

SUPPLEMENTARY SUBMISSION TO THE JOINT STANDING COMMITTEE ON TREATIES REGARDING THE AGREEMENT BETWEEN THE GOVERNMENT OF AUSTRALIA AND THE GOVERNMENT OF UKRAINE ON COOPERATION IN THE PEACEFUL USES OF NUCLEAR ENERGY

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Friends of the Earth, Australia

Contact:

Jim Green (national nuclear campaigner)
0417 318 368
jim.green@foe.org.au
PO Box 222, Fitzroy, VIC, 3065

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1. Safeguards inspections, fallback safeguards, return of AONM, nuclear security

Questions put to the IAEA (by Friends of the Earth):

1. Have safeguards inspections been carried out in contested or conflict-ridden regions of Ukraine (Crimea, eastern Ukraine) over the past three years and can you provide any details?
2. Is the safeguarding of nuclear facilities and materials in Crimea now carried out under the auspices of the IAEA/Russia safeguards agreement (or the IAEA/Ukraine agreement)?
3. Ukraine's March 2016 NSS report states: "Russian military aggression in eastern Ukraine and its attempt of illegal annexation of the Autonomous Republic of Crimea pose new threats to the national system of nuclear and radiation security and resulted in loss of regulatory control in those areas."
(www.nss2016.org/document-center-docs/2016/3/31/national-progress-report-ukraine)
Have IAEA safeguards inspections been deferred or in any way compromised as a result of conflict in Crimea or eastern Ukraine?

IAEA response (email from Fredrik.Dahl@iaea.org, 18 Nov 2016, copied in full)

For your information:

- The Agency continues to implement safeguards in Ukraine in accordance with the IAEA Statute and international law. Therefore, the Agency continues to implement safeguards in Ukraine in accordance with the country's Comprehensive Safeguards Agreement and Additional Protocol thereto, and consequently all facilities and nuclear material in Crimea continue to be covered by the CSA and AP between Ukraine and the Agency.

- You may also find the following background material useful: the IAEA Safeguards Statement for 2015 (https://www.iaea.org/sites/default/files/16/08/statement_sir_2015.pdf) and the annex to the IAEA's Annual Report for 2015 (https://www.iaea.org/sites/default/files/16/09/gc60-9_annexinfo.pdf).

- Due to the confidentiality of such information, the Agency cannot provide details about its safeguards-related activities in Member States.

Comments:

- The IAEA states that facilities in Crimea are subject to the IAEA/Ukraine safeguards agreement even though Ukraine has no control over nuclear facilities and materials in Crimea. Clearly that is an unworkable situation, e.g. the IAEA potentially raising concerns with Ukraine over nuclear facilities and materials in Crimea that Ukraine has no control over.
- Dr John Kalish from the Australian Safeguards and Non-Proliferation Office (ASNO) acknowledged in the 21/11/16 JSCOT hearing that: "Of course, there has been an issue with the inspection of the research reactor in Sevastopol in the Crimea. That is a special case where the IAEA inspectors have not inspected the facility but the IAEA has concluded that the likelihood of material being used for non-civilian purposes is extremely low – in fact, non-existent."
The JSCOT should seek clarification from ASNO. Has the IAEA sought to carry out safeguards inspections of the Sevastopol research reactor in Crimea and been rebuffed by Russia? The JSCOT should seek any other information that ASNO can provide on this matter.
- The JSCOT should seek any information that ASNO can provide on the safeguarding (or non-safeguarding) of nuclear facilities and materials in eastern Ukraine.
- Section 7.1 of the original submission from Friends of the Earth provides details (drawn from the Ukrainian government) about the loss of regulatory control over numerous nuclear facilities and literally thousands of radioactive sources in Crimea and eastern Ukraine. A reasonable working assumption is that the IAEA has lost safeguards control over the same regions – and the same facilities and sources. **The Committee needs further information.**

In the event of renewed conflict in Ukraine there is clearly a risk of Australian Obligated Nuclear Materials (AONM) falling beyond the reach of IAEA safeguards just as has already happened in Crimea. To make a bad situation much worse, DFAT/ASNO appear to have no credible plans for i) fallback safeguards or ii) return of AONM to Australia (or on-sending it to a third country).

FALLBACK SAFEGUARDS: The importance of credible plans for fallback safeguards is self-evident: from ASNO's statements to the JSCOT hearing it appears that the IAEA has already lost safeguards coverage over a research reactor (and possibly other facilities and materials) in Crimea. Yet this issue was not raised with DFAT, ASNO or Department of Industry, Innovation and Science representatives during the 21/11/16 JSCOT hearing. **The Committee clearly needs to hold further hearings.**

RETURN OF AONM: On the question of the potential need to return AONM to Australia (or send it to a third country) in the event of proliferation or security concerns, this matter was raised with Dr Kalish from ASNO. Here is the relevant section of the transcript:

Mr JOSH WILSON: We have some evidence that suggests that, in the case of the agreement with Ukraine, the likelihood of the return of Australian obligated nuclear material is higher than it might be in other arrangements. Has there been any analysis or preparations made for that eventuality?

Dr Kalish: Our view is that there is not necessarily a higher likelihood of return being required. The agreement is a treaty-level commitment for peaceful use. We have no reason to see why they would break that commitment, particularly given their energy security requirements and the importance of energy independence to them, or at least independence from Russia. We do not see that as a likely event.

Clearly the potential need for return of AONM from Ukraine relates primarily to security risks rather than proliferation, yet Kalish ignored the issue of security risks and focused his answer solely on proliferation. Note also that Kalish said nothing about planning for the return of AONM (securing agreement from relevant parties, transport, storage etc.). These issues are detailed in section 6.4 of the original submission from Friends of the Earth. **The Committee clearly needs to hold further hearings.**

NUCLEAR SECURITY:

Some of the views presented by DFAT/ASNO at the November 21 hearing are at odds with other evidence and the JSCOT needs further information.

Kalish from ASNO said that the "nearest nuclear power plant to the conflict zone is Zaporizhia, which is about 200 kilometres from Donbas and about 150 kilometres from Crimea. So it is far removed from the conflict zone."

However section 7.1 of the original submission from Friends of the Earth provides details on recent attempts to foment unrest in Zaporizhia – a city adjacent to a 4-reactor nuclear power plant – and two towns near Zaporizhia, Dnipropetrovsk and Andronivka. DFAT and ASNO were silent about that incident – and there is no reason to believe it is an isolated incident.

Mr Magee from DFAT told the November 21 JSCOT hearing that the Russia/Ukraine conflict is a "frozen conflict". The attempt to foment unrest Zaporizhia suggest otherwise. Moreover Magee's statement is in conflict with March 2016 statements made by the Ukrainian government itself, which said in its statement to the 2016 Nuclear Security Summit (NSS):

"Organization and implementation of measures for physical protection of the Ukrainian nuclear power plants (NPPs) is being carried out under real threats caused by the Russian aggression in eastern Ukraine and deterioration of social and political situation in the country. In these conditions, to ensure stable operation of nuclear power facilities, significant efforts are directed at strengthening physical protection, defense and practical training focused on anti-terrorism and anti-sabotage measures at nuclear power

plants. Systematic monitoring of crisis situations and development of new approaches to protect nuclear facilities are underway."¹

Ukraine's March 2016 NSS report further states: "Russian military aggression in eastern Ukraine and its attempt of illegal annexation of the Autonomous Republic of Crimea pose new threats to the national system of nuclear and radiation security and resulted in loss of regulatory control in those areas."

Ukraine's March 2016 NSS report further states: "At present Ukraine cannot guarantee physical protection of the above-mentioned research reactor, nuclear material and sources of ionizing radiation on the territory of Crimea, city of Sevastopol and certain areas of Donetsk and Luhansk regions. Given the occupation of the Autonomous Republic of Crimea by the Russian Federation and ongoing anti-terrorist operation in eastern Ukraine, any damage to radiation-hazardous objects located on those territories may lead to dire consequences not only for Ukraine but for many European nations as well. Thus, we consider that the issue of establishing international control over nuclear facilities that can be seized or damaged as a result of military actions, requires immediate international attention."

2. Ukraine's energy options

Clean energy solutions – renewables, and energy efficiency and conservation – offer a way to reduce the myriad risks associated with Ukraine's nuclear power program. Ukraine is highly energy inefficient due to decades of subsidies that artificially reduce energy costs to the public and frequent failure to even collect on the energy bills that are charged to consumers and institutions.² So there's plenty of low-hanging fruit in the fields of energy efficiency and conservation.

There is also plenty of untapped renewable energy potential. Jan Haverkamp and Iryna Holovko wrote in an April 2016 paper: "Ukraine could cover its entire energy demand in 2050 with wind, solar and water and a 32% decrease in primary energy need. A move towards clean, renewable energy sources (such as wind, water, sun, biomass and geothermal) would seem a logical route, especially given the potential savings in health costs and increase in energy independence. Here, in these countries most afflicted by Chernobyl, economic realities make this switch to a clean energy future inevitable: the old centralised energy economy is collapsing, slowly but surely, and an awareness movement is growing."³

An excerpt from the Haverkamp / Holovko paper is copied here:

In central and eastern Europe, several strong myths about renewable energy remain a barrier to its growth. In Ukraine's energy strategy, these myths result in a meagre target of only 11% renewables in the electricity sector for 2020, and that includes eight percent hydropower. In comparison,

¹ 'National Progress Report: Ukraine', March 31, 2016, report to 2016 Nuclear Security Summit, www.nss2016.org/document-center-docs/2016/3/31/national-progress-report-ukraine

² Michael Mariotte, 25 March 2014, 'Nuclear industry's wishful thinking knows no bounds: No, Ukraine crisis is not going to boost nukes in Europe', <http://safeenergy.org/2014/03/25/nuclear-industrys-wishful-thinking/>

³ Jan Haverkamp and Iryna Holovko, 25 April 2016, 'Towards a post-nuclear Ukraine', <https://www.opendemocracy.net/od-russia/jan-haverkamp-iryna-holovko/towards-post-nuclear-ukraine>

Germany generated a third of its electricity with non-hydro renewable energy sources in 2015, and intends to increase that to 40% or more in 2020.

The most important of these myths is that renewable energy is expensive. And indeed, recent investigations from Greenpeace and NECU showed that it still is virtually impossible to turn Ukrainian houses or public buildings into efficient renewables-powered units in a financially sustainable way. The regulated consumer price system and lack of accounting (metering) of energy used by consumers makes changes difficult. Relaxation of price regulation could cause severe energy poverty in a country that already is facing sluggish economic growth and high unemployment rates. This means that as long as energy prices remain under what they would be in a healthy market, the combination of energy efficiency and renewable energy sources will need some kind of support.

A first and crucial step to motivate energy efficiency in Ukraine would be to introduce metering of electricity, gas and/or heat used by households. Heating is the highest burden for private consumers and is, for a large part, provided by imported gas. But less than half of the buildings with centralised heating systems have metering in place. It is estimated that non-metered consumers, who cannot influence their energy bill with efficiency measures, pay over 30% more for their heating than in buildings with individual metering. A law on metering in accordance with EU standards has been prepared, but is stuck in the legislative procedure.

There is a lot of verbal support for the development of energy efficiency and renewable energy sources in Ukraine by western institutions and investors, including rhetoric about how decentralisation of the energy market by the introduction of efficiency and renewables could reduce corruption and increase sustainability. The reality is that only 15% of EU total support for energy projects in Ukraine and less than about 16% of EBRD and EIB loans goes to energy efficiency and renewable energy sources.

Neither the EU, nor the EBRD have a sufficiently pro-active policy to turn Ukraine's energy system onto a sustainable pathway. This is, among others, illustrated by their support for the development of new electricity corridors, which are basically oriented on enabling export of Ukraine's nuclear power to the EU instead of developing an electricity network that could support the uptake of large amounts of variable renewable sources.

What is changing, however, is public perception of clean energy technology. The collapse of Activ Solar and the fact that feed-in tariffs for solar PV are now in the same order of magnitude as those for wind power have changed the idea that renewables are expensive play toys for the enrichment of a few and indeed can deliver an affordable alternative. Also the awareness that a lot of the corruption in Ukraine is related to the centralised nature of the old energy carriers is growing, and we see an increasing amount of courageous small and medium investors seeing efficiency and renewables as chances for job and income creation.

Ukraine's 2014 legislative framework for prosumers (people that produce their own electricity and sell the surplus to the grid) enables home generators of solar PV power to sell their surplus for grid-price. This is motivating a growing group of homeowners to investments. Meanwhile, a group of

environmental NGOs and a coalition for energy efficient cities are pushing for further steps to decrease Ukraine's energy wastage and at the same time promote the uptake of renewable energy sources.

But what is really needed is a shift in gear from small, localised projects to efficiency and renewable energy development becoming the backbone of energy policy. It needs projects like the 140 MW Kherson wind project from Windkraft. It would need initiatives from global corporations like those united in the RE100 Climate Group to secure a 100% renewable supply chain in Ukraine. It would need the political elite in Ukraine to break with the energy oligarchs, looking instead for support for local municipal initiatives and structures that motivate small and middle large enterprises; the development of a grid structure based on decentralised electricity generation and optimising the regional advantages in the country; and international cooperation partners like the EU, the EBRD and the World Bank to be consistent in their support for an Ukrainian energy [r]evolution.

Given the dilapidated state of Ukraine's energy industry at this moment, these steps are not only possible — they are inevitable. The question is not whether they will be taken, but how many opportunities and funds will be wasted before they are taken.

The earlier Ukraine moves towards a clean energy future, the better for all involved. After all, it could become a positive model for Belarus and Russia to find — at last — a way off the path set by Chernobyl.

Other useful information can be found in the following papers:

Larisa Bronder, 18 April 2016, 'Ukrainian economics and the potential for decarbonization and growth', <http://bellona.org/news/climate-change/2016-04-ukrainian-economics-and-the-potential-for-decarbonization-and-growth>

Deep decarbonization could present economic opportunity to Ukrainian business in the heavily coal dependent and politically wobbly country, allowing it to gain a toehold on a progressive climate technology in the post-Paris Climate Summit world, Bellona told a working group in Kiev last week.

Karel Beckman, 22 Aug 2016, 'Ukrainian crisis can be solved – with an Energiewende', <http://energypostproductionsbv.cmail20.com/t/i-l-ktidkjd-yhuduiji-z/>

A Ukrainian Energiewende could go a long way to resolving the current geopolitical crisis around the country, writes Oleg Savitsky of the National Ecological Centre of Ukraine in a new report⁴ for the Succow Stiftung. According to Savitsky, it would reduce Ukraine's dependence on Russian gas and uranium as well as on coal from the breakaway regions, while at the same time reducing pollution, greenhouse gas emissions and the risk of a nuclear disaster. It would also help to combat corruption and usher in economic growth and a more equitable society. Savitsky calls on the EU and Germany to set up a "Marshall Plan" to

⁴ http://www.succow-stiftung.de/tl_files/pdfs_downloads/MDF%20Working%20Paper/MDF%20Paper_%20Energy_transition_UA_Oleg%20Savitsky.pdf

bring about a Ukrainian energy transition, rather than trying to maintain Ukraine as a failed gas transit state.

Quirin Schiermeier, 28 Sept 2016, 'Solar on the steppe: Ukraine embraces renewables revolution', www.nature.com/news/solar-on-the-steppe-ukraine-embraces-renewables-revolution-1.20690

Excerpt:

Ukraine has significant untapped renewable-energy potential, finds a 2015 report by the International Renewable Energy Agency (IRENA) in Abu Dhabi, United Arab Emirates — enough to support the 2014 plan. The largest country to lie entirely within Europe (Turkey and Russia are mostly in Asia), it gets more sunshine than Germany, where photo-voltaic solar power now exceeds 40 gigawatts.

Ukraine also has good grid infrastructure, including high-voltage transmission lines between Chernobyl and Kiev, says Dolf Gielen, director of IRENA's Innovation and Technology Center in Bonn, Germany.

But the economic environment is less favourable, Gielen says. Electricity demand has declined in the years since the conflict with Russia escalated, and is mostly met by existing nuclear and fossil-fuel sources. More-over, the exceedingly high cost of investment in the politically unstable country might discourage potential backers. As the first phase of implementing the 2014 action plan, Ukraine is scheduled to build 51 solar-power and 15 wind-power projects — an endeavour that will cost an estimated \$7 billion.

“Financing renewables in Ukraine is comparable to investing in parts of Africa,” Gielen says.

“Investors such as the European Bank for Reconstruction and Development might still be interested, but the Chernobyl solar plant certainly can't be a purely commercial project.”

In Russia, things are different. Solar plants on the annexed sunny Crimean peninsula have some 300 megawatts of capacity. But elsewhere, utility-scale wind and solar plants are almost non-existent.