

[CN] Maoxing HUANG

Contact Information

Address: College of Economics, Fujian Normal University, China

Telephone:

Fax:

Mobile: 013705032762

Email Address: hmx2001007@163.com

Homepage:

Zip Code: 350108

Huang Maoxing (1976 -), male, native of Putian Fujian China, PhD in economics, associate professor and currently assistant to head of the College of Economics of Fujian Normal University and vice executive director of the Fujian Normal University Branch of the National Research Center of Comprehensive Economic Competitiveness; main research fields: Energy Economics, Regional Economics and Competitiveness Economics
He has published many papers such as < World Energy Security Conditions and Strategy Selection amidst Globalization>.

World Energy Security Conditions and Strategy Selection amidst Globalization

[CN] Maoxing HUANG

Abstract: the stable and fast development of world economy highly depends on the stable supply of energies. However, the environmental pollutions arising from energy shortages, energy wars and abusive use of energies have also aroused significant challenges to the survival and development of the human beings. With the arrival of the post-cheap-energy era of the globalization process, it has become a common issue for the whole world how to establish a more complete and stable system of world energy security. It is necessary to set up a more complete and comprehensive system of world energy security from the perspectives of energy supply, energy demand, energy price and energy use in the foreseeable future. Meanwhile, the opportunities as offered by the current global financial crisis shall also be fully capitalized upon in order to accelerate the restructuring of global energy supply and promote the stable, long-term and sustainable development of the world economy.

Key words: globalization, world energy security, energy supply, energy demand, strategy selection

Energy security is an issue that came into existence during the industrial revolution. With the increasing demands for energies by the human beings, energy security has become increasingly related to international political and economic security. Energy security issue is

a realistic and urgent issue facing all countries in the world and the focus of attention during the era of globalization, particularly when the era of cheap energies is coming to a conclusion. It will surely become the biggest obstacle and challenge to economic development, social production and people's daily life. As a result, the international competitions for energies have been intensified and potential conflicts have been aroused by the drive for interests, thus sparking off regional conflicts and turbulences and blocking the process of world peace and development. With the increasing globalization of the world economy, energy security issue has become a worldwide concern for all. Only by uniting together and creating a more complete system of world energy security can all countries address the various energy-related issues in a more stable environment and safeguard the world economic community in real sense.

I. World energy security in the background of globalization and its characteristics

1. Emergence of world energy security in the background of globalization

Energy became a key factor to affect the war outcomes and determine national destiny during the two world wars in the 1920s and the two petroleum crises in the 1970s. After the International Energy Agency established in 1974 proposed the concept of energy security based on stable petroleum supply and price, many countries, particularly western countries, compiled their energy policies focusing on energy supply security on the basis of such concept. World energy security is a concept with a wide scope of applicability. It is universally accepted in the international energy sector that energy security includes energy production security, supply security and application security. It is necessary to not only guarantee world energy supply and maintain the stable development of the world economy through reasonably priced energies, but also attach significant importance to the damages that energies may bring to the environment, protect the natural environment where the human beings live and protect the international community and its members from the turbulences and threats arising from present and future changes in the development trend of world energies.

Ever since the human beings recognized the importance of energies, the competitions for energies have never stopped due to the uneven distribution of energies geographically and such competitions have aggravated the conditions of international energy security and rendered the current environment of world energy security highly complicated and vulnerable. With the accelerated process of globalization, the energy structure and economic structure of various countries and regions in the world have changed greatly. Such changes have sparked off a series of profound reforms in the existing system and thus

generated far-reaching influences on world energy security (please see Table 1)¹. In addition, the reduced influence of OPEC has generated substantial impacts on the energy security system from various perspectives and intensified the contest for and consolidation of energy sources by various major powers in the world. Speculations have also worked to disrupt the normal prices of energies and energy consumptions by emerging countries have been resisted by these major powers. The current energy security system is becoming more and more unstable due to the presence of political and other factors. Although various major powers have aggressively invested to develop and experiment with new energies, no good substitute of traditional energies has been found so far. Traditional energies will continue to play an important role in economic development for a long period in the future.

Table 1 World Energy Security in the Background of Globalization

Period	Petroleum price	Reason	Effects
Second World War – 1970s	Petroleum price is kept stable between USD 1 to 3 per barrel	Monopolized by western petroleum corporations	The economic development of major industrialized countries in the west; coals give way to petroleum in the world energy structure
October 1973 – January 1974	Surging petroleum prices: from USD 3 to USD 11 per barrel	Middle East wars; OPEC increases petroleum prices	World economic crisis (1 st petroleum crisis)
End of 1973 – end of 1980	Surging petroleum prices: from USD 13 to USD 43 per barrel (highest in 1979)	Changes in the political situations of Iran in 1978; petroleum output is sharply reduced due to the war between Iran and Iraq in 1980	Western economy sinks into a recession (2 nd petroleum crisis); restructuring of western economy, development of energy-saving technologies and substitute energies
End of 1985 – October 1986	Slumping petroleum prices: from USD 38 to USD 6.8 per barrel	Restructuring of energy consumption structure due to high petroleum prices; more petroleum suppliers and increasing petroleum supply; shrinking demands	Slow development of energy-saving technologies and substitute energies; economic and liability crisis of petroleum producing countries
1990 – 1991	Surging petroleum	Gulf War	Petroleum producing

¹ Shen Yuming, “Economic Globalization and National Energy Security (J)”, World Geographic Study”, Page 78, Edition 3, 2003

	prices: once rise above USD 30 per barrel; come down to the normal scope of fluctuations after the war		countries in West Asia are severely affected (3 rd petroleum crisis)
October 1991 – December 1998	Slumping petroleum prices: from USD 23 to USD 10 per barrel	Asian financial crisis; warm winter in the northern hemisphere; oversupply	Slowdown of world economic growth
December 1998 – November 2000	Surging petroleum prices: from USD 10 to USD 35 per barrel; mean price of USD 27.6 in 2000	Revival of world economy; reduced inventory of petroleum	Influence world economic growth (4 th petroleum crisis)
December 2000 – December 2001	Decreasing petroleum prices: from USD 35 to USD 22 per barrel	Oversupply of petroleum in the international market; OPEC limits productions to keep price up; “9.11” terrorist event	Global economic slowdown
January 2002 – November 2002	Increasing petroleum prices: between USD 22 – 28 per barrel, reaching USD 33 at the maximum	Unstable situations in the Middle East; political turbulences in Venezuela	Slow revival of the world economy
December 2002 – April 2003	Increasing petroleum prices: between USD 30 – 35 per barrel	Strikes in Venezuela; US war against Iraq	OPEC increases output to stabilize petroleum prices; balance between demand and supply
May 2003 – September 2004	International petroleum price exceeds USD 50	Iraqi war	Intense situations
August 2005	International petroleum price exceeds USD 70	Hurricane Katrina hit the Gulf of Mexico	Severe influence on crude oil supply and production of oil refineries
September 2007 – end of November	Sharply increasing petroleum prices: between USD 80 and 99.29 per barrel	Worries about reduced US inventory of crude oils; persistently intense relationships between the US and	

		Iran; continuous reduction of US inventory of crude oils; US FED decides to cut interest rate; worries about the relationships between Iran and Turkey and the low supply of crude oils in winter	
January – July 2008	International crude oil price exceeds USD 100 and fluctuates between USD 100 and USD 147.27 (hit the historic high of USD 147.27 in the New York market on July 11)		
July 2008 – today	Continuous decrease of petroleum prices	Financial crisis and economic crisis; decreasing demands for energies; OPEC reduction of outputs	Slowdown of world economic growth

Source: Shen Yuming, “Economic Globalization and National Energy Security (J)”, World Geographic Study”, Page 78, Edition 3, 2003

With the incessant deepening of world economic ties, no single country can remain independent in the issue of energy. Instead, it is an issue that relates to the reasonable distribution and use of energies across the world. As shown in Table 1, the fluctuations of world energy prices (primarily petroleum price) directly influence the stability and development of the world economy. For instance, the 4th petroleum crisis starting from the 1970s severely impacted the development of the western economy and resulted in a major recession thereof. In the meantime, it also constituted a major setback and retardance to the economic development of emerging countries

2. Features of world energy security in the era of globalization

Some new features can be seen for the current world energy security. Firstly, dependence on Middle East energy supply has further intensified. Statistics show that the Top 20 petroleum producing countries in the world have a daily crude oil output of 57 million barrels (accounting for 87% of the world crude oil output), of which 24 million

barrels, or 43% of the world crude oil output, are from OPEC members. As forecasted by the UN Energy Development Program, the global dependence on Middle East petroleum output will increase from 26% in 1997 to 40% in 2040. Secondly, there is a continuous trend for international cooperation in energy security. Energy security has increasingly become a major subject in many international conferences, e.g. World Energy Conference, “G8” conference, UN conference and APEC conference, due to petroleum price fluctuations, Middle East turbulences, prevalence of international terrorist activities and other situations in recent years. Various countries intend to reach a consensus on these conferences in order to strengthen international energy cooperation, jointly guarantee the normal supply of energies and deal with the threats and damages that terrorism may bring to energy facilities. Thirdly, short-term speculations of petroleum prices never fail to affect the world economy and even impact the international financial market. However, the enormous profitability of energies usually makes them the manipulated object of speculators, which imposes severe challenges to the world economy. In addition, energy security is normally closely related to politics, including the competitions between Russia and the US in the energy sector, the obstacles that the US and Europe create for China, India and other emerging petroleum consuming nations, the energy restrictions of OPEC on the US and other countries, etc, which would normally spark off political conflicts and intensify the instability of the energy market.

II. Analysis of status-quo of world energy supply amidst globalization

World energy security is significantly reflected by energy demand and supply as the conflict between demand and supply is the core of energy security issue. Only with a proper settlement of the energy demand and supply conflict can all countries sit down and talk about global energy cooperation in a peaceful and amicable environment.

Although energy prices have kept rising in recent years, robust economic development will continue to increase the demands for energies. According to the “BP World Energy Statistics 2008”, the global energy consumption continues to maintain a strong growth momentum driven by economic growth in 2007. Primary energy consumption increases by 2.4% and the growth rate has been higher than the average in the past ten years for five years running. The primary energy consumption in the Asia-Pacific region has been developing the fastest, registering a growth of 5% for 2007 over that of the previous year. China and India have contributed most significantly to such growth, with the growth rate being 7.7% for China and 6.8% for India. China, the US and India have become the top three countries in the increment of primary energy consumption in 2007. Compared with 2006, Japan, North America and EU have witnessed decreases in energy consumption to various extents. Energy consumption is closely related to the economic development

conditions of various regions on the one hand. Considering the robust economic development (please see Figures 1 and 2) and the ongoing industrialization and urbanization process of China, India and other emerging countries, their demands for energies are enormous. However, some developed countries have become industrialized with slow economic growth and some countries and regions are even in a recession so that their energy demands are comparatively limited.

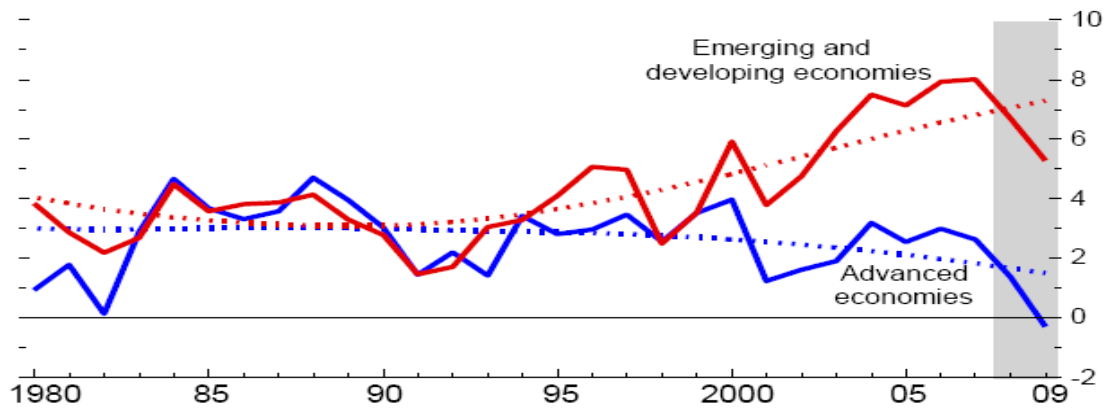


Figure 1 Trend of Economic Growth Rate of Advanced Economies and Developing Economies from 1980 to 2008

Note: quoted from the World Bank (IMF)

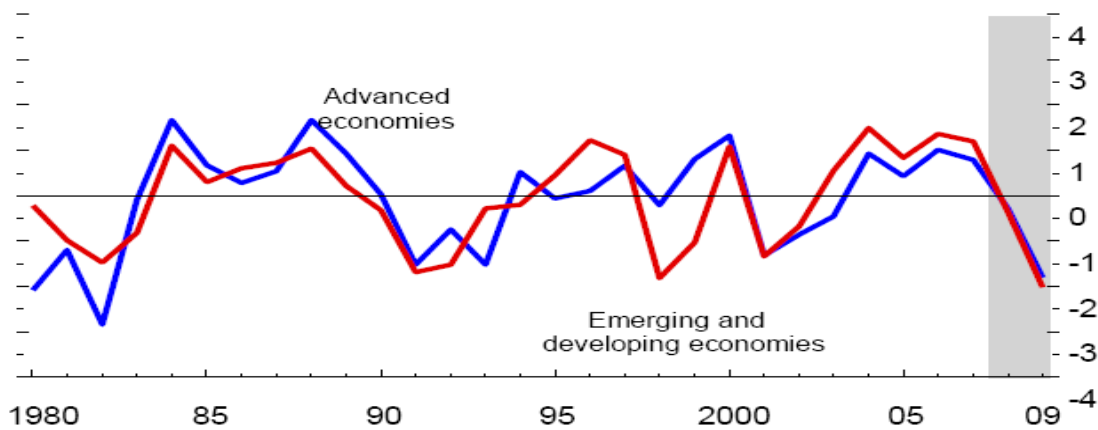


Figure 2 Trend of Actual Economic Growth Rate of Advanced Economies and Developing Economies from 1980 to 2008

Note: quoted from the World Bank (IMF); actual economic growth rate is economic growth rate minus inflation rate

Table 2 Global Petroleum Consumption from 1990 to 2007 Unit: 100mil tons

Country or region	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	change ±%*
US	7.8	8.1	9.0	9.0	9.0	9.1	9.5	9.5	9.4	9.4	-0.1
Middle and South America	1.7	2.0	2.3	2.3	2.3	2.2	2.3	2.4	2.4	2.5	5.0
Europe and Eurasia	11.3	9.4	9.3	9.3	9.3	9.4	9.5	9.6	9.7	9.5	-2.0
Middle East	1.7	2.0	2.3	2.3	2.4	2.5	2.6	2.7	2.8	2.9	4.4
Africa	0.9	1.0	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.4	4.6
Asia-Pacific	6.6	8.6	9.9	9.9	10.2	10.6	11.2	11.4	11.6	11.9	2.3
World total	31.5	32.6	35.6	35.8	36.1	36.8	38.2	38.7	39.1	39.5	1.1
EU	6.6	6.7	7.0	7.0	7.0	7.0	7.1	7.2	7.2	7.0	-2.6
APEC	19.3	20.6	22.0	22.0	21.9	22.2	22.7	22.8	22.7	22.5	-0.9
Emerging economies	8.1	10.0	11.9	12.1	12.5	12.8	13.8	14.1	14.6	15.2	4.4

*Changes refer to those of 2007 as compared with 2006

Data source: Wang Limin, Imbalance between Demand and Supply Challenges Energy Security – “BP World Energy Statistics 2008”, Analysis [M] International Petroleum Economy 2008 (7)

On the other hand, people have come to realize that the continuous price increase of petroleum, as a basic energy and an important raw chemical material, will cause cost-driven inflations, restrict consumptions, reduce and retard economic growth and result in economic recessions since the two petroleum crises in the 1970s. The continuous and substantial increase of petroleum prices since 2004 has prodded the academia and various national governments to focus on the impacts of petroleum price fluctuations on the macroeconomic conditions thereof. According to statistics, the mean price of crude oil is USD 3.6 in 1970 but it is USD 91.5 in 2008, registering a mean annual growth rate of 8.89%. In particular, the mean price of petroleum price has been on a linearly up trend since 2004 (please see Figure 3). Compared with the energy price in 2002, the CIF price of crude oils to APEC countries has increased by 187% by 2007; the CIF price of natural gases to the EU has increased by 158%; the CIF price of LPG Japan has increased by 81%; and the datum price of coals to Northwest Europe has increased by 174%. Of course, energy prices have also significantly restricted energy consumption and rising energy prices have restricted national energy consumptions to a certain extent (please see Figure 4). However, some of the developing countries have offer subsidies for petroleum consumption in order to guarantee normal economic growth so that the impacts of energy price fluctuations are limited.

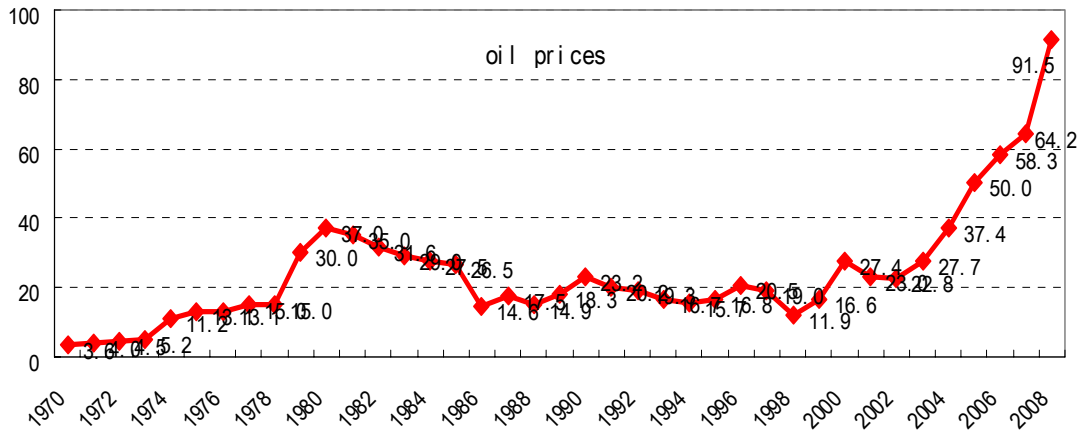


Figure 3 Trend of Mean Crude Oil Price from 1970 to 2008

Note: quoted from the website of Illinois Oil & Gas Association <http://www.ioga.com>.

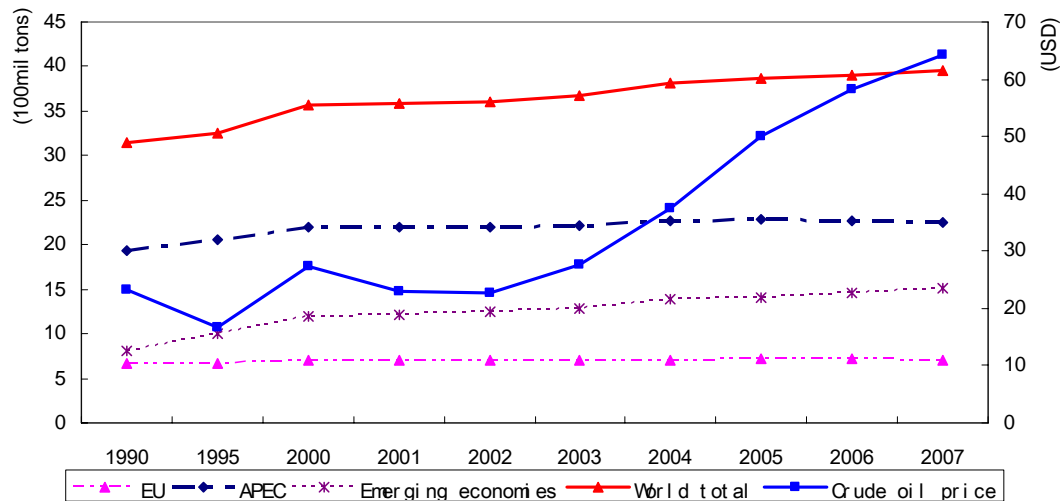


Figure 4 Petroleum Price Fluctuations of Major Economies and Trend of Petroleum Consumption from 1990 to 2007

Different from the increases of consumption year over year, energy supply remains comparatively stable. The world petroleum reserve identified is 1237.9 billion barrels, registering a decrease for two years running. The petroleum reserve in North America decreases by 0.9%; some European countries have also seen decreased petroleum reserve. The petroleum reserve in Katar and Syria in the Middle East decreases by 100 million barrels (see Figure 3). The natural gas reserve identified increases from 176.22 trillion cubic meters in 2006 to 177.36 trillion cubic meters in 2007, registering a growth of only 0.6%. However, the ratio of reserve to exploitation decreases from 63.3 in 2006 to 60.3 in 2007. In terms of output, the world petroleum output registered drops in 2007 for the first time in the last five years. OPEC output decreases by about 350,000 barrels/day and its 10 member countries that participate in output restriction have a daily reduction of 900,000

barrels/day. APEC petroleum output has decreased for five years running and by nearly 300,000 barrels/day in 2007. The output of natural gases registers comparatively high increases with the world natural gas output reaching 2.94 billion cubic meters in 2007 or a growth of 2.4% over that of 2006. The US has contributed most to the increase of natural gas output while the EU natural gas output decreases by 6.4% in 2007 with Britain slashing its output the most. The demand and supply of other energies do not show considerable fluctuations though. World nuclear power generation is down by 2% and the global hydropower generation is up by 1.7%. However, the outputs of most renewable energies have witnessed substantial growth in 2007. The global ethanol output increases by 27.8% to as high as 920,000 barrels/day and the installed capacity of wind farms and solar power plants increases by 28.5% and 37% respectively.

Table 3 Output of Crude Oils at Various Regions of the World in 2007 Unit: 10,000 barrels/day

Region	Output	Increase/decrease over that of the previous year +/-%	Proportion in the world total, %
Middle East	2558.9	-1.8	30.8
Europe and Eurasia	1783.5	1.5	22.0
North America	1366.5	0.5	16.5
Africa	1031.8	3.2	12.5
Asia-Pacific	790.7	0.3	9.7
Middle and South America	663.3	-3.6	8.5
World total	8153.3	-0.2	100.0
Incl.: APEC	1917.0	-1.4	23.0
OPEC	3520.4	-1.2	43.0
Non-OPEC	3352.4	-0.7	41.0
Former Soviet Union	1280.4	3.9	16.0

Data source: Wang Limin, Imbalance between Demand and Supply Challenges Energy Security – “BP World Energy Statistics 2008”, Analysis [M] International Petroleum Economy 2008 (7)

The conflicts between energy demand and supply are still highly significant in the world today. Robust economic growth needs long-term and continuous energy supply. However, undersupply of energies will become a real problem sooner or later in the absence of new substitute energies if the current trend continues and that will surely constitute the biggest threat to the global energy security. For that reason, it is necessary to adapt sustainable energy consumption to economic growth in order to establish a more secure world energy system.

III. Risks and challenges for world energy security today

The world energy security system is facing more and more serious challenges when no substitute energy is found despite the incessantly increasing demands for traditional natural energies. The long queues in gas stations across the world, irrational fluctuations of prices in petroleum futures exchanges and the competitions for petroleum and natural gases between Russia and Ukraine and between Russian and Belarusian are sending out warnings to the human beings that the challenges to world energy security today are the comprehensive risks and threats in terms of supply, demand, price and use instead of just an issue of supply and that the issue of world energy security system has become more complicated.

1. Financial crisis cools down the zeal for new energy development

Rocketing oil prices in the past two years have driven the rapid development of substitute energies in the world. Developed economies including EU, US and Japan have made efforts to develop substitute energies and made considerable achievements. Substantial achievements have been made in the wind energy, solar energy and bioenergy sectors of Europe, the solar energy of Japan and water energy of the US. In particular, the eruption of the 2008 financial crisis has significantly delayed the development of new energies. Based on historic experience, the zeal for the development of substitute energies will appear with rocketing oil prices and rising costs of crude oils. On the contrary, such zeal will subside when international crude oil prices fall. Petroleum and the financial market have always been closely related to each other. The international financial crisis taking place in the second half of 2008 has substantially dragged down international crude oil prices, from USD 137.62 at the end of July 2008 to merely USD 44.27 at the end of December in particular (please see Figure 5). The drop of crude oil prices have reduced the costs of petroleum, cooled down the enthusiasm for development of new energies and directly retarded the passion for new energy development, which is unfavorable to the development of substitute energies and does not fit in with the normal fluctuation rules of natural energy prices. In addition, no new breakthrough has taken place in the development technology of new energies. Without the support of new technologies, it is hard to find any substitute energy.

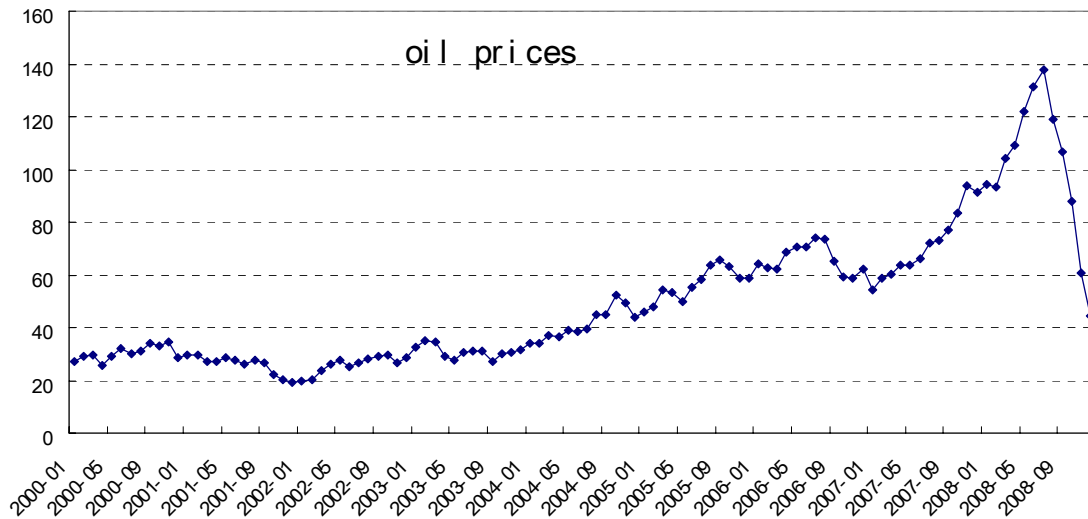


Figure 5 Trend of Crude Oil Price from January 2000 to December 2008

Note: quoted from the website of Illinois Oil & Gas Association <http://www.ioga.com>.

2. Continuous rise of energy consumption requires higher energy supplies

With the continuous expansion of the global economic scale, world energy consumption tends to increase and that has aroused shifted the global attention from the supply side to the demand side of international energy security. The increase of energy consumption is challenging the stability and sustainability of world energy supply. According to statistics, the global consumption of primary energies is merely 5.73 billion tons of petroleum equivalents in 1973 but doubled to 11.1 billion tons of petroleum equivalents in 2007, registering an average growth of 1.8%. According to the forecast in the “2008 International Energy Outlook” as publicized by the EIA (please see Table 4), the consumption of various types of energies will keep growing before 2030, with petroleum energies still playing the major role. The world energy consumption is expected to grow by 50%. The energy consumption of non-APEC countries will grow by 40% while that of APEC countries is expected to grow by 10% primarily because non-APEC countries will develop on a faster track and APEC countries are already well developed enough. The gradual increase of energy consumption will definitely require higher energy supplies. Take petroleum as an example, the residual output of petroleum decreases from 3 to 4 million barrels/day at the end of the 1990s to 2 million barrels/day in 2003 and further down to 1 million barrels/day in 2005. The conflicts between demand and supply will impose a greater pressure on the energy security system.

Table 4 Forecast of World Energy Consumption Structure

Energy	2010	2020
Petroleum	37	40
Natural gas	24	26

Coal	25	24
Hydroelectricity	8	5
Nuclear power	6	5

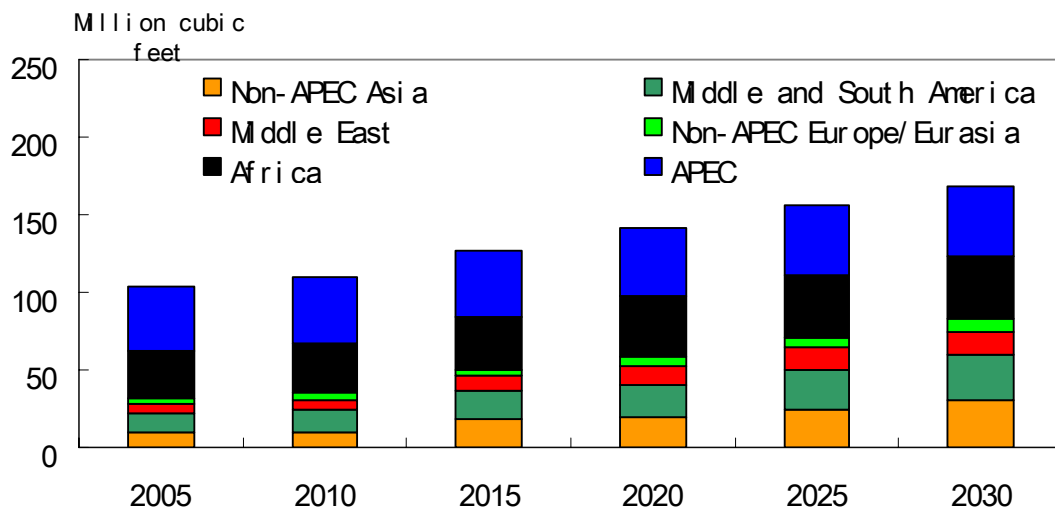
Data source: BP Energy Statistics (2003)

3. International energy wars harms the harmony and stability of the international energy market

The distribution of energies is highly restricted by natural conditions and environments and energies are unevenly distributed in geography to a large extent. Middle East – North Africa and Middle Asia – Russia regions account for 73.4% of total world petroleum reserve while Asia-Pacific and North America have a limited reserve. Such uneven geographic distribution of energies has intensified the competitions for energies on a global scale. The strategic competitions for the petroleum resources in the Middle East have never ended in history. For instance, with reference to IEO 2008, non-APEC countries are expected to contribute to 90% of total natural gas output growth in the world from 2005 to 2030 (Figure 6). A very large proportion of the outputs of non-APEC countries (excluding Russia and other Eurasian countries) are expected to be exported, particularly LNG. Middle East and Africa are at the forefront of LPG exports: from 2005 to 2030, the two regions are expected to increase their natural gas output by 21 million cubic feet although their total demand for natural gases will increase by merely 9.9 million cubic feet. The APEC countries in Asia are also expected to have considerable growth in natural gas output but such increased output will primarily be used to cover local needs instead of exported¹. In addition to uneven geographic distribution, the global energy production and consumption are also severely imbalanced geographically. The small number of developed countries consumes most energies in the world while some major energy producing countries consume far fewer energies than what they produce due to the low level of industrialization. Therefore, some of these big energy-consuming countries compete for the resources of energy-producing countries. For instance, the conflicts between Russia and Georgia and the US attacks of Iraq are closely related to the competitions or energies. With the ever-aggravating international energy situations and the ever-increasing concentration of world energy reserves, the competitions for energies among various countries will intensify and the methods adopted will become more and more complicated, thus causing the international energy market to become more instable and increasing the possibility of conflicts and wars arising from energy competitions. The issue of energy security is not just a national strategic issue, but an international strategic issue and even a geopolitical issue of

¹ EIA “2008 International Energy Outlook”

international energy.



Data source: 2005: EIA, International Energy Annals 2005 (June to October 2007), website www.eia.doe.gov/iea. Forecast model: EIA, World Energy Forecast + (2008)

Figure 6 World Natural Gas Output, 2005 to 2030

4. Abnormal fluctuations of international energy prices affect the development of many industries

The international energy market price system is highly vulnerable and therefore it has become the object of many speculators so that energy prices usually have major fluctuations to affect lots of middle and downstream industries adversely. Oil price increases in various historic periods are related to the situations in the Middle East to a certain extent. The political turbulences of Iran in 1978 leads to the second petroleum crisis from 1979 to 1980; Iraq's invasion into Kuwait in August 1990 pushes the oil prices up sharply. In 1996, Iraqi armed forces attacked the Kurdish region and the Persian Gulf situations are intensified once again to cause oil price hikes. However, the end of each war or the mitigation of situations always brings down the oil prices. Ever since the 1990s, oil prices have increased to USD 50, 70 and even 100 per barrel, which imposes severe challenges to the world economy and even strong impacts to the financial market. As Figure 7 shows, oil price rise and world economic growth are mostly related to each other in a negative way (please see Figure 7). Currently, there is no financial center in the Persian Gulf and thus it can control the international oil price in the absence of such a financial center. The US financial sector still decides international oil prices today because the US enjoys a strong economy and a highly developed capital market and its "petrodollar" still plays a major role in the world. For that reason, fluctuations of the US financial market directly affect the fluctuations of petroleum prices. Petroleum price has undergone major ups and downs within less than two years since the eruption of the US submortgage crisis. In

addition, there are energy speculative transactions in the world today, e.g. the daily petroleum transaction volume reaches as high as 1 billion barrels in the New York Commodity Exchange and speculative transactions are expected to severely affect the normal prices of transactions and thus hamper the normal operation of the energy-related industry.

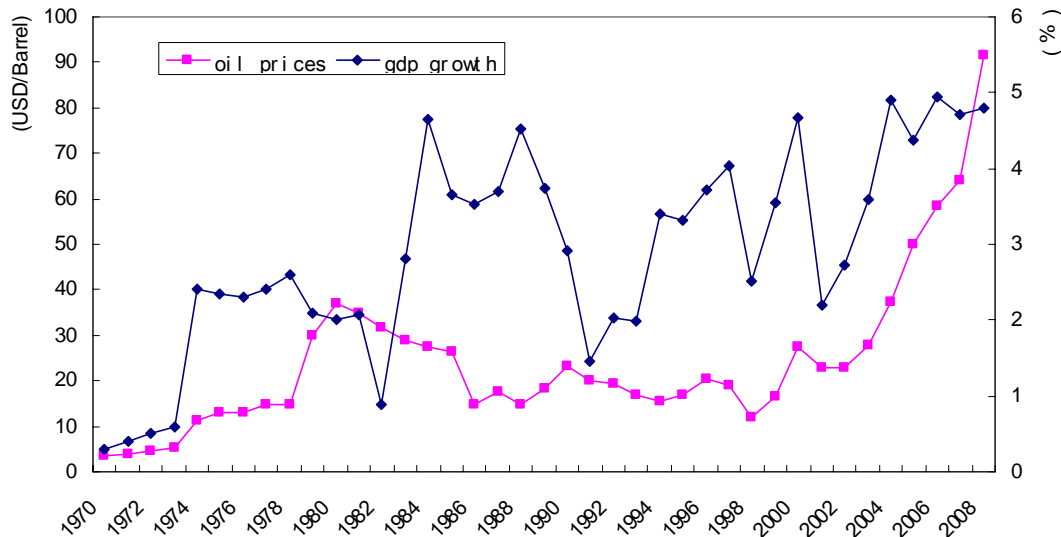


Figure 7 International Oil Prices and World Economic Growth Rate

Note: annual mean price of crude oils; world economic growth rate in 2008 is the expected rate of “China and World Economic Development Report (2008)”

5. Abusive use of energies pollutes and harms the environment and threatens the sustainable development of the human beings

Since the 1990s, environmental protection has increasingly become a major concern for the human beings and the common understanding is that energy use will pollute and harm the environment. Therefore, energy use security has gradually become one important part of energy security. According to statistics, 75% of the global carbon dioxide emissions originate from the combustion of petroleum, coal and other mineral substances. Carbon dioxides are the direct accelerant of global warming effect and create a series of chain reactions. Today, fossil energy consumption accounts for 90% of the world’s total consumption of primary energies. If no effective measure is taken to reduce the emissions of carbon dioxides and other harmful substances, a fatal blow will be dealt to the global environment and climate. It has become commonly recognized in the international community that all countries have to join hands in dealing with such global issues as energy use security and climatic changes. However, the human beings can’t shackle of its dependence on natural energies within a long period in the future. Although various countries have taken some measures to reduce the discharges of wastes, the damages to the environment can’t be prevented fundamentally. Continuous efforts are necessary for all countries to increase energy utilization ratio, save energies and reduce energy consumption.

The economy can't develop at the cost of the environment. Fighting against environmental pollution is a problem and task facing the whole mankind today.

IV. Make a global energy security strategy, improve world energy security system and promote sustainable development of the global economy

Energy security is challenging the whole mankind. Wars and violence can't settle the issue fundamentally, but may add to the instability of the already vulnerable energy system. Therefore, world energy security is a common issue for the mankind and it is only possible to promote the stable and harmonious development of the world economy and safeguard the stability of world politics and balance of social economy when all human beings unite together, cooperate with each other and go in line with natural rules.

1. Fully capitalize on the opportunity of the financial crisis to establish new energy industry as a leading industry

The eruption of the financial crisis poses considerable challenges to energy security and retards the development of new energies. However, the financial crisis has also offered unprecedented opportunities to establish a more complete energy security system. It is possible to turn the crisis into an opportunity by promoting the development of the energy industry and establish a more harmonious world energy security system. Current financial crisis and drop of energy prices are just a reflection of the conflicts between economic growth and energy shortage. Recovery of economy needs effective and reasonable measures for full utilization of existing resources and further quest for new substitutes of traditional energies. For instance, the new Obama administration has significantly tilted the balance towards new energies by making the following proposals: by 2012, 10% of the US power generation will come from renewable energies; the demands for solar power generating equipment in the US market will be 580% the incremental generating capacity in 2007 within the next five years. Such enormous market demands will normally spark off significant changes in the new energy industry. Based on historic experience, the eruption of a financial crisis is normally the beginning of a new industrial revolution. During a certain period in the past, the US and other developed economies have mainly relied upon finance to drive economic growth. However, finance has suffered severe losses in the financial crisis and the business mode and structure of the financial industry need fundamental adjustments, which means that the financial sector can hardly recover its status as a fundamental industry within a short period in the future. The development of new energy industry is closely related to the change of economic growth mode and the enhanced status of developed economies in the global energy market. Therefore, it may become the leading industry in the next boom period to a large extent.

2. Harmony between producing countries and consuming countries and balance between energy demand and supply

Supply security and consumption security are important parts of international energy security and therefore it is necessary to guarantee the balance between demand and supply as much as possible. From the perspective of the supplier, the producing countries normally determine their investment scale according to the prices that consuming countries are willing to pay in order to guarantee sufficient production capacity. As the producer and the consumer are on an uncertain game in which the producer is worried about the stability of middle and long-term production and the consumer expects the producer to have as high outputs as possible, it is necessary for the producer to make a correct assessment of the market demands, guarantee the smoothness of various points in the supply chain and establish a long-term energy supply system in order to maximize its interests. From the perspective of the consumer, the consuming country normally starts from reducing energy consumption and maximizing energy utilization efficiency. For instance, the US proposes the concept of “energy independence” by developing new electric technologies and further improving its electric system. The EU proposes the “common energy policy” with an aim to reduce greenhouse effects, increase energy efficiency, open energy market and guarantee supply security. For Japan that is in severe lack of energies, emphasis is placed on the development renewable energies and playing a leading role in energy cooperation programs in Asia. The consumer’s effective control and saving of energy consumption can also effectively alleviate the conflicts between demand and supply. The supplier and the consumer need to cooperate with each other effectively in order to maintain the balance and stability of demand and supply.

3. Advocate equality, mutual benefits and mutual respect and strengthen international energy cooperation

No single country can independently settle the energy issue and guarantee energy supply. It is necessary to strengthen the cooperation among various countries and regions in the energy sector in order to settle the energy security issue in a uniform and integral environment. The energy security system is a global system and all countries in the world share the responsibilities, risks and interests in it. Otherwise, all efforts will be wasted in vain. Energy cooperation can effectively alleviate the conflicts between international energy demand and supply. In witness of such common interests, it is necessary to strengthen the cooperation and exchanges among producing countries, transporting countries and consuming countries. Developed countries shall not resist such emerging consuming countries as China and India. Instead, they shall engage in international energy cooperation and develop jointly in a win-win partnership on a mutually beneficial and respectful basis. It is necessary to give full rein to international organizations and governmental organs in coordination, e.g. OPEC that represents the interests of petroleum exporting countries,

International Energy Agency, International Energy Forum and International Atomic Energy Agency that represent the interests of developed countries as well as other main energy organizations and groups. With the help of these organizations and groups, the interests of various countries are more closely related. Surely, many existing international security systems no longer adapt to the complicated energy security situations today with the changes of international situations. For that reason, these organizations and groups need to adjust their plans and set up a more flexible energy system at due time. Various countries shall also cooperate together and fully concentrate and utilize their human, material and financial resources to accelerate the development pace of new energies in order to promote international cooperation in and full utilization and development of new energies.

4. Improve the global financial market and stabilize world energy prices

Energy industry and many other industries are closely related. The fluctuations of energy prices will affect most middle and downstream industries through a transmission mechanism and thus cause highly adverse impacts on the markets of industrial and consumer products. Stable energy price is the core of a stable international energy system. It is necessary to increase energy reserve and further increase the efficiency of energy exploitation and utilization firstly in order to guarantee the stability of energy prices. Secondly, it is necessary to restrict energy investments, strengthen price controls and transaction supervisions in the energy futures market, smoothen the energy market and price mechanism, prevent the energy futures market from becoming the market of speculators, avoid price fluctuations due to speculations, weaken the international influence of “petrodollar”, increase the relevance of Asian Currency Unit and Euro to international energies and thus reduce the dependence of energy prices, particularly oil prices, on the financial market of the USA. Thirdly, improve governmental subsidy policies for energy prices. With the gradually increased transparency of and reduced governmental subsidies to energy prices and the gradual increase of energy prices as driven by their shortage, stable energy prices shall be reflected more by the restrictions on the fast rise of energy prices. Some countries, particularly emerging countries, shall offer energy subsidies in a reasonable, fair, effective and transparent manner in order to weaken the impacts of energy price fluctuations on the national economy. In addition, it is necessary to strengthen the cooperation and peaceful coexistence among various countries. In particular, efforts shall be made to control and stabilize the Middle East situations and settle any disputes in peaceful means instead of wars.

5. Strengthen energy efficiency and environment protection, increase energy utilization efficiency and guarantee sustainable economic development

Climatic changes and other global issues as caused by the use of fossil energies have been commonly recognized in the international community and energy use security issue

has aroused more and more attention in the whole society. It is necessary to closely relate energy use and energy supply together, increase the efficiency of energy use and better protect the ecological environment. It is necessary to actively adjust and optimize the energy structure, reduce the proportion of coal consumption, increase the use and popularity of clean energies and actively develop and utilize such clean and highly-efficient energies as wind and thermal powers and such renewable energies as bioenergies and solar energies in order to guarantee the sustainable supply of economic, secure, highly efficient and clean energies. Various countries and regions shall strengthen cooperation in new energy development, jointly make new breakthroughs in the development technologies of new energies and develop better substitute energies that are more adaptable to economic development needs so that the mankind can fully shackle off the dependence on traditional energies and thoroughly settle the pollutions as brought about by the use of fossil energies. Today, the international energy market is becoming increasingly diversified. For instance, many developing countries in Asia, Europe, Africa and Latin America choose or re-choose to develop and utilize nuclear powers. Asia and the US are actively promoting the development of wind powers. The development, use and popularity of clean energies and the continuously increased utilization efficiency of fossil energies will have far-reaching significance on the protection of environment and the sustainable development of economy.

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