

## **No to thorium nuclear energy**

*The organisations listed below support the No2Tho declaration. They do so for different reasons, like ageing nuclear reactors, the four INES 7 accidented nuclear reactors of Chernobyl and Fukushima, but also inherent health, safety, proliferation (danger of wider spreading of nuclear arms), terrorism and waste risks of all sorts of nuclear energy. Furthermore, the costs of nuclear energy are rising. On top of this, it is necessary to develop renewable energy, together with its flexible and climate-positive supplements (storage, CHP with carbon fixation and utilization,...). This is why the No2Tho declaration calls on the research institutes, policy makers and all economic and societal players to fully invest all resources in a full renewable, non-fossil and non-nuclear energy system, and to reject any research, development and implementation of thorium nuclear energy.*

### **1. Thorium hampers renewables**

“Don’t nuke the climate” is a well-known slogan during manifestations. Abusing the climate issue to create another risky (thorium and other) nuclear energy, is a false choice between a climate apocalypse or a nuclear armageddon. Every euro, dollar or renminbi invested in nuclear, is one less for renewables. To say it with the words of physicist Amory Lovins, “it worsens climate change compared with devoting the same money and time to more efficient options”.

### **2. Thorium prevents climate-positive action**

Nuclear lobbyists defend that nuclear energy is poor in carbon- and greenhouse gas. But we need far more than “poor in carbon”, if we really want to tackle the anthropogenic climate breakdown. Indeed, we need to fully implement an energy infrastructure which is not only poor in carbon, but moreover, climate positive. After reaching climate neutrality, we need to go further, in order to fixate more greenhouse gases than humanity emits. We need both biological and technological net carbon fixation, which nuclear power including thorium, cannot do.

### **3. Thorium is no partner for renewables, on the contrary**

Some pretend that nuclear power in general, and thorium specifically, is a good partner for a sustainable energy future, where baseload (or even flexible) nuclear power goes hand in hand with flexible renewable energy. In the case of baseload nuclear energy, there is a contradiction between flexible renewables, and baseload in general. Renewables need a very flexible back up. In the case of flexible nuclear power, this has all the disadvantages mentioned above and below. Moreover, there is a specific higher risk of flexible nuclear energy production. Everybody knows that heating and cooling metal installations in a fast way – as is required for flexible installations to really back up renewables – increases the risk

of material failure in the installations. This increases the risk of a nuclear accident with escape of nuclear elements. Flexible nuclear installations exacerbate the existing problems of nuclear production; instead of resolving them.

#### ***4. Thorium is expensive***

Thorium presents itself today as a newborn alternative, while it isn't this at all. It is a "modernized" old fashioned nuclear technology, having failed economically in the past. A big and politically much desired German experiment in the eighties failed with a Thorium High Temperature Reactor in Hamm-Uentrop. It is one of the reasons why the technology of pressurized or boiling water reactors was chosen, beside the higher of this technology. Nevertheless, scientists continue to apply research, for example in Jülich, which is promoted worldwide. Meanwhile, safety requirements have become more severe for all nuclear technologies, raising even more the costs of thorium technology itself. Becoming more expensive, they lose the battle against renewables financially. Again Amory Lovins remarks, "nuclear power is (...) so hopelessly uneconomic, that one needs not debate whether it is clean or safe".

#### ***5. Thorium is unhealthy***

Thorium 232 is a non-fissile element. It requires Uranium 235 and/or plutonium to sustain the process. It produces its own mix of radioactive elements in its fuel, thus creating typical radio-activity related health risks for both the reactor staff, as for the population in the wide area of the reactor. Perfect nuclear technology does not exist. Unwanted release of some or all of these elements during minor to major accidents cannot be excluded. Thorium is also unhealthy right from the beginning: thorium must be mined, and the mines cause health, climate and environmental problems.

#### ***6. Thorium is unsafe***

Thorium is unsafe and not clean. We all know the repeated nuclear self-defense arguments when a nuclear accident occurs: "our technology is different than the one from the accidented reactor". That is what the thorium protagonists do not stop to repeat: their technology is different, cleaner and safer. This does not stop the real thorium technology from having its own dangerous characteristics. For example the molten salt technology requires very challenging material characteristics in order to prevent the release of nuclides containing molten salt. As it requires Uranium 235 and/or plutonium to start and sustain the process, and as the fission concerns uranium 233, there are the specific dangers of uranium isotopes and trans uranium elements. And it creates all kinds of very dangerous elements, like for example protactinium, having a half-time of fast 33.000 years, even longer than the half-time of Plutonium, being 24.000 years.

#### ***7. Thorium has some higher risks than the actual NPP's***

Thorium is often represented as a safer technology than current nuclear technologies, like Pressurized Water Reactors, like in Doel and Tihange in Belgium. Since the technologies are

different, it is very possible that some dangerous aspects differ and are less important. Yet it is highly misleading only to mention the lesser risks, and remain silent on the higher risks. Thorium technology has some higher risks than the current reactor technologies. In fact, thorium reactors are breeder reactors - breeding uranium 233 out of thorium 232 - requiring continuous reprocessing facilities on each site with thorium reactors. These reprocessing facilities are high-risk installations. Further specific risks are the risks of leaks and breaks in the piping, having to withstand extreme heat and salt conditions of the molten salt fuel. And we mentioned already the creation of thorium-specific, long-living and risky elements, for example protactinium.

### ***8. Thorium strengthens proliferation***

Thorium 232 is itself unable to split, but fissile and weapons-grade uranium 233 is bred out of it. Tests with uranium 233 atomic bombs have been successfully held in the fifties, for example in the US in 1955. Saying that thorium does not have the risks of nuclear weapons is a highly misleading statement. Thorium 232 on its own does not have that risk, because it is not fissile. Since it is a breeding material for uranium 233, it contains all the risks related to nuclear bomb production. Moreover, since each molten salt power plant on thorium needs an own reprocessing plant, there are many more places where highly usable-material appropriate for nuclear and dirty bombs can “disappear”.

### ***9. Thorium is terrorism sensitive***

As thorium technology has many risks throughout the whole life chain, it is also susceptible to terrorist abuse. The technology creates fissile material appropriate for both explosive and dirty nuclear bombs. Thus the technology is suitable for terrorist abuse in different ways. The site itself is highly sensitive to strong radioactive release when a terroristic attack succeeds on the site. And the material produced in the site is itself usable for atomic explosive or dirty bomb production.

### ***10. Thorium causes long-living nuclear waste***

Proponents of thorium technology often pretend their technology produces far less long-living waste, and avoids the production of the typical transuranic waste elements, coming from current nuclear power plants, fuelled with enriched uranium 235, or even Mixed Oxide Fuels (MOX), containing plutonium as well. First of all, this is not entirely true. Thorium technology produces different kinds of long living waste, including the “traditional” waste elements (like plutonium and transuranic elements), but also including other long-lived elements, like for example protactinium.

Why developing a new radioactive waste producing technology, with all the non-resolved waste problems? Non-nuclear renewable alternatives are becoming more and more available. They are far less risky, unhealthy and polluting. On top of this, they are cheaper, climate friendly, and even reversing climate degeneration. Last but not least, they are not suitable for mass destruction weapons or accompanying terrorism. So let's do it, and invest for a 100% renewable energy future!

***The following organisations support the declaration No2Tho***

Wolfgang Oberacker, Thomas Partmann, Karlsruhe, [AtomMuell@online.de](mailto:AtomMuell@online.de)

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11 maart beweging, <http://elfmaartbeweging.be/>

WISE Nederland, <https://wisenederland.nl/home>

LAKA Nederland, <https://www.laka.org/>

NSK Nucléaire Stop Kernenergie, <http://nucleaire-stop-kernenergie.org/>

SOFA Münster, <https://sofa-ms.de/>

Climaxi Belgium, <https://www.climaxi.be/homepage>

Greenpeace Antwerpen, <https://greenwire.greenpeace.org/belgium/nl/groups/greenpeace-antwerpen>

COBAN, Comité Blegnytois pour des Alternatives au Nucléaire

Climate Express Belgium, <http://climate-express.be/>

GROEN, <https://www.groen.be/>

PCB, <http://www.particommuniste.be/index.php/belgique>

LEF, <http://www.lef-online.be/>

PvdA-PTB, <https://pvda.be/>

Hart boven Hard, <http://www.hartbovenhard.be/>

Soutien Bure Repression

Bürgerinitiative "Kein Atommüll in Ahaus", [www.bi-ahaus.de](http://www.bi-ahaus.de)

Aktionsbündnis Münsterland gegen Atomanlagen, <https://www.facebook.com/keincastornachahaus/>

IPPNW Deutschland, <https://www.ippnw.de/>

Arbeitskreis Umwelt (AKU) Schüttorf, <https://www.facebook.com/AKU.Schuettorf>

Anti-Atom-Berlin, <https://antiatomberlin.de/>

Bürgerinitiative Umweltschutz Hamm, <https://www.reaktorpleite.de/68-frontpage/thtr-rundbriefe/rundbriefe-2018/820-thtr-rundbrief-nr-150-juni-2018.html>

Don't nuke the climate, <http://www.dont-nuke-the-climate.org/>

Bürgerinitiative Umweltschutz Lüchow- Dannenberg e.V., [www.bi-luechow-dannenberg.de](http://www.bi-luechow-dannenberg.de)

Aktionsbündnis "Stop Westcastor" (Aachen, Jülich, Wegberg, Düren, Euskirchen, Köln), <http://westcastor.blogspot.de/>

Die Ökologische Plattform der Partei Die Linke Nordrhein-Westfalen, <https://oekologische-plattform.dielinke-nrw.de>

Arbeitskreis gegen Atomanlagen Frankfurt am Main

Mütter gegen Atomkraft e.V, [www.muettergegenatomkraft.de](http://www.muettergegenatomkraft.de)

BI Stoppt Temelin, <https://www.stoppt-temelin.de/>

Aarhus Konvention Initiative, <http://aarhus-konvention-initiative.de/>

**Caretta-Naturschutzgruppe**      **Potsdam,**      <https://www.naju-brandenburg.de/mach-mit/naju-gruppen/caretta-caretta/>

German Society for Radiation Protection, <http://www.strahlenschutz-gesellschaft.de/English>

Bundesverband Bürgerinitiativen Umweltschutz (BBU) e. V., <https://bbu-online.de>

Initiative AtomErbe Obrigheim, <http://www.atomerbe-obrigheim.de>

Arbeitskreis Umwelt (AKU) Gronau, <http://www.aku-gronau.de>

Initiative 3 Rosen e.V., <https://3rosen.eu/>

Wolfenbütteler AtomAusstiegsgruppe (WAAG), <https://waagwf.wordpress.com/>

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