The Oil Drum
DISCUSSIONS ABOUT ENERGY AND OUR FUTURE

German Military Study Warns of Potential Energy Crisis

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This week a study on peak oil by a German military think tank was leaked on the Internet. The document shows that the German government is closely studying the issue of peak oil, and is aware of the potential for serious consequences as oil production declines. The study is reminiscent of the Hirsch Report, commissioned by the U.S. Department of Energy, that warned of the risks posed by peak oil.

The document warns of the potential for regional shortages, market failures, and a shift in political power toward those capable of exporting oil. This report describes potential outcomes that require planning and preparation. The scenarios outlined in the paper are exactly the kinds of drivers that lead me to advocate for greater regional energy self-sufficiency. The report clearly lays out just how vulnerable Europe will be because of its continuing dependence upon Russia for both oil and gas, and notes that Russia will be in a very strong political bargaining position as a result.

The report can be accessed from the popular German paper Der Spiegel in this story: Bundeswehr-Studie warnt vor dramatischer Ölkrise. The report is so far only available in German, and while *Ich spreche ein wenig Deutsch* (I speak a little German), I am not fluent enough to capture the essence of the report. (Der Spiegel has summarized the report in English now: Military Study Warns of a Potentially Drastic Oil Crisis).

However, I have a friend who is both fluent in German (his native tongue) and passionate about peak oil outreach. Given a week, I could probably translate the report. My friend (who didn't want to be identified) did it overnight. Below is his translation of the major points in the report.

Peak Oil

Implications Of Resource Scarcity On (National) Security

Center for German Army Transformation, Group for "Future Studies"

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1. Introduction

The focus of the document is on the topic of finite resources, using Peak Oil as an example. The report is part of a series of publications focused on the long term (30 years) with the intent to enable the Ministry of Defense to take action early.

In the past, resources have always triggered conflicts, mostly of regional nature. For the future, the authors expect this to become a global problem, as scarcity (mainly of crude oil) will affect everybody.

The authors confirm multiple views on Peak Oil timing and concede that there will be Peak Oil eventually. The study isn't about positioning the problem on a timeline, but instead about the consequences of a peak. They expect major consequences with a delay of 15-30 years after the peak has hit.

The report refers to the uncertainty of reserve statements mainly in OPEC countries based on the quota allocation method within OPEC but also refers to the possibility of better extraction technologies.

They suggest that it has become urgent to understand those consequences of an eventual peak now in order to have enough time to adapt.

2. The Importance of Oil

2.1 Oil as a driver of globalization

95% of all industrial outputs is dependent on oil as a fuel and/or as a chemical base for polymer production etc. Oil has become a key driver of modern lifestyle and globalization.

Substantial oil price increases poses a systemic risk, not just for obvious things like transportation, but equally for other subsystems.

Thus, internationally, but equally nationally, there is a vital interest in securing access to oil, which is currently possible on world spot markets, with OPEC being cooperative due to a mutual dependency between key actors (and a massive presence of the U.S military in the Gulf region).

Yet, on the other hand, regional conflicts can always at least partially be attributed to resources, such as in the Caucasus region, the Middle East or in Nigeria. They may also fuel conflicts due to the wealth they create (such as in Africa).

The report sees – within a timeframe until the year 2040 – a changed international security layout based on new risks (including transport risks for fuels) and new roles of actors in a possible conflict around the distribution of increasingly scarce resources.

2.2 German energy security.

The term is defined narrowly as "reliable energy supply", and then extended to include environmental objectives, technology transformation of societies, planning for energy demand and the long-term planning of a national strategy, tied in with international organizations.

This expansion of the view is seen as required based on the globalization of energy markets. However, the report then narrows in scope again to the possible risk from a supply shock,

focusing on the key suppliers of oil: Russia, Norway and the U.K. It is noted that both European partners are already past their peak and that Germany is increasingly dependent on Russia, which currently is reliable but not necessarily so in the long term. Given the expected decline in German energy consumption, the Russian share will likely be 40% by 2025, with the Middle East, Africa and sources around the Caspian Sea making up for the increasing gap from declining European production.

3 . Possible Scenarios After Global Peak Oil

This chapter looks at gradual changes (3.1.) and the risk of disruptive changes (3.2) past a certain tipping point.

3.1 General interdependencies driven by Peak Oil

3.1.1 Oil as a deciding factor in international relationships

With increasing scarcity, producers are increasingly in an advantageous position, both from high revenues and access to cheaper oil when compared to spot market prices. This partly reverses the trend to free oil markets which took place after the '70s shocks, and gives those countries more control over the supply chain, with a risk of monopolies and nationalizations, and of "political pricing."

Further, oil producers use increasing amounts of their production internally at lower prices, which increases domestic consumption and inefficiencies, accelerating the problem. [The authors miss out on the fact that high oil prices also bring more wealth to the country which AGAIN increases resource consumption].

The report then looks at increasing "strategic" moves by key actors including the Chinese CNPC (China National Petroleum Corporation), which tries to grab the sources that are still available (particularly in Asia and Africa), but often at relatively unattractive conditions.

Overall, the authors expect a reduction of "free market" mechanisms in oil trade, and a rise in more protectionism, exchange deals, and political alliances between suppliers and customers, which could lead to significant geopolitical shifts. Equally, the authors expect this interdependency to shape foreign affairs of oil importers, making them more tolerant towards rogue behavior of suppliers out of sheer need.

Overall, higher volatility and loss of trust are seen as possible outcomes in a world where oil supplies are limited, increasing the need for "oil related diplomacy" and thus increasing the risk of moral hazard among all actors, which in turn decreases overall global supply security.

The report then refers to already existing actions of the German government to tie close economic relationships with energy suppliers, and to the tendency of consuming countries to reduce oil dependency, trying to steer clear of risks of future supply shocks.

The Middle East is identified as a very dangerous region with high external involvement from many players and thus a very unstable overall situation.

Overall, the report expects a reduction of the importance of "Western values" related to democracy, and human rights in the context of politically motivated alliances, which increasingly are driven by emerging economies such as China – likely leading to double standards. Emerging economies are equally expected to receive higher recognition in international organizations, particularly those with strength in resources (such as Russia).

3.1.2 New security risks based on additional/alternative energy resources

New conflicts are potentially arising from oil exploration in international or disputed ocean waters, where multiple issues arise, particularly around the Arctic Circle, with further geopolitical risks for conflict.

Also, the shift to natural gas is reviewed as an extension of the "oil age", because it might be able to replace crude oil as a bridging source until new solutions are found. The risks for problems from transporting gas (pipelines) and the related issues (as seen between Russia and its neighbors during the past years) are highlighted.

Equally, nuclear power as a potential source is highlighted – emphasizing the risk for safety and the proliferation of nuclear technology. This would also require an increasing shift towards electricity.

Equally, the competition between biofuel and food production is highlighted, showing the limits of biofuel outputs to compensate for reductions in oil availability, and also showing risks for water supply and soil degradation from excessive use.

Overall, the authors see a trend to increase the energy autonomy of entire regions from external supplies, both in the ability to generate alternative fuels (from biofuels and coal), but particularly in electricity generation.

3.1.3 A shift in roles between private and public actors

Based on the increasing importance of oil, governments are becoming more relevant in securing the benefits of oil, both on the supply and on the demand side. This puts a higher emphasis on political negotiations and deals, and increases the risks for nationalizations of resources and key exploration activities.

Exploration licenses are seen as a key area where bidding wars (including non-financial commitments) might emerge. Equally, increasing pressure to renegotiate or revoke already existing licenses might emerge. Ultimately, each country will try to secure sufficient oil to maintain its standard of living.

On the other hand, private enterprises are seen on the rise in protecting infrastructure and ensuring production and transportation security in less developed regions, particularly if weaker countries become unable to keep their own services up.

The dependency on oil-related infrastructure (pipelines, refineries, harbors, key pathways on oceans) will increase, and thus the risk. Damaging infrastructure through hostile acts (sabotage, war) might become an attractive target for groups or countries with a tendency to use violence. The same is expected for electricity and natural gas-related infrastructure – they all might require higher protection.

Generally, the focus of risks is expected in the region which the authors consider the "strategic ellipse" (a term used for the region East of Europe reaching from Saudi Arabia in the South to

Russia and former Soviet Union countries in the North), because a majority of oil reserves are located in this area.

3.1.4 Economic and political crises as a consequence of the transition to "post-fossil" societies

A number of risks of higher oil prices are seen for modern economies, particularly in transportation. Security risks are seen in resulting systemic crises.

A first direct consequence of higher oil prices and lower availability of fossil fuels is a possible reduction in transportation capacity, equally in individual transportation and in freight forwarding. This might lead to another "mobility crisis" for societies that heavily depend on cars and trucks.

Higher cost in commercial transportation markets might severely affect current supply chains, and no alternatives are in sight (electric trucks don't exist yet). Food particularly might become a critical issue for countries that are a) highly dependent on imports and b) are susceptible to price-increases of food products, particularly affecting Africa, parts of Asia and Latin America, and the Middle East.

High oil prices would further affect almost all aspects of society, as it will also influence the cost of chemicals and all products derived from them, which might substantially alter the nature of value chains and make certain things uneconomical – ultimately leading to higher unemployment during a transformational phase away from an oil based economy. This might particularly affect the German car industry.

Limits in availability might also strengthen regulatory efforts, encourage the allocation of energy (oil) by rationing schemes and possible other actions limiting free markets.

Additionally, the changes and likely reduction in standard of living might render societies less stable and make them more attracted to extremist political positions and even trigger changes in government systems, as trust into key actors in politics will diminish. This might be a particular risk for the relatively young democratic countries in Eastern Europe.

3.1.5 More selective intervention – key actors overwhelmed

Overall, more expensive transportation and increasing problems "at home" might reduce the ability of larger countries to intervene internationally (politically and/or with military action), and also lower the readiness to provide help to poorer countries. The focus will be more on a country's (energy) interest for itself and not so much on an ideal of transferring Western values. The gap will likely not be filled by NGOs, as they will be affected by similar limits.

Overall, international institutions will be weakened, as they will have less resources to provide help and support, and it becomes equally possible that help will be attached to direct (energy) needs of the donors.

3.2 Systemic risks after reaching a "tipping point"

In addition to the gradual risks, there might be risks of non-linear events, where a reduction of economic output based on Peak Oil might affect market-driven economies in a way that they stop functioning altogether, leaving the possibility of a relatively steady downward trajectory.

Such a scenario could develop through an initially slow decline of trade and economic activity, combined with higher stress on government budgets from lower tax income, higher social cost and growing investment into alternative technologies.

Investment will decline and debt service will be challenged, leading to a crash in financial markets, accompanied by a loss of trust in currencies and a break-up of value and supply chains – because trade is no longer possible. This would in turn lead to the collapse of economies, mass unemployment, government defaults and infrastructure breakdowns, ultimately followed by famines and total system collapse.

4. Challenges for Germany

4.1 Risk of new dependencies for Germany

Oil as a new factor of global power would create significant dependencies for Germany, and in order to avoid supply issues, strong ties with suppliers are a must, but equally a diversification of supply relationships, taking into account that a supplier might intentionally reduce capacity to accomplish political objectives.

Among the key supplier countries is Russia (supplying 35% of German oil imports), where reliability risks are prevalent, given past experience. Natural gas, as a possible temporary substitute, bears the same risk (37% comes from Russia). Thus, a diversification becomes essential.

4.2 Focus of politics on supply relationships

Germany needs strong and reliable ties to Russia and other Caspian Sea countries. This might create some challenges in international relations, particularly with smaller Eastern European countries [like Poland]. Thus, intensifying relationships to the Middle East might be equally relevant. However, all those relationships have an inherent risk of being instruments in conflicts, which puts a certain limit on treating all foreign partners the same.

4.3 More pragmatic foreign policy

The need to mitigate supply risks might require some compromises on foreign affairs topics (such as human rights). Equally, more active diplomatic efforts will be required with a focus of energy security in mind. This is more difficult given Germany's reluctance to engage in political power play due to its history, but needs to be tackled in order to deal with the challenges ahead. The authors don't want to encourage military solutions, but suggest a strong preventive development of political and diplomatic initiatives to tackle the problem.

4.4 Importance and freedom of industrial nations reduced

All industrial nations that depend on energy imports will become more dependent on new partners, both in emerging economies and supplier countries. This requires a new focus in foreign affairs, sometimes giving up standards in negotiations with countries that have different cultures and political systems.

4.5 Help in stabilizing supplier countries at risk

Some supplier countries (and surrounding regions) might be destabilized by the force of higher resource prices. This is an area where Germany needs to help by providing support for nation building and conflict resolution on the national and international level. This is in conflict with the lower economic power likely to result from Peak Oil, which might make interventions less likely and requires new approaches of "stabilization with lower effort."

4.6 Growing conflict potential concerning the Arctic Circle

Germany might have to take positions in case of an upcoming conflict regarding resources in the Arctic Circle, where multiple countries (including Russia) have open claims for accessing oil and gas fields. This requires further research.

4.7 Nuclear technology proliferation

The risk for nuclear technology proliferation and thus more countries with the potential for nuclear weapons (and the risk for terrorists having access to nuclear material) is growing due to the proliferation of nuclear technology for energy generation. Equally, risks for terrorist attacks and accidents on German soil are rising. Both scenarios require more surveillance, intelligence and preventive action.

4.8 Higher conflict potential regarding critical infrastructure

Energy delivery infrastructure for all sources including electricity will have a higher importance in an oil constrained world, thus, securing its reliability, security and availability becomes mission-critical. International cooperation is needed to secure large international supply paths (pipelines, sea routes).

4.9 Larger "energy regions" change international alliances

The expectation of stronger connections between suppliers and consumers across continents creates different settings for current international alliances and security risks. DESERTEC (a large power production system in Northern Africa based on CSP) would require different settings even for military strategies.

4.10 Peak Oil for armed forces

Armed forces would also be significantly affected by fossil fuel limits, as they are very dependent on oil products. Significant investments in alternative energy procurement technologies (biofuels, coal-to-liquids - Fischer-Tropsch) and applications (electric and hybrid vehicles) would be required, with long transition times. Further, local energy-independence of stationary troop infrastructure (like military bases) using more renewable sources would be beneficial. The long term objective would be to fully convert Germany's armed forces to only use renewable energy sources by 2100.

4.11 Crude Oil as a systemic risk

For scenarios which end with a complete destabilization of societies, Germany is at a significant risk given its strong participation in a globalized economy. Being still able to act requires a number of basic infrastructures to keep functioning, both for the country and its armed forces.

Work is required to look into redundancy, high-resilience of infrastructure and local self-organization approaches.

5. Summary

The report sees significant risks arising from an unavoidable peak in oil production, which go beyond gradual shifts in energy systems and economies. This will likely lead to economic change and new geopolitical risks that affect much more than just what we can anticipate. The overall ability to describe exact outcomes is very limited, as many scenarios are possible, and further research is required.

Overall, more emphasis needs to be put on understanding and shaping international relationships with respect to energy security, anticipating and integrating the ongoing shift to different players in a resource-constrained world.

In any case, Germany has to identify and implement alternatives to the current transportation technologies that require oil, and put a similar emphasis on avoiding other dependencies, for example concerning rare earths.

For armed forces, Peak Oil creates significant risks, both from a mobility standpoint as well as from dependencies on other societal services. Understanding those risks requires further analysis and likely a very different approach in the future.

In general, more preparation is required for society and the army to make sure that problems are recognized and solutions are actively implemented.