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## **Geopolitics, strategic resources and sustainable development**

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### **1 Introduction: Geo-economics, geopolitics and “new wars”**

After the demise of the socialist camp at the beginnings of the 1990s Edward Luttwak (1994) or Kenichi Ohmae (1992) have been the most prominent proponents of the idea of an era of an emerging geo-economic world order, based on economic competition on global markets instead of political conflicts within and between nation-states. The binary logics of political hostility are presumed to be transformed into the peaceful rules of a (by definition) era of multilateral economic competition and cooperation. According to the line of argument of the free-trade-discourse, the wealth of nations will in consequence increase. Globalisation thus is a blessing for mankind.

In the meanwhile, however, and especially since September 11, 2001, there has been a reemergence of the “geopolitical” or geostrategic binary interpretation of the world as divided between allied friendly nations and hostile enemies, against whom war must be waged – and this view has been especially strongly advanced by the Bush administration. It is not only neo-conservative or neo-liberal ideology which guides the US-government to follow the path of a “unipolar moment” announced by Charles Krauthammer already 1991 immediately after the end of the Soviet block, instead of the presumed multilateralism of globalisation. The war against terrorism is only one war among many others which characterize the “new world order”. The peaceful velvet revolution only was an historical intermezzo; it has been followed by many violent conflicts in all parts of the world. Those social scientists whose profession is to count the number of wars, find out that due to the failure of state building and because of the disappearance of the protection of one of the bipolar superpowers the number of extra-state, sub-state or civil wars

increased remarkably. Under this perspective, the new world order is a new world disorder. The disorder, however, has economic, political, social causes. It is the result of the impact of geopolitical interests of the superpower which are dictating the agenda. The agenda is labelled national security, and one crucial part of it (besides security against migrants, organized crime, prostitution or drug trafficking) is the secure provision of strategic resources, such as petroleum, uranium and other minerals or agricultural resources (US National Security Strategy of 2002; Cheney Report of 2001). How important is it for the geopolitical stance of the USA that leading figures such as Cheney, Rice and Rumsfeld, and many others, including Bush himself, have strong ties to the California-Texas - oil industry? Is the Bush administration driven by a Wall Street-military-CalTex-complex?

After less than a decade the geo-economic discourse of globalization has been completed by a geopolitical discourse of global power. But there is a difference to the “old” geopolitical reasoning of the early 20<sup>th</sup> century. In the understanding of Haushofer or Kjellén geopolitics always included an organic “growth of the nation state” because they assumed that without growth the nation state will die. This assumption is not the basis of modern geopolitical reasoning. Geopolitics today includes the efforts of extending rules (of “global and good governance”) on all parts of the world in order to oblige governments as well as private actors to follow the same set of rules which allow exploitation of resources – of manpower as well as of natural resources by the powerful actors on the stage of the global theatre. Once the rules are established it is possible to leave the allocation of resources to the market. Therefore, the strongest, the fittest, the most competitive actors have the best chances in the game over exploitation of resources. Modern geopolitics, therefore, always comes accompanied by geo-economics. The latter is the theme of free trade ideologues, of neoliberal marketers and their think tanks, of liberal and conservative parties and governments. The former is the case of geo-politicians, of neo-conservatives, and in many cases the free marketers and geopoliticians and their manifestos are the result of the same think tank. They work perfectly together – in organizing the “grand chessboard” of exploitation of resources at the beginning of the 21<sup>st</sup> century.

The following account above all deals with the energy requirements for capital accumulation. The access to energy resources always has been a major cause of conflict and violence. The dynamics of capitalism are the outcome of science and technology, of the social form of surplus value production, and – last not least - of the massive use of fossil fuels. Fossil resources, however, are limited and their use involves extremely harmful effects on the global environment (above all the greenhouse effect). As we are approaching the limits of the provision of fossil resources and thus the end of the fossil energy regime, there are increasingly sharp conflicts about access to resources, as well as conflicts resulting from the ecological degradation of large territories. The dimensions of these conflicts are manifold. They take the form of conflicts over trade, or they appear as diplomatic pressures and political and even military intervention. Attempts are undertaken to resolve conflicts within a framework of international agreements, but this framework more and more is unilaterally manipulated by the leading capitalist powers. Conflicts about oil have led to open wars, waged by the “only superpower” against Afghanistan and Iraq, although in the Bushian newspeak this military aggression has been labelled as a war waged on international terrorism. But also the wars in Sudan, Congo, Columbia etc. are neither ethnical conflicts nor the outcome of a powerplay between competing elites. They are waged on the domination of resource-rich territories. Very often external actors, such as TNCs and private “security-suppliers” are involved.

## **2 Growth fuelled by fossil energy**

Without a continuous supply and massive use of fossil energies modern capitalism would be locked into the boundaries of biotic energies (wind, water, bio-masses, the power of muscles etc.). Although capitalist social forms had already put down some weak roots in ancient societies (in Europe as well as in Latin America and Asia), these could not flourish because of an insufficient technological basis and because of the lack of fossil energy. The economy was restricted by reliance on “slow” biotic energies which did not allow a capitalist acceleration of production, i.e. a decisive increase of productivity in the production of relative surplus value. Therefore also growth was limited, and in fact the average growth rate was nearly zero before the industrial revolution of late 18<sup>th</sup> century. Conversely, fossil energy

would not have played the decisive role which it has done since the industrial revolution without the social formation of capitalism and its all-encompassing dynamics. Three forces drove the since then highly dynamic development: (1) the “European rationality of world domination” (as Max Weber called it), (2) the dynamics of money in the social form of capital (as Marx analysed it) and (3) the use of fossil energies which became the fulfilment of a (by Nicolas Georgescu-Roegen) so called “promethean revolution”, comparable to the Neolithic revolution several thousand years ago, when mankind discovered how systematically to transform solar energy into crops etc. by establishing sedentary agricultural systems. The development of agriculture resulted in an increase of food production, and moreover in a greater reliability of food supplies. The surplus produced by the farmers – in the terminology of the “Physiocrats” of the 18<sup>th</sup> century, the sole “productive class” - made it possible that “unproductive classes” of artisans, clerks and rulers could be fed. The division of labour within society included a division of labour between the urban and rural areas, between the sexes, between intellectual and manual labour, and between the rulers und the ruled.

The industrial revolution was even more radical, because of the acceleration of all economic and social processes since then. World population has increased faster than ever before. In pre-capitalist and pre-industrial times economic growth was dependent on population growth which, in turn, depended – this was the rationale behind Malthus’ theory – on the supply of goods and services for subsistence and reproduction. But since the industrial revolution economic growth became independent on population growth due to an enormous productivity increase and the concomitant increase of the production of relative surplus value. Therefore, contrary to Malthus predictions per capita incomes also increased. Angus Maddison in an OECD study showed that in the first millennium after Christ, from 0 to 1000 AD, world population grew at an average annual rate of 0,02% from 230,8 million to 268,3 million. Between 1000 to 1820 the number increased to 1041,1 million. GDP per capita followed a similar trend: in the first millennium from 0 to 1000 AD there was a slight decrease from an average of \$444 to \$435 per person per year (in the 1990 equivalent dollar standard which Maddison uses). And between 1000 AD to 1820 an increase to \$667 per capita took place. It is interesting to note that in the first millennium the income divergences between

Western Europe, Japan, Latin America, Eastern Europe, Africa and Asia were very small. Per capita income at the end of the first millennium varied between a low of \$400 dollar (Western Europe) to a high of \$450 in Asia (excluding Japan). In the second millennium, however, the divergence of per capita incomes increased remarkably. In 1820 the average per capita income in Western Europe reached \$1232; in Africa it was the same as 820 years before: \$418 (Maddison 2001: 28). Maddison, of course, is aware of the methodological problems measuring monetary flows over 2000 years in 1990 dollar-denomination. Therefore the interpretation must be more careful than usual. Although the numbers are not fully reliable, the trend found out is plausible.

From the second half of the 19<sup>th</sup> century average growth rates increased remarkably. This growth, however, has been extremely uneven over time and in space, and has failed to reduce the inequalities between peoples and regions in a globalizing world. This is also evident in the numbers provided by Maddison. Average world per capita income increased from 1820 to 1998, i.e. in only 178 years from \$667 to \$5709 (in Maddison's 1990 international dollar standard). The distribution of incomes in the same period became more uneven. In 1998 average per capita income in Western Europe was \$17921, in North America (USA, Canada etc.) it was \$26146 dollars, in Asia (excluding Japan) it was \$2936 and in Africa \$1368 (Maddison 2001: 28).

No wonder, that in the 20<sup>th</sup> century economic growth has become a kind of a fetish, not only in economic theory but also in political discourses, world-wide. Interestingly classical political economy, whose founders still were living in an predominantly agrarian environment, established only the foundations of a theory of growth, but they did not develop the theory. In the contrary some of the classical political economists praised the virtues of self-sufficiency and a contemplative life – e.g. John Stuart Mill. Only in the 20th century did economic growth become seen as the most important goal of economic activity, a decisive benchmark of “good” governance. Growth and growth theory first became a central concern in the planning processes in the socialist Soviet Union. It then became the dominant economic discourse in the course of the competition between the two systems and with the development of Keynesian economics.

### **3 The fossil energy regime**

The transition to industrial systems is much more dramatic than that which transformed societies of hunters and gatherers into a social order of sedentary agricultural systems. For now it is no longer the flow of solar radiation which serves as the main energy supply for the system of production, but the use of the mineralised stocks of energy in the crust of the earth. The greatest expansion of human demand for natural resources followed the Industrial Revolution during the latter half of the 18th and the first half of the 19th centuries. The Neolithic revolution, however, is an important example which shows that it is possible to extremely increase the productivity of labour and of resources on the basis of the solar energy-regime. Therefore, a similar increase after the transition to a “solar society” cannot be excluded.

One of the main advantages of fossil (and nuclear) energies for capitalist accumulation in comparison with other energies is the congruence of their physical properties with the socioeconomic and political logics of capitalist development:

- Firstly, they can be used without considering space and place. The location of energy resources is no longer the main reason for the location of industries, for it is simple to transport energy resources to any place in the world. The fossil energy system spreads itself far and wide by creating logistical networks which today cover the globe. It is so to say “autopoetic”, for it allows the transport of energy to remote places of the Earth and thus draws them into the fossil system. Energy supply therefore is only one factor amongst many others in decisions about where production is to take place. The availability of local sources of energy has only a minor impact on the competition for locations in the global space.
- Secondly, and in contrast to solar radiation, which changes its intensity between day and night, summer and winter, and with the rhythms of the seasons, fossil energies can be used 24 hours a day and 365 days a year with constant intensity. They allow the organisation of production processes independently of social time schedules, biological and other natural rhythms. The time regime of modernity follows the logics of profitability and shareholder value. The reason is that fossil energies can be stored and

consumed without reference to natural time patterns, and only in accordance with the timetable which will optimise profits. “Time is money” therefore appears not as a crazy statement but as an adequate norm for human behaviour in “modern times”.

- Thirdly, fossil energies allow the extreme *acceleration* of processes, i.e. the “compression of time and space” (Harvey 1999; Altvater and Mahnkopf 1999). In other words they allow an increase in productivity i.e. the production of more commodities within a given time span or the reduction of the time span for the production of the same amount of products. Since time and space are the coordinates of nature in which we live, their compression is a serious neglect of the natural conditions of work and life.
- Fourthly, fossil energies can be used very flexibly with regard to the quantities of energy consumed or the temporal distribution and spatial location of consumption. The development of electricity networks and of the electro-motor, the illumination of whole cities at night, of the gasoline and diesel-motor are decisive steps for an increasingly flexible use of energy-inputs, for the mobilisation and acceleration of economic processes and for an individualisation of social life which never before in human history existed. Now, managerial decisions can follow the logics of profitability for capitalist firms without needing to take into account energy restrictions or spatial and temporal constraints. Therefore, accumulation and growth must be understood as increasingly independent from natural conditions and their limitations.

These advantages of fossil energy for the capitalist system make them indispensable for its functioning. The congruence of capitalism, fossilism, rationalism and industrialism is perfect and make it a comprehensive fossil energy regime which includes not only the fossil resources and the economic mechanisms of growth and accumulation, but also the formation of social relations based on the massive use of fossil energy and of a fossil culture, most visible in the dominance of automobiles in modern societies. The concept of growth is the most unchallenged one in economics. Politicians from the IMF to local governments unite in praising the God of growth, seen as the solution to all the problems of the world – the magic cure for unemployment, for poverty, for underdevelopment, for

the fiscal crisis of the state, etc. Of course, real growth of output enlarges the increase available for distribution, and therefore it makes life easier for governments. But the question comes up: is growth possible for ever, is growth "triumphant" (Easterlin 1998)? And the answer has to be no, because nothing on earth grows eternally without any limits. The limits of growth belong to the life conditions, to the laws of evolution on the planet Earth, and they are a direct consequence of the limits of fossil resources which are fuelling the growth-engine. Although the "capitalist growth machine" is nearly entirely powered by fossil energy (and thus dependent on a closed system of finite resources) human and natural life in general is almost entirely dependent on solar radiation (i.e. on the influx of solar energy into an open system). Daylight, the warming of the atmosphere, of the waters and the soils, the growth of living beings, the provision of food, etc. are the result of solar radiation and only to a small extent that of the use of fossil energy consumption. The satisfaction of primary human needs only is possible by using energy in the form of organic foods (containing proteins, fats, carbohydrates, vitamins, and minerals; water) and in a transformed manner as clothing and shelter - not to speak about the availability of oxygen.

This contradiction between life conditions (open system) and economic conditions (closed system) on Earth is a decisive one. Capitalism, i.e. social actors within the capitalist system, have constructed a "firewall" between them. Today, and possibly never, it is impossible to power the machine of capitalist accumulation and growth with solar radiation. It simply has not the advantages mentioned above, i.e. the potential of time and space compression, which fossil energy offers. Conversely, the fossil energy regime of the capitalist economy has an extremely destructive effect on living conditions on Earth, i.e. on life which is "powered" nearly completely by solar radiation. The degradation of nature, e.g. the greenhouse effect, ozone layer depletion, loss of biodiversity, desertification, disappearance of tropical rain forests etc. – the impact of these forms of ecological devastation have become dramatically evident and the focus of deep concern among ecological researchers and campaigners. The advantages of the fossil energy regime have a price: the disadvantages of ecological destruction and of the necessity to find a solution to the limits of their availability.

#### **4 Limits of Resources and their oligarchical distribution**

Generally, capitalist production does not care about natural or social limits. Nature is external to capitalist accumulation, and therefore the inevitable effects of joint production (each production is joint production, as thermodynamic economics convincingly show) on the natural environment in mainstream economics are interpreted as “external effects”. Gold is a telling example for the abstraction of economics from natural boundaries. Gold is, by its very nature, a limited resource, although socially and economically it functions as money. Since capitalist accumulation is ignoring natural boundaries and money is a social construct, the function of money has been de-coupled from the natural form of limited gold and ascribed to paper-money or electronic bits and bytes. Money in a nature-form nearly completely disappeared. Attempts to revive gold as the natural form of money, as Jaques Rueff tried to do under de Gaulle in the 1960s, is a ridiculous and anachronistic undertaking.

In capitalist calculation ecological limits of production and accumulation are recognised only when they increase the costs of economic processes and exert pressures on the rate of profit. Calculations of the German Institute for Economic Research have shown that the annual costs of climate change will be the equivalent of about \$2000bn from the middle of the century on (Kemfert 2004). “External effects” of production and consumption on society and nature are irrelevant for capitalist rational choices so long as they remain external. But this is the case only so long as the “carrying capacity” and the capacities of recreation of nature and social systems are sufficient as to bear the emissions of the economic process. Otherwise they become part of the “general conditions of production”, affect negatively profitability and accumulation up to a crisis of the capitalist system. (This is the theme of James O’Connor, David Harvey and others.)

In the case of oil, however, it is impossible to neglect natural properties and boundaries of the resource; bits and bytes cannot substitute for oil. The stocks of oil are limited, and oil will be running out over the next few decades. Although the supply of oil is limited, the demand for oil will increase in spite of the attempts to save energy and to increase the efficiency of its use. This is for two interconnected reasons. First, the “financialisation” of global capitalism and the crucial role of financial markets with its high real interest rates and rates of return-claims, enforce

high real growth rates of GNP. Under the prevailing patterns of technology deployment, growth only can be achieved by an intensive use of fossil energy. Thus the operation of global financial markets has an impact on the oil market. It only can be mentioned here that there are also two other pressures exerted by the financial system on quantities and prices of supply on world oil markets. One arises from speculation on futures markets. The other is due to the fact that rich oil producers of the Gulf region have heavily invested their “petrodollars” into financial assets so that their income in the meanwhile is as dependent on interest flows as on oil rents. The second reason stems from the globalization of Western production and consumption patterns which are extremely energy-intensive. Newly industrialising countries crowd into markets and add to the already insatiable demand of the OECD countries, above all of the USA.

The limits involved become even more evident when we consider not just the “input-side” of the fossil regime but also the “output-side”, i.e. the emissions of CO<sub>2</sub> and other pollutants. The greenhouse gases build up in the atmosphere and thus reduce levels of heat-radiation from the Earth into outer space. The average temperature on Earth is likely to rise in the next decades. Although today the likely effects can be no more than predictions, most scenarios of the forthcoming climate change show a severely negative impact on natural and social systems. The number, force and impact of unusual weather- and climate events are increasing. The hurricanes Katrina and Rita are an actual example for the destructive power of a natural environment which has lost its ecological balance.

In all parts of the world, including huge countries like China and India, there is a continuing shift into industry from agriculture (which is more dependent on renewable, solar energy than industrial systems), and a movement of population from the countryside to urban agglomerations. These trends are powerfully accelerated by the rules of the game as implemented by international organisations such as the IMF and the World Bank, with their structural adjustment plans, or the WTO which exerts pressure on all member countries to increase competitiveness in global competition. Economic mechanisms, supported by political pressures transplant the limits of energy supply into the working of the global accumulation process. The limits of resources on the background of increasing demand are responsible for higher conflictuality between political and economic actors.

Under “normal” conditions capitalist accumulation relied on the production of relative surplus value, on productivity increases, powered by fossil fuel. Under the conditions of energy shortage and increasing energy prices accumulation of capital more and more takes the form of a process of dispossession (Harvey; de Angeles) of the less powerful by the more powerful private corporations and national states. The “oil security” of different countries and alliances is competitive and conflict-prone. The transformation of natural riches (matter and energy) into the wealth of nations is not possible for all people in the world. The “wealth of nations” is a “positional” or oligarchical or club-good for the few belonging to the club or to the global oligarchy and not for all the others.

### **5 Peakoil and climate conflicts**

The main limiting factor of accumulation is the exhaustion of non-renewable fossil energy-resources within a reasonable time-span. Of course, the capitalist crisis is the consequence of the internal socio-economic contradictions of capital and labour and thus to some extent independent of the availability of resources. External limits, however, have the potential to aggravate “normal” capitalist crises. In times of mass unemployment labour is no limiting factor at all, and technology neither. Nature in general is a limiting factor, because the carrying capacity of eco-systems cannot be stretched together with the load of human activities on natural sinks. Nobody knows exactly when oil and gas fields will be dry and empty, but it is certain that this will happen not in centuries but in a few years or decades from now. Oil production probably is peaking soon, Deffeyes writes around thanksgiving day 2005. Moreover, the exploitation of known reserves becomes more and more expensive since pressure and viscosity and other physical properties of oil fields deteriorate in the course of the extraction. Drilling is becoming more and more complicated, especially in off-shore areas or in the case of unconventional oil-fields. The peak of oil production was already predicted by Marion King Hubbert in the 1950s, when everybody believed in an abundance of oil. But oil production must inevitably decline given that the additional reserves being found each year are smaller than the total of oil extracted, indicating that when oil production has passed its peak.

The peak, however, is not an objective fact, but is dependent on extraction-technologies and on the evaluation of reserves. The first factor is emphasised by neoclassical economists: Do invest capital into the exploration of oil fields and into oil logistics and refinement - and the supply of oil can be increased in pace with the growing demand. The second factor, the evaluations of reserves is highly dependent on interests of all parties involved in oil markets: producers, consumers and dealers. Therefore the estimates of world reserves are substantially different, reaching from 1149 bn barrels (BP in 2003) to 780 bn barrels (ASPO). The data published by BP are based on information provided by private oil companies. These data are biased by the strategies deployed by the companies concerned. The case of Shell in 2004 is telling. The company had to reduce their published highly overvalued reserve figures by 3,9 bn barrels, i.e. by more than 20 percent due to the requirements of stock market supervision. A major reason of this "error" and its corrections is "creative book-keeping". The company blew the reserves out for their annual report, in order to facelift the financial performance. OPEC countries for their part are interested in high reserve-figures because of two reasons. First, oil producers increase their estimate of reserves in order to get a higher OPEC quota in oil production. Typically, during the late 1980s "six of the 11 OPEC nations increased their reserve figures by colossal amounts, ranging from 42 to 197 percent, they did so only to boost their export quotas." (Campbell/ Laherrere 1998; available under <http://www.dieoff.org/page140.htm>). The Iraq reported in 1983 (during the war against Iran) an increase of reserves of 11 giga barrels although there was no discovery of new fields. Also Kuwait notified an increase of its reserves in 1985 of 50% without any proof. The second reason for reports of high reserves is the intention to influence the consumers of oil. High reserves of oil producing countries signal that also in the future there will be no shortage of oil and therefore the search of alternatives (of renewable energies) is not necessary. On the other hand the reserves may be underestimated in order to increase the hidden reserves of an oil company or to inflate the oil-price in order to make the exploration of unconventional oil (deep sea-oil; oil-sand; polar oil, heavy oil) and high investment into new infrastructure (pipelines, tankers, refineries etc.) profitable. The uncertainty about the real amount of reserves therefore is remarkably high, as the comparison between the reserve figures of BP and ASPO

perspicuously show. But it is absolutely certain that the reserve stocks are declining.

One major result of the using up of fossil energy is an enormous increase in greenhouse gas emissions and hence the warming of the atmosphere. According to the Intergovernmental Panel on Climate Change (IPCC) (2001), the average global temperature has risen by approximately 0.6°C during the 20th century. The average surface air temperature is expected to rise 0.4 to 5.8°C by 2100 relative to 1990, and the sea level is projected to rise 0.09 to 0.88 m by the same year. However, these data in the meanwhile are challenged by new measures of the increase of the concentration of CO<sub>2</sub> in the atmosphere. In recent years much scientific progress has been made in realistically assessing the effects of an increase of world temperature on the sea level, coastal areas, small and low islands, desertification, on changes of agricultural climate zones, and on biodiversity, although the totality of climate-effects of the combustion of fossil energies is still uncertain. However, only a few studies suggest that climate change will have no negative effects; most studies forecast severe consequences and a dramatic deterioration of future living conditions on earth.

The consequences of global warming are serious even today. The number of weather- and climate-related disasters in the world has more than tripled in the last decade compared to the 1960s. The average cost in recent decades is estimated at around \$334 billion per decade, as the insurance-industry complains. For the future a calculation of the German Institute for Economic Research estimates an *annual* cost of up to \$2000 billion. (Hemfert 2004).

## **6 Oil Imperialism**

At the end of the fossil energy regime conflicts are becoming sharper, on the input side with regard to access to oil resources as well as on the output side with regard to environmental consequences of petrol-combustion. Each nation, constrained by the logics of industrial and post-industrial capitalism, needs to have access to the common good of fossil fuel reserves. But under the conditions of scarcity (better: shortage) the global commons of oil reserves is (as we have already seen) transformed into a “positional”, oligarcical or “club” good. Either its distribution

can be left to market forces and the processes of price formation, so that those oil consumers which do not afford to pay for the oil invoices are prevented from access. Or it could be organized in a democratic, solidary rationing of oil reserves - a perspective which however in these times is not realistic. The third mode of distributing oil resources is that of the exercise of political power and military violence. It is rather likely that the first and the third mode and a mixture between both will rule the "Great Game", the battle over control of scarce oil resources in the coming future. These are the forces at play in the new "petrostrategy", in the arising oil-imperialism, in which geo-economics and geopolitics are combined.

The combination of market forces and (military) power is central in the ideologies of American neo-conservatives – the neo-liberal glorification of a free market in a "geo-economy" and a "geo-political" recourse to military power. The invisible hand of the market must be completed by the visible fist of the American army, in the cynical words of Thomas Friedman. This is only at the first glance a contradictory position, considered more closely, it refers to a long tradition of "oil-empire". American wealth, power and supremacy are founded on "cheap and abundant oil flows" (Klare 2004) from the 19<sup>th</sup> century and the Rockefeller-Baku-connection until the present days.

"Oil security" is one of the priorities of US-American politics (Cheney report 2001; Klare 2004). It refers to several dimensions: first, to strategic control of oil territories; secondly, to the strategic control of oil logistics (pipe lines, routes of oil tank-ships, secure refineries and storage); thirdly, it aims to influence the formation of the oilprice by controlling supply and demand; and fourthly, it aims to determine the currency in which the price of oil is invoiced. When we consider the many complex strands in a strategy of oil security or "oil imperialism", the formula of "blood for oil" seems too simple. Yet it is essentially correct.

The US government aims to secure strategic control over oil regions, either by means of diplomacy and the establishment of friendly relations as in the Gulf region, or by means of subversion as in some Latin American and African countries, or by using massive military power as in Iraq and to a lesser extent also in Central Asia. The war waged on Iraq seems to be an irrational undertaking, because a military occupation imposed on a country against the resistance of a hostile population is extremely expensive and, in ways which are difficult to

estimate, may well involve a demoralising impact on hegemony of the global superpower. Nevertheless, the USA after 2001 are well prepared to control the oil-regions; they dispose on more than 700 military bases in all parts of the world, many of them aiming at controlling the Caucasus Region, Central Asia and the Gulf.

The strategic control of oil logistics is expensive too, although to a lesser extent. It requires the collaboration of many governments in countries traversed by the pipelines, and the countries along whose coasts the tankers are routed and need protection. In Central Asia the US have created what is sometimes designated as “Pipelineistan”, the group of states in the region which provides transit for the Caspian oil. Based as it is on authoritarian and corrupt regimes, US dominance over these stages is however precarious, and faces challenge, not only by “terrorists”, but by considerable parts of the population.

Influence on the supply of oil can only be exercised by influencing OPEC, or by using diplomatic pressure on single oil producers, or by enforcing oil exploration in parts of the world which so far have not fully become incorporated into the US oil-empire. The occupation of Iraq, and the establishment of a US-dependent and therefore only formally sovereign government, allow the USA to exert some influence on OPEC decisions since Iraq is a member country. Diplomatic pressure on oil producers (particularly swing producers like Saudi Arabia, to get them to increase their exports is a very common practice of rich oil consuming countries and not only of the USA.

In 1973 the US dollar fell sharply against other currencies and the inflation rate in the USA increased. Faced with this situation, the oil exporting countries had only one alternative. No other currency was available, apart from the US dollar, in which oil could be priced. What they were able to do was to exploit the opportunity of the Israeli-Arab Yom Kippur war of October 1973 to increase the oil price. This increase was experienced as a severe “shock” by oil importing countries. Thirty years later, however, the situation has changed, because an alternative currency exists, namely the Euro. But in June 2003 the OPEC decided to continue to invoice in US dollars, although some governments already considered to switch into the Euro, above all Venezuela and the Iraq before the war. The domination of all the other dimensions of “oil governance” by the USA makes sure that no change of the

oil currency in the near future is going to take place. However, it is not certain that this favourable situation for the USA will last for ever. The loss of value of the US dollar vis-à-vis the Euro and the huge twin deficits being run by the US economy (on trade and the federal budget) are factors which make the Euro as a oil currency more attractive for oil exporters.

Moreover, this option could also become attractive for those countries, particularly Japan and China, much of whose huge official reserves consist of US financial assets. Again we have to consider the close connectedness of financial and oil markets. According to the *Economist* (January 10, 2004) at the end of 2003 Japan held reserves totalling \$673,5 bn, China \$406,0 bn, Hongkong \$114,1 bn, South Korea \$150,3 bn, and Taiwan \$206,3 bn. There is the threatening possibility that these reserves would lose part of their value in the event of a devaluation of the US dollar. Such a devaluation is a real possibility. The strategy of these countries will be to change their reserves into alternative currencies, above all into the Euro. They must do it slowly in order to avoid turbulences on currency markets. Senior officials of the People's Bank of China have in fact declared their intention to increase the share of the Euro in its reserves. Also the Bank of South Korea declared the intention to reduce the engagement in US-Dollars. However, the share of the Euro in the reserves of the Asian central banks today is only 6%, so that the degree of movement into the Euro should not be overstated (Solans 2004: 12). Again, we have to take into account the intertwined structures of global oil and global finance. Therefore, a strategy which aims to prevent resulting conflicts must include both, regulation of the oil market as well as the re-regulation of global financial markets.

The conflict over oil therefore has many dimensions. On the horizon of the disputes on energy security, i.e. on oil, there hovers the possibility of deep tensions between the US dollar and the Euro, between North America and Europe. Oil imperialism obviously includes conflict dimensions which have the potential to undermine any peaceful co-existence between the peoples of the world. On the output-side oil imperialism also is topical. One of the worst scenarios of climate change, paradoxically, has been presented in a study commissioned by the Pentagon and carried out by Peter Schwartz and Doug Randall (2003) of the Global Business Network. Since global warming does not have equal effects in all parts of the

world, the regions of the world may be affected differently, and thus will experience different patterns of climate change. Thus, some regions may well be hit by colder periods in the near future because of the changing pattern of global air and water circulation. The study follows the assumption of the IPCC that the average global temperature is likely to increase by up to 5.8<sup>0</sup> C by 2100. As this temperature rise will cause a melting of the Greenland ice sheet, the Gulf Stream may change its direction due to the lower density and salination of waters in the North Atlantic. This process is expected to be very rapid. The resulting collapse of the thermohaline circulation in the North Atlantic will involve “disrupting the temperate climate of Europe .... Ocean circulation patterns change, bringing less warm water north and causing an immediate shift in the weather in Northern Europe and eastern North America...” (Schwartz and Randall 2003: 9). Europe would be severely affected by such an abrupt climate change; “...Over time though, conflicts over land and water use are likely to become more severe – and more violent. As states become increasingly desperate, the pressure for action will grow.” (Ibid.: 16)

Even if climate change turns out to be less dramatic as this suggests, and does not occur as suddenly as assumed in the Pentagon scenario (this being the opinion of the majority of climate researchers), it is obvious how conflict-prone the use of fossil energies actually is – both on the “input side” of energy provision and the “output side” of green house gas emissions. The future conflicts very likely will have to do with access to resources and with the strategies undertaken to insulate nation states against the effects of climate change, especially against migration flows.

### **7 A “solar revolution”: the transition to a renewable energy regime**

It is unlikely that new reserves of oil explored can hold pace with the growing demand for oil. China and India alone are responsible for three quarters of the rise in oil demand in 2004. It is unlikely that this situation will change. There seems in fact to be only one realistic alternative to oil imperialism – namely a shift from oil dependence to renewable energy source, to the radiation energy of the sun (and its secondary derivatives such as photovoltaic, eolic, water, biotic energies etc.).

Technologies and appropriate social institutions have to be developed in order to realise the necessary transformation and to overcome the above mentioned “firewall” in energy which separates the (closed) fossil regime from the (open) life energies provided by the sun. This radical transition from fossil to renewable energies can be understood as a “solar revolution”. Such a revolution must aim not just at a simple seizure of power but must include radical transformation in patterns of production and consumption, of life and work, of gender relations, of the societal relation of mankind to nature. It is a holistic endeavour.