Export Control of Nuclear Dual-use Items – Global Overview and the Slovenian Experience

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ABSTRACT

This article would like to give some insights about nuclear dual-use items, i.e. goods that can be used for both civil and military purposes. The contemporary world faces great challenges how to curb nuclear proliferation and provide for legitimate use of items for declared purposes. Effective export control of dual-use items addresses a number of stakeholders – from a single exporter, research institutes, larger companies, national agencies to international fora and non-governmental organisations.

The first part of the article intends to encompass several international, legally binding instruments, fora and different groups that deal with the export control of nuclear and other dual-use items. These mechanisms are used by those states which follow their international obligations in the area of non-proliferation of weapons of mass destruction (WMD). It includes control of exports, as well as transfers, brokering and transit of dual-use items.

The second part will touch upon Slovenian experience in this sphere, in particular its participation in the work of international bodies and organisations, domestic legislation, national inter-agency co-operation and obligations within the European Union (EU).

The third part shows a few practical examples of nuclear dual-use items as well as some thoughts about challenges with regard to effective export control.

1 INTRODUCTION

Globally there is a serious concern regarding the proliferation of WMD. Occasional revelations of smuggling and transfers of illicit items – nuclear material and other nuclear-related items – have touched a number of countries including those in our vicinity. Very extensive networks of procurement paths have surprised even those countries (unwitting suppliers) whose export controls had seemed to be very tight and robust. There has been a trend of diversification of proliferation routes, seeking loop-holes in trading goods. International experts believe that lion’s share of items, applied in WMD programmes, are non-listed items. Indeed, nuclear proliferation networks have been considered as one of the biggest concerns to international safeguards. Export controls are the responsibility of States which are not always well developed and not capable of effectively controlling sensitive goods, software and technology. For years, the EU countries have been in the limelight of the efforts in combating the proliferation of WMD and their delivery systems. EU strategy in this regard, leaning on multilateral export regimes, extensive outreach to other countries and frequent up-dates of legislation and collaboration with member states plays fairly well in last years. In Slovenia, the concept of export control of dual-use items was introduced more than a decade ago.
2 INTERNATIONAL ASPECTS

There are several instruments, fora and groups that deal with the issue of export control of (nuclear) dual-use items.

The **Nuclear Suppliers Group (NSG)** has 46 member states – nuclear suppliers countries which seek to contribute to the non-proliferation of nuclear weapons through the implementation of two sets of Guidelines for nuclear exports and nuclear related exports. The NSG Guidelines aim to ensure that nuclear trade for peaceful purposes does not contribute to the proliferation of nuclear weapons or other nuclear explosive devices which would not hinder international trade and cooperation in the nuclear field. Guidelines for Nuclear Transfers (INFCIRC/254, rev. 10, Part 1) govern the export of items that are especially designed or prepared for nuclear use. These include: nuclear material, nuclear reactors and equipment thereof; non-nuclear material for reactors; plant and equipment for the reprocessing, enrichment and conversion of nuclear material and for fuel fabrication and heavy water production; and technology associated with each of the above items. Guidelines for Transfers of Nuclear-Related Dual-Use Equipment, Materials, Software and Related Technology (INFCIRC/254, rev. 8, Part 2) governs the export of nuclear related dual-use items and technologies, that is, items that can make a major contribution to an unsafeguarded nuclear fuel cycle or nuclear explosive activity, but which have non-nuclear uses as well, for example in industry. These lists are known as the “Trigger List” and “Dual-use List,” respectively. Together, they represent all facilities, equipment, items and technology that are required for the processing and use of nuclear material, including the testing and fabrication of nuclear explosives. The lists themselves were the basis of Annex 2, Items for Import/Export Reporting, of the IAEA’s Additional Protocol.

The **Zangger Committee** devotes itself to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) and its Article III/2, i.e. what is meant by "especialy designed or prepared equipment or material for the processing, use or production of special fissionable material." The Zangger Committee maintains a Trigger List (triggering safeguards as a condition of supply) of nuclear-related strategic goods to assist NPT Parties in identifying equipment and materials subject to export controls. Today, the Zangger Committee has 38 members including all the nuclear weapon States. The Trigger List and the Zangger Committee's understandings (documents Memorandum A, B and Annex) are published by the IAEA in its INFCIRC/209 circular.

**United Nations Security Council Resolution** (UNSCR) **1373 (2001)** sees *inter alia* a close connection between international terrorism and the illegal movement of nuclear materials. In this regard, it emphasizes the need to enhance coordination of efforts on national, sub-regional, regional and international levels in order to strengthen a global response to this serious challenge and threat to international security. **UNSCR 1540**, adopted in 2004, decides that all States shall take and enforce effective measures to establish domestic controls to prevent the proliferation of nuclear, chemical or biological weapons and their means of delivery. Related materials are materials, equipment and technology covered by relevant multilateral treaties and arrangements, or included on national control lists, which could be used for the design, development, production or use of nuclear, chemical and biological weapons and their means of delivery. UNSCR 1673 (2006), 1810 (2008) and 1977 (2011) further encompass multi-pronged endeavours to non-proliferation, export control and the work of a special 1540 Committee under this umbrella. In addition, the recent United Nations General Assembly Resolutions A/RES/65/75 (2011), A/RES/64/40 (2010), A/RES/63/67 (2009) and A/RES/62/26 (2008) have touched upon export control and preventing and combating illicit brokering activities. **UNSCR 1887 (2009)** calls upon and urges all states to adopt stricter national controls for the export of sensitive goods and
technologies of the nuclear fuel cycle, as well as to secure sensitive materials, and to control access to intangible transfers of technology.

Also the IAEA has become interested in this sphere. The Nuclear Trade and Technology Analysis Unit (TTA) was established within the Department of Safeguards in order to address safeguards challenges of covert nuclear related trade. Its mandate is to centralize the analyses of all procurement networks related information available to the IAEA. The pro-active role of the IAEA could be also seen from the fact that it rely on and encourage Member States to provide to it (on free-will basis) additional relevant data. The IAEA may also use visits (if a Member State agrees) towards its industry to check the situation there as well as raise awareness regarding suspicious enquires.

The Communiqué of the Washington Nuclear Security Summit (2010) addresses primarily the field of “nuclear security” but clearly addresses importance of prevention of non-state actors from obtaining the material, information or technology required to use such material for malicious purposes. The L'Aquila statement of the leaders of G8 (summit in 2009, Italy) addresses also the issue of non-proliferation of WMD as well as tightened export control (in particular addressing the NSG and its long process of revising the strengthened controls on transfers of enrichment and reprocessing items and technology). The Deauville statement of the leaders of G8 (summit in May 2011, France) reiterated their commitments from 2009 and supported the exchange, in conformity with the obligations of the NPT, of equipment, materials and scientific and technological information for the peaceful uses of nuclear energy, in particular for developing countries.

The issue of non-proliferation and export control is fostered through the actions of several different non-governmental organisations (NGOs; “think-tanks”) from various parts of the world, e.g. Stockholm International Peace Research Institute (SIPRI) and Institute for Science and International Security (ISIS). They co-operate also in some outreach activities and deliver their conclusions and highlights aiming at providing support to control efforts. They endeavour to assist those who want to develop and foster an export-control culture.

3 EU AND DUAL-USE ISSUES

The European Union (EU) is committed to the preservation of the integrity and the strengthening of the global nuclear non-proliferation regime. The EU Strategy against Proliferation of Weapons of Mass Destruction (WMD), adopted in December 2003, clearly sets out the commitment to these obligations. In December 2008, the Council adopted a document “New lines for action by the European Union in combating the proliferation of weapons of mass destruction and their delivery systems” with the aim to further improve the implementation of the EU WMD Strategy and make non-proliferation a cross-cutting priority in EU and Member States' policies. The Council Regulation No 428/2009 setting up a Community regime for the control of exports, transfer, brokering and transit of dual-use items is legally-binding instrument which is further implemented through national systems. The Commission and the Member States reinvigorated the process of practical exchanges of experience on dual-use export controls by holding regular meetings of the Article 23 Coordination Group. Six-monthly Progress Report on the implementation of the EU Strategy against Proliferation of Weapons of Mass Destruction periodically addresses various issues, including export control of dual-use items. On 30 June 2011, the Commission adopted a Green Paper on the EU dual-use export control system. This paper launches a broad public consultation concerning the functioning of the EU dual-use export control system.

National authorities in EU Member States can require export controls on even unlisted dual-use items. Such ad-hoc controls (“catch all”) may apply where there is a risk that an export to a specific end-user might be diverted for use in a WMD, in violation of an embargo.
or in certain other situations. Decisions to update the common list of dual-use items subject to export controls must be in conformity with the obligations and commitments that Member States have accepted as members of the relevant international non-proliferation regimes and export control arrangements, or by ratification of relevant international treaties. Dual-use items (including software and technology) should be subject to effective control when they are exported from the EU. Particular attention needs to be paid to issues of re-export and end-use. Each Member State should determine effective, proportionate and dissuasive penalties applicable in the event of breach of the provisions.

This article does not look specifically into the issue of Iran and fairly stringent export vis-à-vis this country. However, it should be mentioned at least that in July 2010, the Council Decision concerning restrictive measures against Iran and repealing Common Position 2007/140/CFSP was adopted (No. 2010/413/CFSP; amended in October, No. 2010/644/CFSP), followed by the Council Regulation (EU) No 961/2010 of 25 October 2010 on restrictive measures against Iran and repealing Regulation (EC) No 423/2007. An extensive set of prohibitions applies for those exporters who would like to sell, supply, transfer or export, directly or indirectly, vast majority of dual-use goods and technology; a prior authorisation is required for other (rare) cases, having telecommunication in mind. All the legal instruments follow the “spirit” of the UNSCR 1929 (2010), providing additional autonomous measures against this country. Early in 2011, the Decree on restrictive measures against Iran and on implementation of Council Regulation (EU) No 961/2010 was endorsed by the Slovenian government.

In January 2011, the Consortium began its work and forms the core of a wider network of European non-proliferation think tanks and research centres. Close co-operation with the representative of the High Representative of the Union for Foreign Affairs and Security Policy is envisaged. The main aim of the network of independent non-proliferation think tanks is to encourage discussion of measures to combat the proliferation of WMD and their delivery systems – particularly among experts, researchers and academics. The outcomes of the network discussions can be submitted in the form of reports and recommendations within the EU.

4 SLOVENIAN EFFORTS IN EXPORT CONTROL OF DUAL-USE ITEMS

Already in the 90’s, a decree (Decree establishing the export and import regime for specific goods) was addressing export as well as import of “certain goods”. SNSA, for example, granted licences at that time e.g. for import of zirconium balls, nuclear material, radiation sources, small amounts of deuterium compounds etc. The tendency changed in late 90ies when Slovenia applied for the memberships in some international export control fora (Zangger Committee, Australia Group, NSG and Wassenaar Arrangement). The need for tightening the control has relied more on export, so the Slovenian ministries and other regulators co-operated to establish the first act (Act regulating the exports of dual-use goods) as well as a second tier regulation (Decision establishing the list of dual-use goods). In 2000, Slovenia became a full member of both Zangger Committee as well as the NSG. There were relatively strict criteria for the NSG, e.g. being able to supply dual-use items, having in force a legally-based domestic export control system, be a party to the NPT and being supportive of international efforts towards non-proliferation of weapons of mass destruction. In the scope of international activities in this area, the SNSA and the Ministry of Foreign Affairs regularly participate in the work (sessions) of the NSG and the Zangger Committee. In the period 2004

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1 The EU Non-Proliferation Consortium, managed jointly by four institutes entrusted with the project: the Fondation pour la recherche stratégique in Paris, the Peace Research Institute in Frankfurt (HSFK/PRIF), the International Institute for Strategic Studies (IISS) in London, and the Stockholm International Peace Research Institute (SIPRI).
- 2006, the legislation was substantially renewed by the new Act Regulating the Export Control of Dual-Use Goods, adopted in 2004, followed by the second tier regulation (Decree on the control of exports of dual-use goods). The act was amended in 2010, but the decree was replaced by the new Regulation on procedures for issuing authorisations and certificates and on competence of the Commission for the control of exports of dual use items.

Already in 2003, the Slovenian Government established an inter-ministerial working group to attend and co-ordinate the export control of dual-use items. Next year (2004), the Slovenian Government made a step ahead and founded a Commission for the control of exports of dual-use items. Delegated representatives of the Ministry of Economy (acting as the Chair), the Ministry of Foreign Affairs, the Ministry of Defence, the Ministry of the Interior, the Customs Administration, the Slovenian Intelligence and Security Agency, the National Chemicals Bureau and the SNSA have participated in the work of the commission. A licence for export of dual-use goods, based upon the prior opinion of the commission, must be obtained from the Ministry of Economy. The commission had 37 (regular/correspondence) sessions in 2009 and 26 in 2010, apparently, to mention only the last period. The exported items were medical lasers, materials, machine tools, various chemicals (precursors), absorbers, etc. It is worthwhile to be pinpointed that also “import certificates” can be issued after importer’s demand. Inspection control is provided by the Slovenian customs. The commission prepares its annual report which is endorsed by the Government.

At the beginning, one of the toughest challenges was how to adequately translate very complex terminology for a number of items, stated in the lists. Slovenian enterprises have produced and exported only a relatively small number of different types of dual-use items, however some of them have been cutting edge – including technology. Another challenge was posed by the fact that the contact between the regulator and industry was not optimal therefore industry presented some hesitance, probably from the fear of additional burdens, costs and self-persuasion that “we do not produce any dual-use items”. By a number of tiny steps, the reluctance has considerably thawed. It is not always apparent from the goods concerned whether they are subject to export control restrictions. Exporters may already seek suitable advice at an early stage in order to avoid unpleasant surprises later-on.

Slovenian ministries and regulators (as well as industry) received fairly abundant foreign trainings on export of dual-use goods at the outset of the decade. The USA and German BAFA (Das Bundesamt für Wirtschaft und Ausfuhrkontrolle) played the most salient role in that outreach, while Italy was providing for support when Slovenia applied for its membership in the NSG. For a decade or so, the Ministry of the Economy, together with the other members of the commission, has organised thorough out-reach activities for domestic industry, with the purpose of not only raising awareness but also acquainting industry with the frequent changes of legislation and also to establish mutual understanding of each other’s role. Early in 2010, the Slovenian customs and Swedish institute SIPRI organised a seminar – “Regional Study Visit, Investigating and Prosecuting Export Control Violations”. In autumn 2010, the Slovenian customs invited its designated officers as well as some of the commissions’ members to participate in a “train-the-trainer course” on recognising dual-use goods (“commodities”) with the involvement of US experts. In August 2011, an additional “push” towards sustainability of the process was made with a seminar for mobile units (investigators), focusing in particular on nuclear dual-use items. Back in 2009, the operation “Early Bird” aimed at combating the proliferation and dual-use of sensitive goods was undertaken by several EU countries, including Slovenia and its experts. This multi-day action was focused on preventing the movement through major airports of sensitive goods destined for sensitive countries. In March 2010, Hungary (then-NSG Chair) organised in Belgrade (Serbia) a regional seminar on export control of (nuclear) dual-use. It invited several countries

and organisations to participate as experts (Slovenia/SNSA included) to raise awareness in the Balkans.

5 SOME PRACTICAL EXAMPLES OF DUAL-USE ITEMS

A few fairly simple practical examples that highlight export control will be addressed here. We all know aluminium and its abundant use in our life. Window frames, beverage cans, bicycles, ladders, strollers, automotive parts and myriad other things surround us and make our life easier. Aluminium is used extensively also in civil aviation as well as in military one. Aluminium is one of a few materials which can be used in uranium enrichment process, i.e. for ultra-high speed tubes. Such an extreme working environment does require light but high-strength rotor and only a small number of aluminium alloys could “survive” harsh conditions. These alloys pose certain proliferation concerns in case of exports thus control of them is obvious and unambiguous. Aluminium can be controlled by several different export control fora. Many times, characteristics ascertained by the NSG and those determined by the other control fora overlap (this is also the case for certain machine tools). The EU has solved the issue of overlapping in such a way that the items derived from the Wassenaar Arrangement precede those which are determined by the Missile Technology Control Regime (MTCR) or NSG, thus excluding double repetition of items.

Another construction material with its characteristics comparable with previously mentioned is maraging steel. This high-strength Fe-Ni-Co-Mo(-Ti-Al…) alloy has been used for a variety of special practices like fencing equipment, Apollo’s structural material or gas centrifuges. Some grades are controlled by the MTCR and some (in addition) by the NSG. Some alloys of maraging steel whose characteristics are merely a bit outside the listed ones could be, for example, occasionally used for repair welding of high pressure die-casting tooling. However, these alloys are prohibited from being exported to the countries, stated in the Council Regulation (EU) No 961/2010 and 329/2007, respectively.

Another case, to be illustrated here, addresses shipments of low enriched uranium (LEU, ≤ 20 % 235U) abroad. Three different recipient groups of countries are possible: the recipient (end-user) is an entity in the European Union, the recipient (end-user) is an entity in the following seven countries: Australia, Canada, Japan, New Zealand, Norway, Switzerland and USA, or the recipient (end-user) is any other country. No (dual-use, export) licence is needed for the first category of countries but the licence is “a must” for the last two categories. Very small quantities are in the certain circumstances exempted from the licensing requirements but it is necessary to look closer on the lists for all details. It is necessary to underline that there is a licensing process envisaged for shipments of “more sensitive items” even within the European Union. Thus, a licence would be mandatory for every such shipment of high-enriched uranium (> 20 % 235U).

Are there all nuclear and radioactive materials dual-use items? Not all. There are only a few items/materials listed in the EU Council regulation, e.g. source material and special fissile materials, alpha emitters (10 days ≤ T1/2 < 200 years), 238Pu, 237Np, 226Ra and 3H (above certain activity thresholds). There are a few exceptions for exports of majority of these items to the set of seven above-mentioned countries.

6 CHALLENGES TO EFFECTIVELY CONTROL DUAL-USE ITEMS

The experts throughout the world - who have studied international exports, perceiving gaps, proliferation of weapons of mass destruction and related items - have noted the
proliferation challenge in this century which will be quite different than it was in the last. Since the 1990’s, dual-use knowledge and equipment have scattered into more hands in more countries than ever before; these trends have been fostered *inter alia* by: increases in global trade – globalized business practices, the end of the Cold War, spread of innovative and manufacturing capacities, and accelerated movement of goods and services. Some countries and export control fora have gone beyond the established lists by introducing additional “watch lists” which *inter alia* tend to: fill loopholes, reinforce the control on some weakly controlled items, monitor the use of “down-graded” items,

4 take into account the improvement of evolving technologies or new technologies, and include some of those items that are controlled elsewhere.

Export control challenges may span from a lack of political will to a single company, being unaware of the misuse of its product(s). It is very likely that some dual-use export control violations can occur purely through lack of awareness. Moreover, how can this individual even know that he or she might be violating export control legislation, if the goods in question might at first glance appear purely for civilian use? The customs around the globe physically check only a tiny portion of exported goods; their in-house “risk analyses” and information-sharing with other stakeholders (e.g. intelligence, police) could not discover all suspicious transactions. It is naïve to think that an ordinary customs officer (being posted far from large flows of goods and illicit trafficking) can be the expert e.g. for endangered species of wild fauna and flora, machine tools as dual-use items, items of cultural heritage etc. It applies similar to the licensing officers which have to address very different dual-use applications, spanning from nuclear material, via lasers and telecommunications, to space vehicles. The “system” plays well only if there is always somebody (expert) who can support and provide answers to the outpost officers.

7 CONCLUSIONS AND FINAL REMARKS

The answer to a great deal of challenges lies in good collaboration of different national agencies which have their own and unique roles. If flow of information is hampered by various reasons, synergies which are vital may slip away. Continuous training of licensing officers as well as all others involved is another pillar to establish a solid base of national experts having in mind turnover of the personnel, networking, the issue of technologies and their rapid development, and the combination of both theoretical themes as well as practical exercises. It has been seen from several international cases that enforcement and prosecution can be extremely difficult, time and resource consuming process with often an international dimension and media attraction. Effective export control of dual-use items spans from a single exporter, research institutes, larger companies to national stakeholders and various agencies, international fora and non-governmental organisations. All pieces of export control should be present with their unique role and shape if it is to be effective. Healthy export environment requires vigilance and efforts of the whole export control society. In order to do their best, the subjects and objects of control should co-operate, recognising their unique roles and creating mutual trust when applying effective export control. In dealing with export of dual-use items and other “delicate” exports, the exporters should avoid risky business of not knowing their customers (consignee, end-user).

Slovenia as a responsible member of the EU has paid attention to the control of exports, transfer, brokering and transit of dual-use items. Despite the fact that Slovenia is neither a large producer of dual-use items nor major transit hub, it had to establish a national scheme to effectively deal with licensing, inspections and enforcement. It has put up such a system

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4 E.g. items which have reduced life-time but present sufficient risk to be deployed and proliferated; also second-hand items fall within the meaning of “down-graded” items.
which seems to be structured, balanced and does not set undue burdens on legitimate trade. Outreach activities have been fine-tuned and tailored towards domestic industry and other exporters. Continuous training of licensing and customs officers, together with their international co-operation, has contributed to better decision-making and fulfilment of their goals. On the EU-level, it is envisaged a thorough discussion on the Green Paper on the EU dual-use export control system in the near future. Presumably, this will draw as a consequence the whole process within the EU to amend the Council Regulation No 428/2009. There are regular activities within the NSG; right now, there is an on-going discussion about NSG - India relations as well as on the “holistic” review of the current NSG lists. The article did not address the NPT itself in details; nevertheless it is worth to mention the next 2015 Review Conference which success is crucial for non-proliferation in a global term.

Even though WMD may sound so distant, futuristic and mystic to some of us, the export control (culture) of dual-use items starts behind the doors of a bunch of companies, research institutions and brokers etc, dotted throughout our and other countries.

8 REFERENCES

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