Fact Sheet 2: Safe Energy

This is not the way to protect the climate

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The UN World Climate Report clearly states that climate change is happening (1). Immediate and global action can stabilise atmospheric CO_2 concentrations at 400 ppm (parts per million, 1 ppm = 0,0001 %) and therefore produce no more than 2 °C increase in global warming. Above this limit the consequences would become uncontrollable. The global community has only 10 to 15 years to affect this outcome. That is why power utility companies offer low carbon technology to solve the problem.

Coal, the climate killer, to the rescue

Carbon Capture and Storage (CCS) is the technology that is supposed to clean up the most carbon intensive of all the fossil fuels. The process: CO_2 is split from the coal firing and stored underground, for example in disused natural gas depositories. Since 1991, huge sums have been invested in researching "CO_2 free" power stations. The enthusiasm could be over soon. Because climate friendly electricity from coal will most probably never be competitive. The necessary infrastructure for the transportation of the carbon dioxide to the underground storage sites along with the additional fuel needed for the CCS technology would lead to considerably higher costs. In addition, the gas is not fully combusted during the process. The CO_2 emissions are only reduced by around 75 %. So far nobody has any experience with storing the aggressive carbon gas. It is unclear whether the leakage unit can be kept so small that an effective storage of the climate gas is possible. And if the technology is only ready in 15 years instead of now, then it will be too late. (2,3)

Nuclear power, to the rescue

Electricity from nuclear power stations produces less CO_2 than from fossil fuels (4). But the risks of using nuclear energy are so high that it does not offer a viable solution. With increased use the risks would increase as well. Along the entire process chain, from the uranium mining and processing, the fuel element production and power production to the decommissioning and disposal. This is in addition to the danger of terrorism and proliferation, especially through military use (North Korea, Pakistan, India, Iran). The central question is, do we want to continue exposing ourselves to the risks. And, nuclear energy does not have the potential to be a serious solution to climate change. Globally, it is insignificant and only cover two to three percent of the worldwide total final energy consumption. Renewable energies cover 20 percent, the large remainder is produced with climate relevant fossil fuels. At the moment, there are 439 nuclear power stations in operation worldwide. Most of them aging. Only 33 stations are less than 10 years old. To achieve the goal of the International Atomic Energy Agency (5) of raising nuclear power to four to six percent by 2030 would require the construction of about 1000 power stations over the next 13 years – also to compensate for the aging power plants. Doubt with regards the implementation are viable as it can take up to 10 years from the planning to the commissioning. Nuclear power is not an option for solving the global warming.

Drawing fast breeders from hat

Even the nuclear fuel uranium is finite (6,7). The uranium resources that can be mined economically and are used at current rates will last about 70 years. With every additional power plant brought online the duration will shrink. Nuclear power leads the way into the same dead-end road as the burning of finite fossil fuels.
A massive expansion of nuclear power use would mean that the supply could not be maintained. These options would become necessary: a switch to Thorium as a fuel source, the expansion of the risky and environmentally harmful reprocessing of used fuel elements or the even more dangerous widespread use of breeder reactors. Some time ago, "fast breeders" were created as a solution to the then perceived uranium shortage. Breeders did not become viable, not only because they were uneconomic, but also due to the immense safety problems. Besides the health risks, the large scale production of plutonium also leads to risks of proliferation. Old technology such as breeders and the German thorium high temperature reactor, that never got beyond the test phase, are now

being proclaimed as 4th generation nuclear reactors. These reactors are supposed to be safe, to produce less waste and to pose no risk with regards to proliferation and use as nuclear weapons. And they are supposed to be economically viable and quickly to commission. Until now, this could not be realised.

No where to be seen: nuclear fusion as climate protector

Far in the future, is a technology that carries the highest expectations for covering the global demand for energy – nuclear fusion. Despite huge R&D investments, the need for further research is still immense. A fusion reactor is not free of radiation problems and carries the dangers of nuclear weapons production. The technology has been researched in the largest industrialised countries since the 1960's. Then it was thought that the technology would be ready within 30 years. Today, the general hope is that it will be ready in 50 years. In reality, nobody can say for sure whether nuclear fusion will ever be commercially viable or which risks and problems will come with it.

Instead of investing in CCS, the extension of nuclear power, 4th generation reactors or nuclear fusion other energy sources should be used. Ones that are quicker to realise and cheaper to develop: renewable energies and the massive potential of energy efficiency.

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