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IMPLICATIONS OF MARKET LIBERALIZATION FOR ENERGY SECURITY

I. INTRODUCTION

1. The “winds of change” are blowing across the ECE region, buffeting energy markets, industries and enterprises. Governments in central and eastern Europe as well as central Asia are busy reshaping, restructuring and, in some cases, privatizing their energy industries. In western Europe and North America, governments are aggressively opening up and liberalizing energy markets, notably the natural gas and electricity markets. At the same time, liberalization and globalization are favouring the agglomeration or concentration of capital and labour into ever larger and larger multinational energy companies, raising concerns about excessive market power.

2. Anxieties over energy availability and security of energy supplies, which abated in the 1980s and 1990s, are once again re-emerging, and receiving increasing public and policy attention. Energy import dependence is rising, the cost of developing incremental sources of supplies is increasing and energy prices are once again volatile. It would appear that the underlying long-run energy fundamentals that prevailed in the 1970s and early 1980s when energy supply and demand were tightly balanced and energy markets rocked by two sharp oil price rises, have reappeared. Needless to say, energy markets today are indeed different from those that prevailed in the 1970s but recent energy market developments, such as higher prices for petrol and electricity shortages, have pushed the issue of energy security higher onto the public and policy agenda.

3. The increased concern over energy security is taking place at a time when uncertainties abound about the full implications of energy market liberalization. The more open and liberalized energy marke have already changed energy pricing structures, the way individual energy sectors are organized, and the way energy companies operate and view themselves. Even more changes are in the offing.

4. The objective of this paper is to consider whether the trend to the liberalization of energy markets is likely to enhance the energy security of ECE countries. To provide a context for this assessment, the paper begins with a brief review of the objectives of energy policy, followed by a brief overview of recent trends in market liberalization. Then, energy supply and demand trends and their significance for energy security are examined. Lastly, there is a concluding section on energy security in the light of evolving market and industry conditions.

II. ENERGY POLICY OBJECTIVES

5. Three basic objectives currently underlie energy policy in most ECE countries. These are enhancement of energy security, the promotion of economic efficiency, and protection of human health and the environment.

(a) Energy Security

6. In many respects, energy security is the “raison d’être” for energy policy. Energy and energy industries are vital to all modern societies. They underpin economic growth and development. They contribute to the material well-being and comfort levels of populations and they touch every aspect of th daily life of individuals. Consequently, governments have historically felt the need to pay special attenti to energy and energy security.

7. Security of energy supply concerns both the short-term and the long-term prospect for uninterrupted supplies of energy. It therefore means: having the capacity to maintain supplies even during periods of peak demand; minimising the risk of supply failure in the short term; and guaranteeing volumes for the long term at affordable prices.

8. The concern about energy security was uppermost in the minds of energy policy makers during the 1970s and early 1980s when energy supply and demand were tightly balanced and energy markets were rocked by two sharp oil price rises. In response, governments introduced a range of policy measures designed to promote energy security. These measures plus the higher real energy prices prevailing at the time significantly reduced the rate of growth of energy demand relative to the growth rate of real Gross Domestic Product (GDP).

9. With the relatively “easier” energy market conditions during the late 1980s and the 1990s, public concern about energy security, and the attention devoted to it by policy makers, abated somewhat. However, because of increasing import dependency, higher energy prices, and electricity and gas supply problems, notably in the United States, the issue of energy security is now receiving increased attention. The Commission of the European Union recently released a green paper on the subject. In addition, the EU Commission, in cooperation with the Russian

Federation, launched an initiative, commonly referred to as the Putin-Prodi initiative, to consider ways of maintaining and possibly increasing the east-west flow of energy resources. In the United States, the Administration is currently taking steps to deal with the current and projected tight supplies of energy in order to enhance energy security. These initiatives highlight the increasing importance of this issue.

(b) Economic Efficiency

10. The second objective of energy policy is to promote economic efficiency in the production and use of energy. Today, governments more than ever are not only preoccupied with ensuring that energy is available to their populations but that energy is available at the lowest possible cost, and that it is used in the most efficient way possible.

11. This does not necessarily imply that governments are committed to ensuring that final consumers pay the lowest possible price but that energy is available to the economy at the lowest possible cost. In many countries, consumption taxes are imposed on energy, particularly on oil products, either to raise revenues for governments or to discourage energy consumption for environmental reasons. Hence, from an efficiency point of view, what is important is not the final price to the consumer but whether the energy was produced, acquired and consumed in the most efficient way possible (i.e., at least cost).

12. It is commonly accepted that economic efficiency is best promoted through decentralized and liberalized energy markets, with freely determined market prices. In recent years, technological, institutional and societal changes in many countries have tended to favour the implementation of measures in this regard.

(c) Protection of Human Health and the Environment

13. The third leg of energy policy is protection of the environment. Energy policy today, to be credible, has to have as one of its objectives the protection of the environment. This is not surprising since the production and use of energy can have significant consequences for the environment. Energy is a major contributor to air pollution. It can also have an impact on both land and water resources in a variety of ways which at times can contribute to their environmental degradation. In addition, nuclear power is responsible for the generation of significant quantities of radioactive wastes that will remain hazardous to humans for thousands of years.

14. Despite the significant progress made in reducing energy-related environmental impacts to date, much still remains to be done. To facilitate the transition to a more environmentally sustainable pattern of energy development and use, vigorous policy action in the energy field is essential.

III. MARKET LIBERALIZATION

15. The trend toward the restructuring and liberalization of markets and industries is not unique to the energy sector. It is part of a worldwide phenomenon favouring less government

intervention in the marketplace. It involves the liberalization of markets, the privatization of state-owned enterprises, and the regionalization and/or globalization of competition.

16. The trend to more open and liberalized energy markets is most pronounced in North America and western Europe. The initial European Union Directives on electricity and natural gas called for, at least, 32% market opening in the electricity sector and 28% in the natural gas sector in EU countries by the end of 2003. So far, market developments indicate that these market opening targets will be far exceeded. For example, while the market opening for electricity in individual EU Member States varies greatly from less than 30% in some countries to almost complete opening in others, the average for the total EU region was about 55% at the beginning of 2001. For natural gas, it was nominally about 78%.

17. This liberalization trend will likely spill over to countries with economies in transition of central Europe, particularly the EU Accession countries, where basic liberalization laws are likely to be adopted by 2005. Countries in eastern Europe and central Asia will also, with time, have to adapt their legislation and market structures to take account of developments in the rest of Europe.

18. As noted earlier, the main objective for liberalizing energy markets is to promote increased economic efficiency in the marketplace. From a public policy point of view, it is important that resources are efficiently allocated in the economy, that consumers have as much choice as possible in terms of the different fuels and sources of supply, and that consumer prices are stable and “fair” (i.e. free from undue market power). From the perspective of a supplier of energy, such as a private energy company, it is important that energy prices are sufficient to attract investment for the continued development of new supplies, and that the market penetration rates of the different fuels and supply sources are not hampered by artificial hindrances and obstacles (i.e., barriers to entry).

19. To the extent that liberalization fosters or facilitates achievement of these objectives, it will also help to enhance energy security. However, the eventual implications of market liberalization on energy security are still uncertain and difficult to predict. Certain emerging trends are preoccupying or, at least, merit close monitoring. For example, market liberalization is more likely to increase energy demand than to reduce it, contributing to greater cross border energy flows and, thus, to increased import dependence and the need for significant new investment in production and transportation infrastructure.

20. Moreover, energy markets are far from textbook models of competition. There is no real atomistic competition. Markets are not fully integrated. Barriers to entry exist. And there is a relatively high level of concentration and interlocking ownership. Market liberalization is not likely to fully resolve these problems and may, in fact, exacerbate some of them.

21. Let us take the concentration of market power for example. The trend to the privatization, deregulation and liberalization of energy markets is contributing to the agglomeration and concentration of capital and labour in ever bigger sized units. Indeed, market liberalization is accelerating the race for greater size, and therefore the search by energy companies for partnerships, alliances, mergers, acquisitions and/or the creation of national champions.

22. This consolidation trend is being reinforced by the convergence of the gas and electricity sectors, resulting in the emergence of multi-utility companies which, in some cases, are now also encompassing water activities. In this new competitive environment, the largest operators, capable of spreading risk over a vast and diversified market, seem to be gaining a competitive advantage. It would appear that the popular view that “small is beautiful”, so prevalent in days gone by, is now giving way to the perception that “big is beautiful”.

23. This is somewhat paradoxical. On the one hand, government policy makers are deregulating and liberalizing with the view of promoting more competition in the marketplace. On the other hand, the market is dictating, in many cases, the consolidation and agglomeration of productive assets into bigger sized companies and, thereby, contributing to regionalization and globalization as well as raising concerns about the concentration of economic power.

24. Market liberalization will also entail a reorganization of energy markets. On the one hand, governments will have to implement appropriate legal and regulatory mechanisms to govern the functioning of markets. On the other hand, the changing nature and character of the marketplace will require energy companies to rethink their corporate strategies, operating philosophies and lines of business. In sum, a common framework will invariably have to evolve with a new set of rules, regulations and norms of behaviour for markets to function well.

25. In some sectors, the changing market landscape will transform current contractual arrangements between suppliers, transporters and consumers. For example, in the natural gas industry, the fate of long term take-or-pay contracts, the backbone of contractual arrangements for new supplies, is still uncertain. This uncertainty and possible changes in the terms of long term take-or-pay contracts could possibly affect the development of new high cost sources of energy supplies and, thus, have implications for energy security.

26. The concern about liberalization, and its eventual implications, is probably most acute in central and eastern Europe. It stems from the fact that the prerequisites for liberalization may not be in place. Countries with economies in transition have had to commence their restructuring from a significantly different starting point than western countries, having been centrally-planned economies for a number of decades. The breadth and depth of reforms required in transitional economies go well beyond simply opening up markets to competition. A transparent, stable and well-functioning legal, regulatory and policy framework has to be put in place before liberalization can proceed.

IV. SUPPLY AND DEMAND TRENDS

27. The energy marketplace is in a constant state of flux and change. In addition to the current market liberalization trend, there are numerous other trends in the regional and global marketplace that can affect the energy security of countries in the ECE region. These include the future evolution of energy demand, the sources of future supplies to satisfy this demand, the variety and diversity of fuels and energies that might be available to consumers in the years ahead, the geographical distribution and concentration of fossil fuel production and reserves, the potential use of market power, the diversity and reliability of energy transportation infrastructure, and the level of social unrest and ethnic strife in producing and transit countries.

(a) **Primary Energy**

28. The energy import dependence of many ECE countries will likely continue to rise for the foreseeable future. In most countries, the growth in energy demand, buoyed by growth in transport and electricity demand, is expected to outpace the growth in domestic energy production. Hence, in the absence of mitigating measures, countries' vulnerability to external shocks (caused by either supply interruptions or price increases) will continue.

29. The major exceptions are the fossil fuel rich countries of the region, such as the Russian Federation, Norway and a number of countries in the Caspian Sea area, which will remain major producers and exporters of fossil fuels. A second group of countries, such as the United Kingdom and Canada, may also not appreciably experience an increase in overall vulnerability because of their considerable reserves of fossil fuels. However, the majority of countries in the region will experience increased reliance on energy imports.

30. The energy security of countries can best be preserved by enhancing the diversity and variety of the energy mix available to consumers. Over-reliance on one type or form of energy, particularly imported energy, can increase a country's vulnerability to unforeseen mishaps. A well-balanced fuel mix is the safest way for countries to ensure energy peace of mind.

31. Today, however, there are many forces at work, such as new technology, environmental concerns and financial constraints, which could limit and possibly even decrease, albeit very slowly, the diversity and variety of types of energy available in the marketplace. Gas is today's fuel of choice. In a free market environment, gas is likely to make inroads and could gradually displace coal and nuclear power, and in time oil, in the marketplace. Likewise, renewable energies could prove uncompetitive in a totally free market environment. The concern is probably most pronounced in the power generation sector, where coal and nuclear are experiencing difficulties, notably for environmental and safety reasons. While these trends are not likely to alter significantly the energy mix in the short to medium term, they could over the longer term if present trends continue. This is discussed in greater detail below under each individual fuel.

(b) **Oil**

32. Oil import dependence of countries in North America, western Europe and central and eastern Europe (with the exception of the Russian Federation) will invariably rise with time. The dependence on oil imports of the countries of the Organization for Economic Cooperation and Development (OECD), which today stands at approximately 50%, is likely to rise to about 60% by 2010. For central and eastern Europe, oil import dependence, which is currently more than 80%, could rise up to around 90% by 2010. Hence, in the absence of measures to offset increased oil import dependence, ECE countries could become more susceptible to world oil supply disruptions or other shocks.

33. Today, about 30% of all oil consumed in the world comes from the Middle East. By 2010, this could be around 40%. Surplus production capacity exists in the Middle East and producers can expand this low cost capacity relatively quickly. Moreover, two-thirds of the world's established reserves of crude oil are in the Middle East. With time, reliance on the region for oil is

bound to rise. The Middle East has been prone to instability, afflicted by war and political upheavals. This is a fact of international life that energy policy makers cannot ignore.

34. Today, OPEC's share of world oil production is about 40%. This is much less than its share of 54% in 1973 or even its share of 44% in 1980 but considerably more than its share of 29% in 1985. The mid 1980s were a turning point for oil and energy generally; worldwide oil and energy demand started to rise once again in response to lower real oil and energy prices, after having declined for a while. Unless there is another reversal, dependency on oil from OPEC is likely to continue to rise; it has risen from 29% to 40% in just over a decade. The world's dependency on oil from OPEC is projected to rise to about 50% by 2010, close to the levels that existed in 1973.

35. Much has been written and said about OPEC's capacity to influence oil prices. The mere fact that so much attention has been devoted to this issue suggests that OPEC can indeed influence oil prices, at least to some degree. Obviously, this does not imply that OPEC is always in a position to move oil prices or that the sky is the limit. Indeed, as OPEC has learned in the past, there are many factors that can impinge upon or influence the level of oil prices. Moreover, what may be an optimal oil price for one or more OPEC members may not necessarily be the same for the others because of differences in production capacities, level of reserves, ability to absorb revenues and the time preference for revenues among OPEC members.

36. Furthermore, consuming countries are not altogether defenceless; they can blunt the ability of producers to raise prices. For example, consuming countries can tax oil and oil products and thereby drive a wedge between consumer and producer prices. In the process, producer prices can be depressed and consuming countries may even be able to appropriate some of the economic rents, assuming that there are rents. And last but not least, the laws of supply and demand, that is market forces, do in the long run impose limits and discipline on producers and the prices they can charge.

37. Notwithstanding this, OPEC has influenced prices, if only temporarily, and has been the cause of price volatility or instability. With its market share steadily increasing, these problems could potentially resurface in the years to come, even though this would not be in the interests of either producers or consumers.

38. Caspian Sea countries, such as Kazakhstan and Azerbaijan, and to a lesser extent Uzbekistan and Turkmenistan, are producers of oil. One or more of these countries are likely to become leading exporters of oil in the future. Their vast oil resource potential is attracting considerable interest not only from domestic but also foreign companies. Their major disadvantage is that they are landlocked. Hence, transit rights through the territories of third countries, which are sometimes difficult to negotiate on commercially acceptable terms, are of vital interest. Moreover, some of the existing transport links as well as new export capacity is likely to be routed through areas which have in the past been subject to instability and unrest.

39. The oil price shocks of the 1970s encouraged governments as well as private oil companies to carry more oil stocks. Today, member countries of the International Energy Agency (IEA) that are oil importers are obliged to carry oil stocks equivalent to 90 days of forward consumption. Moreover, the IEA as well as the European Union have oil sharing arrangements in place in case

of a significant disruption in oil supplies. While these emergency response procedures are constantly being updated and adapted to reflect changing oil market conditions, they are not sufficient, by themselves, to provide peace of mind; other measures to promote energy security will continue to be required.

(c) **Natural Gas**

40. Natural gas is today's fuel of choice. It is flexible to use, environmentally friendly compared to other fossil fuels, relatively abundant, with supplies perceived to be relatively secure and reliable. Consequently, it is being used in a variety of sectors and applications, and experiencing significant growth as a fuel for electricity generation. Therein lies the problem; gas might, albeit slowly, displace coal and nuclear, in the marketplace. Gas may even make inroads in the transportation sector where so far its presence has been very limited. A significant increase in reliance on gas would constrain demand for other fuels and, thereby, contribute to reducing energy diversity in the marketplace.

41. The rapid growth in natural gas consumption will boost the import dependence of many European countries. Total imports by OECD countries in Europe (from outside the OECD region) are likely to increase from about 35% of natural gas consumption to about 45% by 2010, even assuming a significant expansion in Norwegian production. The import dependence of central and east European countries, excluding the Russian Federation, is likely to rise from about 65% to 85% by 2010. On the other hand, the situation in North America is more encouraging. The North American market is relatively self sufficient, well balanced and diversified in terms of supplies and transportation infrastructure, and is likely to remain so for the foreseeable future.

42. The problem of import dependence is compounded when countries have to rely on a single outside source of gas. Most countries in western Europe are now supplied from a number of sources, including indigenous sources of supply. For historical and geographical reasons, this is not generally the case for countries in central and eastern Europe. Almost all the gas imported in these countries, to supplement domestically produced gas, comes from the Russian Federation.

43. So far, the Russian Federation has been a secure and reliable supplier of natural gas to both central and eastern as well as western European countries. Since deliveries began thirty years ago there has been no major interruption of gas supplies. While in recent years Gazprom, the major Russian supplier, has curtailed deliveries to some foreign markets, this has been solely motivated by the non-payment of debt arrears. In some cases, these arrears have amounted to hundreds of millions of dollars.

44. Despite the reliability of Russian gas supplies, the desire of central and east European countries to diversify their sources of supply is understandable. It is an attempt to minimize risks through diversification; unintended accidental disruptions can and do occur.

45. Natural gas production in most western, central and eastern European countries is stable or declining. The major exception is the North Sea, particularly the Norwegian shelf where production is rising, and the Russian Federation. Traditional suppliers, such as the Russian Federation, Algeria, the Netherlands and Norway, are likely to be able to meet Europe's growing

demand for natural gas over the medium term. But meeting demand over the longer term will be a challenge for the industry. Significant investments in production and transportation infrastructure will be required. This is one of the reasons why many companies continue to advocate the need for long-term “take-or-pay” contracts even in a liberalized energy market; they argue that, without this type of contract, the required investment might be difficult to finance.

46. In the future, natural gas supplies will increasingly have to be moved over longer distances as new production centres are developed in the Russian Federation, North Africa and the Caspian Sea area, and perhaps ultimately the Islamic Republic of Iran, that are further and further from existing consumption centres. Even supplies from Norway will have to come from more remote areas. This trend will not only put upward pressure on prices but also add to the vulnerability of gas deliveries; the risk of accidental or weather-related supply disruption, even if it is of short term duration, will consequently rise.

47. World gas reserves are relatively abundant and diversified for the time being. In the longer term, however, increased supplies will likely come from fewer sources. The Russian Federation has about 40% of total known reserves of gas. The Russian Federation and the Islamic Republic of Iran together account for more than 50% of world reserves. Perhaps of more significance is that supplies will increasingly have to come from, as well as transit, areas such as the Caspian Sea area and the Caucasus, which have in the past experienced social unrest and instability. Consequently, the risks of supply disruptions could rise with time.

48. Even today the transit of natural gas through the territories of third countries is an issue of controversy and potential tension. According to reports, some transit countries are already heavily indebted to gas-exporting countries as a result of difficult economic conditions and financial constraints. The potential for disputes and misunderstandings under these conditions are ever present. In addition, transit rights in general are of concern to both gas-exporting and gas-importing countries. Gas from the Russian Federation, Turkmenistan and Uzbekistan for example has to transit a number of countries before reaching markets in central and western Europe. These transit rights are sometimes the subject of intense commercial and political negotiations.

49. Unlike oil and coal, gas is more difficult to store. Nevertheless, gas companies have increasingly expanded their underground storage capacity not only to take care of daily and seasonal peaking of demand but also for strategic reasons. Moreover the practice, quite prevalent in western Europe, of interruptible supply contracts for large customers, particularly those with dual-firing capacity, is gradually catching on in central and eastern Europe. Both underground storage and interruptible contracts can mitigate to some extent the consequences of short term interruptions in gas deliveries.

(d) **Coal**

50. From the point of view of energy security, coal has advantages compared with other fuels. World coal reserves are large, sources are diversified, ample supplies are available from politically stable regions, world infrastructure is well developed, new supplies can be easily brought on stream, and coal can be stored.

51. On the other hand, coal is besieged by an array of problems which in the longer run could have implications for energy security. Coal's share of energy markets is slowly being eroded. Environmental concerns trouble the industry. Competition from other energy sources is intense. The required restructuring to meet this competition and the environmental regulations is costly, and therefore difficult and painful in many countries. In the long run, coal could be increasingly displaced from the marketplace especially in countries where other options are available. The declining share of coal could result in a less diversified energy mix.

(e) **Nuclear Power**

52. Since 1973, nuclear power has significantly contributed to meeting rising electricity demand in the region and in reducing dependence on oil for power generation. However, since the early 1980s far fewer orders for nuclear power plants have been placed, stemming in part from public concern and political debate on the possibility and consequences of accidents, on the lack of adequate methods for disposal of nuclear wastes, and over the costs of nuclear power plants themselves, including their decommissioning costs.

53. A number of European countries (e.g., Denmark, Italy, Austria, Sweden and Germany) have opted against the construction of new nuclear power plants and the phase out of current plants, while other countries (e.g., France, Ukraine, United States) are more favourably disposed to nuclear power. The role that nuclear power is likely to play in the future will probably be more evident after 2010, when several nuclear reactors will be decommissioned, new technologies improved and overall economic costs readjusted, possibly downwards.

54. In any case, nuclear power will continue to be a potential alternative for electricity generation over the longer term even though its outlook is shrouded with considerable uncertainty at this time. Indeed, the future role of nuclear power is, to all intents and purposes, in limbo. The longer this state lasts, the more constrained will be the options and the less flexible and less diverse will be the power generating sector of the future. This is bound to have implications for energy security. While nuclear power may not necessarily be a desirable option for each and every country, removal of that option for all countries as a group would remove an important element of flexibility and diversity in energy supply.

(f) **Renewable Energies**

55. Because of their sustainable nature and characteristics, ambitious programmes to increase significantly the market share of renewables, such as biomass, solar, wind, wave and geothermal, have been launched by the Commission of the European Union and many ECE countries. These programmes have successfully accelerated the development of new technologies and promoted their market penetration. For example, since 1990, wind powered electric generating capacity has been increasing at an average annual rate of 20% and photovoltaic sales at around 5% per annum.

56. No doubt renewables will increase their market share of total energy supply over time, but despite this encouraging outlook renewables, other than hydroelectric power, are not likely to contribute in a major way to meeting energy needs over the foreseeable future. While solar, wind and biomass can be successfully deployed in specific areas under favourable conditions, their

widespread use will continue to be constrained by economic factors. Indeed, renewable energy costs have dropped dramatically over the past 10 years, but in most countries their costs are still not competitive with traditional energy sources for electricity generation. In Switzerland, for example, electricity based on solar energy costs 4 to 5 times more than that of other sources.

57. Even the potential of hydroelectric power to contribute to increasing electricity demand is limited. The region as a whole is characterized by a state of maturing (or limits) when it comes to the development of hydroelectric power. Suitable sites are increasingly difficult to locate for hydrological reasons, competition with alternative land and water uses, and public resistance to the impact of hydro schemes on the natural environment. The Russian Federation still possesses substantial untapped resources but these are in eastern Siberia and are unlikely to be developed very quickly because of their remoteness and low population density. Likewise, there is still considerable potential in a number of countries in central Asia but their development is hampered by the same constraints as those that apply to the development of oil and gas projects.

V. CONCLUSION

58. Is the liberalization of energy markets going to enhance energy security? The answer is a mitigated yes. To the extent that liberalization promotes economic efficiency in the marketplace, greater consumer choice, diversity in the energy mix, diversity in sources of supply and the fuller integration of the energy economies of countries in the ECE region, then energy security will be enhanced.

59. However, energy industries are not likely to develop into textbook models of competition, no matter the effort expended to open up and liberalize these industries. It is not likely that atomistic competition, both in terms of supply and demand, will result from the current liberalization effort, a prerequisite for true energy security.

60. While energy markets will no doubt become more open and competitive, market imperfections will remain. Operational, regulatory and policy constraints, including the distribution of fossil fuel resources, will make pure atomistic competition unattainable. Consequently, the potential impact on energy security as well as public service obligations of market liberalization is not fully known at this time.

61. Furthermore, many governments will continue to view energy as a strategic sector that has to be closely nurtured and monitored by the state. Fossil fuel production and reserves, notably of oil and natural gas, are not equally distributed among countries. Some areas of the world, which are major producers and exporters of energy, and still others which have the potential of becoming major energy suppliers to the world, are prone to instability. In addition, there are concerns over the environment and particularly over climate change, involving discussions among governments and the civil society over global governance, which also could impinge on energy security issues.

62. For these and many other reasons, government measures to promote energy security, that complement and facilitate the market transformation currently underway, will continue to be needed. Governments cannot be too complacent about energy security. While the concern over

security of energy supplies is not very acute or alarming at this particular point in time, the situation does call for continued vigilance by both industry and governments.

63. Past government measures and policies to foster energy security, such as the promotion of energy efficiency, the diversification of the kinds and sources of energy available to consumers, and the development of indigenous (domestic) supplies, have proven successful. Continuation of these policies is still needed and, where necessary, these will need to be adjusted and strengthened in the light of market developments.

64. In fact, the renewed government preoccupation with energy security will invariably affect the ongoing debate on a number of important energy policy issues. No doubt, the increased attention currently paid to energy security is likely to reshape somewhat the debate and policy decisions on a number of thorny issues, such as, the future role of coal and nuclear power in meeting the energy needs of countries, the subsidization of indigenous energy production, the provision of incentives for the exploration and development of fossil fuels, the promotion, development and commercialization of renewable energy sources, and the relaxation and/or implementation of measures to protect the environment.

65. Finally, it is important to emphasize that a strengthening of international relations and economic cooperation would also be helpful in improving energy security. In a number of ECE countries, the rule of law needs to be strengthened, commercial contracts protected and the business climate improved. Low standards of living, inadequate economic development and social, ethnic and political unrest in a number of subregions continue to trouble the region as a whole, and undermine energy security for all. Concerns about energy security cannot be fully separated from and resolved without addressing these broader issues and problems that besiege the region.
