Exemption of Land Use Tax for Power Industry* (Guo Shui Di Zi [1989] No.13)

Information sources: websites of MOF and SAT

Policy name: A policy of VAT exemption for heating fees of heat supply enterprises

Policy number: T-c-7

Overview of the subsidy program: Incomes of heating fee, which are charged by heat supply enterprises from heating supply for individual residents, shall be exempted from VAT.

Description of policy effect: The existing tax preferential policies of VAT on heat supply enterprises supports to ensure normal business operation of enterprises in the

condition that the mechanism of heat supply price is not marketized yet, and also take into consideration of the issues concerning low-price heat supply to partial low-income groups. However, these preferential policies for heat supply enterprises make no contribution to promoting energy conservation and energy efficiency of heat supply enterprises. Furthermore, the policy targets are all social residents, this could cause waste of fossil fuel to a certain extent, so it belongs to inefficient fossil fuel subsidies.

Relevant ministries or government bodies involved in implementing the subsidy program: MOF, SAT

Eligible subsidy recipients: residents

Duration of the subsidy program: 2011-31/12 2015

Annual cost estimates: N.A.

Policy basis: *The Notice of the Ministry of Finance and the State Administration of Taxation on Continuing the Implementation of Preferential Policies on Value-Added Tax, Real Estate Tax and Urban Land Use Tax for Heat Supply Enterprises* (Cai Shui [2011] No.118)

Information sources: websites of MOF and SAT

Policy name: A policy of exempting heat supply enterprises from real estate tax and urban land use tax

Policy number: T-c-8

Overview of the subsidy program: The heat supply enterprises which charge heating fee for heat supply to residents shall be continuously exempted from real estate tax and urban land use tax on plants and land used for heat supply to residents. For heat supply enterprises, which supply heat to residents and units or engage in other production and business activities, shall be exempted from real estate tax and urban land use tax at the percentage that heating fee derived there from accounts for the gross incomes.

Description of policy effect: The existing tax preferential policies of real estate tax and urban land use tax on heat supply enterprises supports to ensure normal business operation of enterprises with the condition that the mechanism of heat supply price is not marketized yet,

and also take into consideration of the issues concerning low-price heat supply to partial low-income groups. However, these preferential policies for heat supply enterprises make no contribution to promoting energy conservation and energy efficiency of heat supply enterprises. Furthermore, the policy targets are all social residents, this could cause waste of fossil fuel to a certain extent, so it belongs to inefficient fossil fuel subsidies.

It should be noted though, clean and efficient urban heat supply is helpful to meet the increasing demand for citizens. Back pressure type CHP is of high degree of cascading utilization of energy, while pollutant emission is far below other forms of coal heating. This policy is not inefficient and can be exempted.

Relevant ministries or government bodies involved in implementing the subsidy program: MOF, SAT

Eligible subsidy recipients: residents

Duration of the subsidy program: 1/7 2011-31/12 2015

Annual cost estimates: N.A.

Policy basis: *The Notice of the Ministry of Finance and the State Administration of Taxation on Continuing the Implementation of Preferential Policies on Value-Added Tax, Real Estate Tax and Urban Land Use Tax for Heat Supply Enterprises (Cai Shui [2011] No.118)*

Information sources: websites of MOF and SAT

Policy Name: A Series of Subsidies Derived from Petroleum Fuels Price and Tax Reform

Policy number: S-c-1

Overview of the subsidy program: In 2008, the State Council issued the document “*Circular of the State Council on Implementing Petroleum Fuels Price and Tax Reform*”, which indicates that in the progress of petroleum fuels price and tax reform the mechanism of subsidies for the grain farmers, low-income groups and public service industries will be improved. Specifically, the rise of oil price causes the increase of oil consumption costs to various different groups. Petroleum price subsidy for the grain farmers is included in the

total of comprehensive agricultural subsidies, while that for low-income groups is included in subsistence allowances for residents with the amount of subsidies based on comprehensive consideration of the overall price level and the price adjustment of petroleum and gas. Subsidies for urban and rural highway passenger transportation, inter-island and rural waterway passenger transportation, fishery (including overseas fishery) are funded by the specific transfer payments of central finance. The subsidy for taxi industry is temporary and also funded by financial funds.

In 2009, seven ministries jointly issued the document “*Circular on Further Improving the Mechanism of Subsidies for Grain Farmers, Low-Income Groups and Public Service Industries after the Petroleum Fuels Price and Tax Reform*”. The circular indicates that, when the prices of petroleum products exceed the price level before the reform in 2006, that is the price of gasoline exceeds 4000 CNY per ton, the price of diesel exceeds 3870 CNY per ton, the trigger mechanism of petroleum price subsidy will be started and the amount of subsidies changes with the petroleum price level, which is calculated based on the price gap and annual weighted average.

Furthermore, Ministry of Finance and other relevant ministries issues a series of interim measures for administration of the special funds as indicated below for different industries such as farming , fishery, forestry, urban and rural highway passenger transportation, urban and rural highway passenger transportation respectively.

Description of policy effect: The series of subsidies derived from petroleum fuels price and tax reform exists widespread in China, with a large subsidy scale and a wide range of subsidy object. The main targeted beneficial group is low income population such as farmers. However, there are still some problems existing in this type of subsidies, such as poorly-targeted policy design, difficulties to effectively distribute the subsidies to low income population and heavy financial burden. In addition, there is a lack of coordination between these subsidy policies. For instance, the policy objectives of petroleum price subsidy for the fishery and subsidy for the marine fishermen who transfer to other industries are not coordinated. The former is designed to compensate for the increased costs caused by the adjustment of petroleum price. The latter is designed as a scrap page incentive scheme for marine fishery vessels by one-off payment. The accumulative amount of the former subsidy may be larger than the latter. In that case, the fishermen would prefer to retain the fishery vessels, which has a negative impact on the latter policy’s effectiveness and bring about wasteful and inefficient oil consumption.

Due to a series of problems existing in the subsidies derived from petroleum fuels price and tax reform, such as inefficient policy performance, poorly-targeted policy design, policy

effects that encourage wasteful consumption, policy goals difficult to meet, and great financial burden, these subsidy policies should be reformed.

Relevant ministries or government bodies involved in implementing the subsidy program: Ministry of Finance, National Development and Reform Commission, Ministry of Supervision, Ministry of Transport, Ministry of Agriculture, National Audit Office, State Forestry Administration

Eligible subsidy recipients: public service industries, employed population in the forestry, fishery and farming, low-income groups

Annual cost estimates: According to the national public finance expenditure balance sheet, the annual costs of subsidies derived from petroleum fuels price and tax reform list as follows.

**Table 1. Annual costs of subsidies derived from petroleum fuels price and tax reform
(Unit: CNY 100 million)**

Year		2010	2011	2012	2013
	Fishery	67.69	207.29	236.63	259.13
	Forestry	15.41	50.10	61.73	46.34
Transportation	Urban public transport	96.03	306.53	363.16	311.53
	Rural road passenger transportation	36.46	128.77	148.17	114.26
	Taxi	63.13	186.06	209.90	170.43
	Else	13.28	21.90	22.70	41.14

Data Source: the national public finance expenditure balance sheet

Note: Petroleum price subsidy for the grain farmers is included in the total of comprehensive agricultural subsidies. Petroleum price subsidy for low-income groups is included in subsistence allowances for residents. The two subsidies are not separately accounted in the national public finance expenditure balance sheet.

Duration of the subsidy program: since 2009

Policy basis: *Circular of the State Council on Implementing Petroleum Fuels Price and Tax Reform* (State Council 2008 Circular 37), *Circular on Further Improving the Mechanism of Subsidies for Grain Farmers, Low-Income Groups and Public Service Industries after the Petroleum Fuels Price and Tax Reform* (MOF 2009 Caijian Circular 1), *Circular on Issuing Implementation Opinions on Further Improving the Dynamic Adjustment Mechanism of Comprehensive Agricultural Subsidies* (MOF 2009 Caijian Circular 492), *Circular on Issuing Interim Measures for Administration of the Special Fund of petroleum price subsidy for the fishery* (MOF 2009 Caijian Circular 1006), *Circular on Issuing Interim Measures for Administration of the Special Fund of petroleum price subsidy for the forestry* (MOF 2009

Caijian Circular 1007), *Circular on Issuing Interim Measures for Administration of the Special Fund of petroleum price subsidy for urban and rural highway passenger transportation* (MOF 2009 Caijian Circular 1008), *Circular on Issuing Interim Measures for Administration of the Special Fund of petroleum price subsidy for inter-island and rural waterway passenger transportation* (MOF 2009 Caijian Circular 1008), the national public finance expenditure balance sheet.

Information sources: websites of MOF and Chinese government



IV. Reform strategies and timeframes for relevant subsidy policies

Fossil fuel subsidy policy reform is an interdisciplinary, interdepartmental complex systematic programme. We suggest in next step reform to plan as a whole to promote energy production and consumption revolution and the overall direction of deepening the reform of the fiscal and taxation systems. To phase out inefficient fossil fuel subsidies that encourage wasteful consumption, comprehensive standardization, transparency and efficiency is required to actively promote the fossil fuel subsidies policy reform and the construction of the modern financial system.

4.1 General idea

Based on the above analysis, we think future China's inefficient fossil fuel subsidies policy reform can be generalized as “One Center and Two Combinations”.

“*One Center*” means improving fossil fuel efficiency should be the center. Although the production and consumption of non-fossil energy is booming worldwide in recent decades, it can be predicted that for a long time in the future, production and consumption of fossil fuels is still dominant, especially for large developing countries like China, with “Coal, electricity” as the main characteristics of the energy production and consumption patterns will exist for a long time. Therefore, China's fossil fuel subsidies policy reform should be adjustment and optimization based on the above judgment. Reform should mainly focus on rationalizing fossil energy subsidies, phasing out inefficient fossil fuel subsidies step by step, improving fossil fuels efficiency, and deepening energy conservation and emissions reduction.

“*Two Combinations*” refers to the combination of China's energy price formation mechanism of market-oriented reform and tax reform. In the third plenary session of the eighteenth CPC central committee, it is clearly stated that “*let the market play a decisive role in resource allocation and let the government play a better role*”. *Let the market play a decisive role in resource allocation* means that commodity price formation mechanism should be determined by the supply and demand, and that government intervention should be reduced or eliminated. At present, most of China's commodity prices already implemented market-oriented reform, except energy products which is priced by the government. Inefficient fossil fuel subsidies are the important factors that affect the government pricing, hinder China's energy price marketization reform, and seriously affect the market decisive

function in resource allocation. Rationalizing and phasing out inefficient fossil fuel subsidies means to reduce government intervention in fossil fuel prices, better reflect supply and demand of energy products, and effectively promote the marketization of China's energy price mechanism reform. Thus rationalizing and phasing out inefficient fossil fuel subsidies should be combined effectively with the marketization of China's energy price mechanism reform. Resonance effect can be expected with the synchronization of the two reforms, which can maximize reform effect.

Future design of fiscal and taxation reform is the concrete embodiment of *let the government play a better role*. In the future design, not only the concept of general layout of *Five-in-One* (economic, political, cultural, social, and ecological progress) should be reflected, but also the principle of the fiscal and taxation system should be followed. Rationalizing and phasing out inefficient fossil fuel subsidies should combine and comply with the future trend of fiscal and taxation reform. Those inefficient fossil fuel subsidies which do not conform to the future trend of fiscal and taxation reform should first be focused. During the future design of fiscal and taxation reform, further measures should be implemented to effectively improve fossil fuel efficiency, such as resource tax and environment tax reform. Therefore, rationalizing and phasing out inefficient fossil fuel subsidies should also be coordinated and harmonized with fiscal and taxation reform to promote the improvement of fossil fuel efficiency.

GSP (Generalized System of Preference) subsidy policies on production and consumption of fossil fuels should be *phased out*. These policies reduce fossil fuel production costs and thereby increase fossil fuel supply and demand, which results in wasteful consumption and low efficiency of fossil fuels.

Fossil fuel subsidy policies on special group (industry) should be *rationalized*. To guarantee the fair consumption of fossil fuels for all kinds of human groups, providing subsidies for special group (industry) is a worldwide practice. China fossil fuel subsidies adopt more GSP policies than targeted policies and need to be rationalized. Fossil fuel subsidy policies on special group (industry) should be rationalized.

4.2 Basic principles

Fossil fuel subsidies reform should follow three principles:

1. To promote reform with open policy

Rationalizing and phasing out inefficient fossil fuel subsidies is China's reform effort

under the G20 framework to comply the commitment of the Sino-US joint statement on climate change. It is also an effort for China's open policy and international image of a responsible big country. Moreover, increasing fossil fuel efficiency, reducing emissions of greenhouse gases and air pollutants also meets China's needs for comprehensively deepening reform and promoting sustainable development. Rationalizing and phasing out inefficient fossil fuel subsidies of great significance to promote China's energy conservation and emissions reduction, energy price formation mechanism reform, fiscal and taxation reform, and economic and social development. In this way, reform roadmap for rationalizing and phasing out inefficient fossil fuel subsidies should be effectively connected and coordinated with energy price marketization reform, fiscal and taxation reform plan and be considered as a whole.

2. To fully consider China's national conditions and development stage

Energy production and consumption is closely related to its national conditions, not only including types and characteristics of energy mineral resources determined by geographical environment, but also domestic economic scale and population, and also the fiscal and taxation system characteristics adapted to local economy and society. Rationalizing and phasing out inefficient fossil fuel subsidies can't ignore China's specific national conditions and stage of development. For example, coal resources are China's most abundant fossil fuel reserves, which can explain the high percentage of coal consumption in China energy mix. Some subsidy policies to improve coal mining technology reduce the mining cost in a short term, but in a broad and long-term view, such policies can be of great significance to improve energy production efficiency. Such policies can't be phased out and to some extent need to be optimized and strengthened. Take another example. Huge volume of population determines top of the world economies for China, but Per capita economy is far behind the developed countries. Economic development is still the top priority for the future development of China. The development of economy cannot be decoupled with the energy production and consumption, which requires China to take cautious attitude during the reforming process of rationalizing and phasing out inefficient fossil fuel subsidies to avoid excessive adverse effects on the economic development.

3. To promote international cooperation

During its developing process, the world has accumulated useful experiences and methods of the use of fossil energy subsidies, as well as experiences of policy optimization and addressing reform barriers. From the 1990s, phasing out inefficient fossil fuel subsidies had been regarded internationally as significant counter measure to address climate change. In recent years inefficient subsidies reform issues have been gradually put on the agenda of

the international energy cooperation. The reason and challenge of subsidy reform for different economies are not the same. Developed countries are facing complex challenges. Major OECD member countries are still in slow recovery process from economic crisis, but try to seek green development solution at low cost to maintain the global leadership for addressing climate change. Emerging economies are in the transition process of energy marketization. Reforming fossil energy subsidies can not only promote domestic reform, but also pave a good way to further participate in global energy governance. Developing countries are facing double challenges of energy poverty and heavy financial burden by energy subsidies, and therefore necessity and barriers will both exist in the reform process. Fossil fuel subsidies reform is a complex and arduous task, international cooperation is particularly important to push forward the reform. While rationalizing domestic fossil fuel subsidy policies reform in the future, China will fully draw lessons from international advanced concept, promote experience sharing and communication, and optimize their policy system to make joint efforts to realize sustainable development of the world and actively address climate change.

4.3 Reform progress

In recent years, China has made significant efforts in the perfection of the mechanisms of energy tax and price formation. The marketization of the fossil fuel prices and the integration with international price level were greatly improved. Externalities of fossil fuel consumption get more attention and cap control policy for fossil fuel consumption is strengthened. China is gradually reducing fossil fuel subsidies.

1. Oil price forming mechanism insists on market-oriented direction and gradually changes from government pricing toward integrating with international market pricing.

China's oil pricing mechanism reform can be implemented through three aspects: gradually integrating with international oil price level, gradually shortening adjustment period of refined oil price, and gradually increasing the fluctuation of refined oil retail price. In 2008 crude oil produced in China already took international crude oil price as the benchmark. Price of refined oil basically formed on international convention. In June 2008, the government announced price rises on gasoline and diesel by 16% and 18% respectively. Average gasoline price rose to \$0.85/liter. In January 2009, a substantial increase in fuel oil excise tax in China made the price of gasoline and diesel basically identical with the international market price level. After policy adjustment, gasoline excise tax has increased by 5 times, reached CNY 1/liter. Excise tax increased to CNY 0.1 ~ 0.8/liter for diesel etc. Late 2014 and early 2015, the Ministry of Finance further increased excise tax of refined oil,

gasoline, naphtha, solvent oil and lubricating oil up to CNY 1.52/liter. Diesel, kerosene and fuel oil excise tax increased to CNY 1.2/liter. At present China's oil pricing is implemented in accordance with “oil price management approach (trial)” issued by National Development and Reform Commission in 2013. The Approach aims to improve the integration of domestic and international oil price, at the same time tries to avoid the adverse effect of international oil price fluctuation to domestic economy. Take the example of October 2014 data. China's gasoline and diesel retail price is higher than the United States by about 30% and 20% respectively.

2. Natural gas pricing mechanism has experienced reform from cost plus method to market net back value method, and relevant policies are being improved. Since 2000, with significant growth of China's natural gas consumption and imports, the problem of low price of natural gas has called for several major reforms on pricing mechanism. First, the ex-factory price of natural gas was increased and the double-track pricing mechanism was cancelled. Second, more market-based net back value pricing mechanism was conducted in several pilot regions. Third, net back value pricing mechanism was launched nationwide, and price management changed from factory to city-gate. In 2010, NDRC raised domestic onshore natural gas price by 25% and enlarge the scope of the contractual price. The rise in price reduced the gap between domestic gas and imported gas (e.g. LNG) and also competition fuel (e.g. LPG), and is an important step to realize market-based pricing mechanism ultimately. It helps to improve the efficiency of gas consumption and domestic investment on gas production, and also to the development of LNG and pipeline gas imports. Since December 2012, a trial scheme for a more market-based net back value pricing mechanism was implemented in the Guangdong and Guangxi regions. Since July 2013, NDRC adjusted non-resident gas price. The national average gate price increased from CNY 1.69/ m³ to CNY 1.95/ m³, i.e. an increase of 15%. In 2014, NDRC rationalized the feed-in tariff management of gas power generator, which encouraged natural gas distributed power providers and power users to negotiate and determine the power supply and price, and tried to resolve the conflict of natural gas power price. Currently in China there is still a price gap between “stock gas” and “incremental gas”. The price relationship between natural gas and alternative energy is being rationalized, which is an important step to promote pricing mechanism reform.

3. Market-based pricing mechanism has been realized on coal, at the same time, policies and measures for coal consumption cap control are strengthening. Currently thermal coal prices are mostly determined by direct negotiations between coal producers and power generation companies, and there are no direct price subsidies. Coking coal price is nearly the same with international market and import coal often shows price advantage over

domestic coal. Coal price is hardly interfered by government except some cases, e.g. in June 2010 to control inflation, NDRC issued a directive to domestic coal producers to freeze coal price. In addition to the increasing trend of market-based pricing, China also continues to control coal consumption. Some regions are required to keep zero-growth or even negative growth of coal consumption to control air pollution.

4. Power system reform is further promoted, and pricing mechanism is constantly adjusted and improved according to electric power development situation. Multi-step tariff is being implemented for residential sales price in China, and favored price for energy intensive industrial users is being phased out. In November 2009, NDRC raised non-residential tariff by an increase of CNY 0.028/kWh, and tax subsidies for some industries were rectified. Since July 2012, multi-step tariff policy for residents has been trialed nationwide. At present, China is encouraging direct trading between power utilities and users, while strengthening the supervision for power distribution. Recent tariff reform will focus on verifying distribution price separately. Principle of “verified cost plus reasonable profit” will be gradually applied in the future. Tariff will be classified according to voltage level and prices of power generation and sale except non-profit users will be formed by market step by step.

5. Fiscal and taxation systems have been optimized and preferential tax policies have been rationalized gradually. *Decision of the Central Committee of the Communist Party of China on Some Major Issues Concerning Comprehensively Deepening the Reform* was adopted at the Third Plenary Session of the 18th Central Committee of the Communist Party of China. In that document, sorting out existing preferential tax policies is required: *In line with the principles of unifying taxation, promoting equality in tax burdens and fair competition, we will strengthen management of preferential tax policies, especially regional preferential tax policies. All preferential tax policies will be made clear in taxation laws and regulations and we will sort out existing preferential policies in this regard. We will improve the collection and management system of state and local taxes. In Decision of the State Council on Deepening the Budget Management System Reform, it is also required to completely rationalize preferential tax policies. The requirement of sorting out existing preferential policies is further clarified in Notice of the State Council on Sorting out Existing Preferential Policies.* Rationalization and reform on domestic fossil fuel preferential tax policies will be carried out based on the requirement of the above-mentioned measures to phase out inefficient fossil fuel preferential tax subsidies.

4.4 Reform strategies

Detailed reform strategies and adjustment of above-mentioned fossil fuel fiscal and tax subsidy policies are suggested as follows.

1. Short- and Mid-term reform

- **Adjust excise-tax rebate policy for self-purchased refined oil consumed by crude oil exploration and excise-tax exemption policy for self-produced refined oil consumed by refined oil production**

Preferential policies for refined oil consumed in crude oil exploration and refined oil production are not conducive to improve energy efficiency and conservation. These policies tried to solve the remaining problems of refined oil tax reform in 2008 and existing double taxation. According to the requirement of the Third Plenary Session of the 18th Central Committee of the Communist Party of China, the collection scope, procedures and rates of excise-tax should be adjusted. Taxation procedure for some refined oil products need to move backward. Holistic planning should be made when adjusting these two policies. Therefore we suggest to study on how to adjust above-mentioned excise-tax preferential policies in the short-term.

Relevant inefficient subsidy policies:

Policy name: A policy of excise tax exemption for oil consumed by refined oil manufacturing enterprises for own use (Policy number: T-c-1)

Policy name: An excise tax policy of "refund after payment" for refined oil produced by oil (gas) field enterprises for own use (Policy number: T-c-2)

2. Mid- and long-term reform

- **Phase out preferential policies on urban land-use tax for fossil fuel exploration and production**

Urban land-use tax exemption policies for oil, gas and thermal-fired utilities and stamp tax exemption policies for oil/gas are not conducive to raise fossil fuel costs and promote market pricing mechanism. These existing policies should be reformed.

Relevant inefficient subsidy policies:

Policy name: A policy of exempting China National Petroleum Corporation (CNPC)

from land use tax (Policy number: T-c-3)

Policy name: A policy of land use tax exemption for China National Offshore Oil Corporation (CNOOC) (Policy number: T-c-4)

Policy name: A policy of exempting thermal power stations from land use tax in cities and towns (Policy number: T-c-6)

- **Phase out preferential policies on 13% VAT Reduction for coal gas**

Coal gas is taxed at a reduced VAT rate of 13%. This low tax rate aims to provide aid for daily necessities but is not conducive to energy conservation and not specifically targeted at lower-income groups. Reform for these policies is suggested combined with domestic price policies reform for home use fossil fuel and supporting policies for lower-income groups.

Relevant inefficient subsidy policies:

Policy name: A preferential tax rate policy of VAT on coal gas and liquefied petroleum gas (Policy number: T-c-5)

- **Phase out VAT exemption policy, preferential policies on urban land-use tax and house property tax for heating enterprises**

VAT exemption policy, preferential policies on urban land-use tax and house property tax for heating enterprises, can reduce their tax burden. These policies are not conducive to energy conservation, and not targeted at lower-income groups. Phasing out these policies is suggested combined with price policies reform for heating and compensation policies for lower-income groups. Clean and efficient urban heat supply is helpful to meet the increasing demand for citizens. Back pressure type CHP is of high degree of cascading utilization of energy, while pollutant emission is far below other forms of coal heating, therefore this policy is not inefficient and can be exempted.

Relevant inefficient subsidy policies:

Policy name: A policy of VAT exemption for heating fees of heat supply enterprises (Policy number: T-c-7)

Policy name: A policy of exempting heat supply enterprises from real estate tax and urban land use tax (Policy number: T-c-8)

- **Improve subsidy policy package after refined oil price and tax-fee reform**

Petroleum fuel subsidies for sectors like urban public transport after the refined oil price reform should be comprehensively designed and adjusted. According to the realities of the five subsidized sectors, we should implement in categorized ways, reduce and substitute the subsidies, adjust the product price subsidies to integrated supporting policies with special fund and general transfer payments.

Relevant inefficient subsidy policies:

Policy Name: A Series of Subsidies Derived from Petroleum Fuels Price and Tax Reform (Policy number: S-c-1)

3. Reform details

For each subsidy policy proposed for reform, details should be given including legislative and/or administrative actions, specific timeframes, the ministry or government body responsible for carrying out reforms, relevant capacity building, risk management and consultation and communication strategy.

4.5 Supporting reform measures

1. Accelerate resource and environment tax system reform

Tax reform related to resource and environment is not only the important content of China future tax system reform, but also helpful to raise fossil fuel cost and improve energy efficiency and environment protection. It is therefore necessary to accelerate resource and environment protection tax system reform.

(1) Accelerate resource tax reform and promote resource conservation and ecological environment protection

Since November 1, 2011, China has implemented ad valorem collection reform nationwide on resource tax for crude oil and natural gas and raised the tax burden level. Since December 1, 2014, China has also implemented ad valorem collection reform nationwide on resource tax for coal and reviewed relevant load funds. Next, China will implement ad valorem collection reform on resource tax for resources other than crude oil, natural gas and coal. Relevant load funds will also be reviewed. According to the requirement of the *Decision* and relevant resources tax characteristics, rivers and forests will

be put into resource tax collection scope.

(2) Accelerate environment protection tax legislation

According to the requirement of the *Decision*, China will accelerate the reform to change the current environmental protection fees into an environment tax. Principles of macro-control, fee to tax, step by step, reasonable tax burden and conducive to collection and management will guide the reform to change the current pollutants discharge fee into environment tax, which will be collected after legislation by the National People's Congress. This tax will be imposed on waste water, waste gas, waste solid and noise. Discharging amount will be used to for tax collection. Tax rate will be set based on comprehensive consideration of current pollutants discharge fee, actual cost of governance, environmental damage and charging practice. Environment tax collection is conducive to straighten up the relationship between environment fee and tax, to promote environment protection work of local government, to reduce pollutants emission and energy consumption, and to accelerate industry upgrade and the transformation of the economic growth model.

2. Strengthen policy support on clean energy and renewable energy

Policy support should focus on clean energy and renewable energy, increase subsidies and tax preferences to clean energy and renewable energy, promote the development of clean energy and renewable energy, increase the portion of clean energy and renewable energy in total energy consumption, and gradually realize the substitution to fossil fuels.

3. Improve subsidy policy on low-income and vulnerable groups

During the process of phasing out inefficient fossil fuel subsidies, we should pay attention to protect low-income and vulnerable groups. Energy price will inevitably rise if subsidies cancelled, and we need further optimize relevant subsidy mechanism and improve fiscal expenditure of corresponding compensation and subsidies to target at less impact on low-income and vulnerable groups, social stabilization, and energy service guarantee.