International Law and Chemical, Biological, Radio-Nuclear (CBRN) Events

Towards an All-Hazards Approach

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CHAPTER 25

Obligations Related to Transfers of CBRN Weapons and Dual-Use Items

Annamaria Viterbo

1 Introduction

The purpose of this Chapter is to review the international legal framework on CBRN non-proliferation by focusing on export controls.[1]

Export controls are preventive measures used by governments to limit international trade in a number of controlled goods, the most important of which are CBRN weapons and dual-use items (*ie* goods, materials and technology that may be used for both civilian and military purposes). For the most part, export controls are deployed to protect international and national security, but they can also be used for purely economic strategic goals.

The description of the variety of forms that export controls can take (*ie* export bans, taxes, quotas, licensing requirements) will not be the object of this research. Nor is this chapter going to analyse and compare national legislation regulating the export of CBRN items.

Instead, we will describe the complex network of treaty-law and soft-law instruments that govern this field.

Indeed, lists and guidelines adopted by the so-called 'informal export control regimes' play a very important role. With this definition we describe the fora (the Zangger Committee, Nuclear Suppliers Group and Australia Group[2]) in which groups of industrialised countries convene to coordinate their trade

1 See in particular DH Joyner, *International Law and the Proliferation of Weapons of Mass Destruction*, (OUP 2009) 8. DH Joyner (ed), *Nonproliferation Export Controls: Origins, Challenges and Proposals for Strengthening* (Ashgate 2006).

2 The Missile Technology Control Regime (MTCR) and the Wassenaar Arrangement (WA) will not be analysed in this contribution. The MTCR was established in 1987 to slow the proliferation of ballistic and cruise missiles, rockets, unmanned aerial vehicles (UAV) and related technologies capable of delivering nuclear weapons, but in 2002 its focus was broadened to also cover the delivery of chemical and biological weapons. The WA was created in 1985 to promote the voluntary exchange of information on transfers of conventional arms and dual-use goods and technologies; it is intended to complement and reinforce, without duplication, the other existing informal regimes.

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controls over the export of CBRN materials, items and technology (with the transfer of CBRN weapons being *per se* strictly prohibited).

Notably, these regimes are not treaty-based, they do not have international legal personality, their deliberations are not legally-binding and they do not establish any formal verification mechanism.

Informal regimes have often been established to 'complement' a treaty regime. However, the relationship of the informal export control regimes with multilateral non-proliferation treaties raises many problematic issues. Can their acts be considered supplementary – and therefore useful – means of treaty interpretation? Or are they facilitating the adoption of overly restrictive export control measures which are at odds with treaty provisions like the ones that encourage international cooperation for peaceful purposes?

2 Export Controls on Nuclear Weapons, Materials, Equipment and Dual-Use Items

The Treaty on the Non-Proliferation of Nuclear Weapons (NPT) entered into force in 1970 and currently binds 191 States Parties, with the notable absence of India, Israel and Pakistan (North Korea withdrew in 2003). The NPT's 'grand bargain' establishes two distinct sets of obligations: one for the five nuclear weapons States (NWS) that had exploded or were already in possession of nuclear weapons before 1 January 1967 and one for the non-nuclear weapons States (NNWS).[3]

According to the NPT's two-tiered structure, NWS are prohibited from transferring nuclear weapons and other nuclear explosive devices 'to any recipient whatsoever', as well as from sharing technologies, components and designs which could lead NNWS to develop nuclear weapons (art I).[4] Despite this broad prohibition, it has to be borne in mind that the treaty was negotiated to prevent proliferation among States and none of its provisions explicitly aims at preventing non-State actors from acquiring nuclear material or technology. This gap was closed by UN Security Council Resolution 1540 (2004), which, being adopted under Chapter VII, imposes on all UN members – even those that have not ratified the non-proliferation treaties – the obligation to refrain from providing any form of support to non-State actors that attempt

3 The five States that had manufactured or detonated a nuclear explosive device before 1 January 1967 are: China, France, Russia, the United Kingdom and the United States.

4 Notably, art I does not cover the sharing between NWS of components, means of transport or propulsion, technology and know-how.

to develop, acquire, manufacture, possess, transport, transfer or use CBRN weapons and their means of delivery, for terrorist purposes.[5]

In parallel, NNWS 'undertake not to receive' nuclear weapons or other nuclear explosive devices from any transferor, 'not to manufacture or otherwise acquire' such weapons or devices, as well as 'not to seek or receive any assistance' in their manufacturing (art II).

In exchange for these commitments, NWS are to cooperate with the other parties in the development of programmes for the peaceful use of nuclear energy (art IV). In addition, all parties to the NPT pledge to conduct negotiations on disarmament and ultimately stop the nuclear arms race (art VI).

According to Article III.2, each State Party commits not to supply a) 'source or special fissionable material' or b) 'equipment or material especially designed or prepared for the processing, use or production of special fissionable material' for peaceful purposes to any NNWS, unless the export is subject to International Atomic Energy Agency (IAEA) safeguards.

Furthermore, each NNWS has to accept IAEA safeguards on all nuclear materials in its territory or under its jurisdiction or control. To this end, it has to conclude with the IAEA a Comprehensive Safeguards Agreement under which the Agency's inspectors can access civilian nuclear power generation facilities for the exclusive purpose of verifying that nuclear material is not diverted to military uses.[6]

Since the NPT does not provide clear definitions, already in March 1971, a group of 15 supplier States (from both sides of the Cold War divide) gathered under the chairmanship of Professor Zangger to reach a common understanding on what constitutes 'equipment or material *especially designed or prepared* for the processing, use or production of special fissionable material' (EDPS). Soon, the Committee became a permanent forum for the interpretation of Article III.2 NPT and the harmonisation of national export control policies.

5 See D Salisbury and others (eds), *Preventing the Proliferation of WMDs: Measuring the Success of UN Security Council Resolution 1540* (Palgrave 2018). See ch 7 Poltronieri Rossetti and ch 23 Poli.

6 See IAEA INFCIRC/153, 'The Structure and Content of Agreements Between the Agency and States Required in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons' and INFCIRC/540, 'Model Protocol Additional to the Agreement(s) between State(s) and the IAEA for the Application of Safeguards'. Agreements under the Model Additional Protocol grant the IAEA increased inspection authority on both declared and undeclared material and activities. However, their conclusion does not fall within the obligations arising from art III.4 NPT. See ch 24 Spagnolo and ch 26 Buscemi.

Currently, the Zangger Committee (ZC)[7] counts 39 Participating States that are also parties to the NPT, plus the European Union as an observer. The Committee's most important contribution to non-proliferation is the publication of the so-called 'Trigger List' of nuclear materials and equipment, the export of which 'triggers' IAEA safeguards pursuant to Article III.2 NPT.

The Trigger List comprises two Memoranda and one Annex.[8] Memorandum A and B respectively recommend a set of procedures to be followed with regards to the exports of source and special fissionable material and EDPs to NNWS not party to the NPT, while the Annex clarifies what equipment and material fall within the EDP category.

The export of nuclear items for peaceful purposes is subject to three requirements ('conditions of supply'): the assurance by the recipient State that the exported items will not be converted into nuclear weapons or other nuclear explosive devices, that they will be subject to IAEA safeguards, and that they will not be re-exported without applying the same conditions of supply.

The ZC soft-law instruments form the core of the legal framework on export controls for nuclear weapons and related equipment and materials. However, participating countries have always reserved the right to restrict the export of items other than those specified in the List.[9] Even more significantly, the instruments are not intended to create additional obligations beyond the NPT.

It has to be noted that, since 1975, the ZC Trigger List has been complemented by the soft-law guidelines adopted by the Nuclear Suppliers Group (NSG).[10] The main reason behind the formation of this additional informal regime was the failure of the ZC to prevent nuclear items from being transferred to countries acting in bad faith. In 1974, in fact, India had successfully

7 F Schmidt, 'NPT Export Controls and the Zangger Committee' (2000) 7(3) The Nonproliferation Review 136–145; F Schmidt, 'The Zangger Committee: Its History and Future Role' (1994) 2(1) The Nonproliferation Review 38–44.

8 The List is periodically updated to take into account technological development, proliferation sensitivity and changes in procurement practices. The last review was completed in 2020. Notably, the Trigger List is published by the IAEA among its information circulars in the INFCIRC/209 series. Information circulars are published by the IAEA to bring matters of general interest – in this case, the commitment of the Committee's members under art III.2 NPT – to the attention of its Member States. See IAEA, INFCIRC/209/Rev. 5, 5 March 2020.

9 This reservation allows States that are also members of the NSG to implement the stricter controls which are associated with that regime.

10 A Sultan, *Universalizing Nuclear Nonproliferation Norms* (Palgrave 2019) 64; DH Joyner, 'The Nuclear Suppliers Group: History and Functioning' (2005) IntTLR 33–42; DH Joyner, 'The Nuclear Suppliers Group: Present Challenges and Future Prospects' (2005) IntTLR 84–96.

diverted material and equipment designated for a nuclear power plant to the development of a nuclear weapon.

The NSG was therefore called upon to adopt more stringent instruments than those adopted by the ZC in order to meet the obligations set forth by Article III.2 NPT. Moreover, while the ZC comprised only States Parties to the NPT, the NSG aimed to also include third countries like France (which at that point had not yet joined the NPT).

Nowadays, the NSG consists of 48 nuclear supplier countries, with the European Commission and the ZC Chair participating as observers. Strict criteria must be met to become a member.[11]

The NSG adopts two sets of guidelines to ensure that trade of nuclear-related items and cooperation in the peaceful uses of nuclear energy will be carried out in a manner consistent with international non-proliferation rules.[12]

Part 1 Guidelines were first adopted in 1978 and concern nuclear transfers. Although largely mirroring the ZC Trigger List,[13] they are wider in scope (especially for what concerns EDPs) and cover transfers to any NNWS, not only those that have ratified the NPT.

Part 2 Guidelines concern transfers of dual-use equipment, materials, software and related technology, which could provide a major contribution to a nuclear explosive activity, an unsafeguarded nuclear fuel-cycle activity or acts of nuclear terrorism. These Guidelines were first adopted in 1992, after it had become clear that dual-use items were the most important to control. In fact, in the 1970s–1980s, Iraq – a party to the NPT – was able to pursue a clandestine nuclear weapons programme by purchasing dual-use items not covered by export controls. Up to that point, neither the ZC nor the NSG had addressed the issue because dual-use items could not be considered EDPs for the purposes of Article III.2 NPT. To close this gap, the NSG adopted a supplementary set of guidelines to establish harmonised export controls on nuclear-related dual-use items identified in a dedicated Annex. The decision prompted a heated reaction from developing countries which opposed further export restrictions on items falling outside the scope of Article III.2 NPT which were considered critical to developing their energy production capacities.

While all items are subject to a licensing requirement, the conditions of supply set by the NSG Guidelines differ for trigger list items and dual-use items.

11 In 2019, China formally affirmed that, in order to be admitted to the NSG, India should have first ratified the NPT.

12 The NSG Guidelines are published in the INFCIRC/254 series. See IAEA, INFCIRC/254/Rev.14/Part 1 and INFCIRC/254/Rev.11/Part 2, as lastly amended.

13 There is close cooperation between the NSG and the Zangger Committee on the review and amendment of their lists.

For trigger list items, the following apply. First, to become eligible for nuclear trade with NSG members, a recipient State needs to have in place a Comprehensive Safeguards Agreement.[14] This requirement is similar to the one established by Article III.1 NPT, but it is addressed to any recipient State (irrespective of it being an NPT member or not) and amounts to a significant tightening of the export control regime.[15] Moreover, this raises a particular issue for Israel and Pakistan, which have only entered into facility-specific arrangements with the IAEA. On the contrary, India – the very country which prompted the creation of the NSG – was unanimously granted a waiver from this requirement in 2008. The decision to exempt India greatly undermined the credibility of the NSG and violated the political commitment given by NSG members to the 1995 NPT Review Conference not to provide nuclear technology to States without full-scope safeguards.

The second requirement is that recipient governments have to provide adequate assurances on the peaceful use of trigger list items. Among these, two assurances are particularly important: that the items will not be used in any nuclear explosive device and that the recipient of potential retransfers will have to provide the same assurances as those required by the supplier for the original transfer. Complementary to these conditions, suppliers should require from the recipient country assurances that nuclear material and facilities will be placed under effective physical protection in order to prevent unauthorised use and handling. The transfers of enrichment and reprocessing facilities, equipment and technology are subject to stricter conditions than those applicable to trigger list items.

In addition, the Part 1 Guidelines also contain the so-called 'non-proliferation principle', according to which a supplier State can authorise a transfer only when satisfied that it would not contribute to the proliferation of nuclear weapons or be diverted to acts of nuclear terrorism.

For dual-use items, the conditions of supply established by the Part 2 Guidelines essentially consist of three types of government-to-government assurances: a statement from the end-user specifying the uses and the end-use locations of the items; an assurance explicitly stating that the proposed transfer will not be used for any nuclear explosive activity or unsafeguarded nuclear fuel-cycle activity; an assurance that the prior consent of the supplier

14 Even if under the NSG regime the adoption of safeguards based on the IAEA Additional Protocol does not constitute a condition of supply for trigger list items, such commitment is required by all EU Members States, in particular for the export of enrichment and reprocessing facilities, equipment and technology.

15 See IAEA, INFCIRC/405.

will be required before transferring any dual-use item to a State not adhering to the Guidelines.

In any case, according to the so-called 'basic principle' of the Part 2 Guidelines, suppliers are required not to authorise transfers of listed dual-use items when: a) there is an unacceptable risk of diversion to a nuclear explosive activity or unsafeguarded nuclear fuel-cycle activity; b) the transfers are contrary to the objective of averting the proliferation of nuclear weapons; or c) there is an unacceptable risk of diversion to acts of nuclear terrorism. To exercise the prudence required by the basic principle, several factors need to be considered, among which is whether the recipient State has failed to comply with UNSC Resolution 1540 (2004).

The Part 2 Guidelines also contain a 'catch-all clause', which requires an authorisation even for the transfer of items not listed in the Annex when such items 'are or may be intended, in their entirety or in part, for use in connection with a nuclear explosive activity'.[16]

NSG participants undertake to ensure the effective implementation of the Guidelines in their national legislation by adopting export licensing regulations, enforcement measures and penalties for violations. However, they also reserve their discretionary power to apply the Guidelines to items of concern other than those listed in the Annex, as well as to apply additional transfer conditions. All non-participating States are invited to adhere to the Guidelines.

The NSG Guidelines have been strongly criticised for being an attempt by nuclear technology holders to preserve their economic advantages and for being at odds with the reciprocal nature of the obligations arising from the NPT.

Before concluding this analysis, it has to be underlined that the NPT does not include a clear prohibition on the transfer of nuclear weapons or other nuclear explosive devices from one NNWS to another NNWS.

This lacuna was addressed by the Treaty on the Prohibition of Nuclear Weapons (TPNW), which entered into force in January 2021 and currently binds 52 States Parties,[17] with the notable absence of all NWS. The TPNW prohibits all States Parties – without distinction – from developing, testing, producing, manufacturing, acquiring, possessing, or stockpiling, using or threatening to use nuclear weapons or other nuclear explosive devices.

16 See IAEA, INFCIRC/254/Rev.11/Part 2, par. 5.

17 All the States Parties to the TPNW are also States Parties to the NPT, except for the Cook Islands. On the TPNW see M Pedrazzi, 'The Treaty on the Prohibition of Nuclear Weapons: A Promise, a Threat or a Flop?' (2018) 27 ItYBIL 215.

In particular, pursuant to Article 1.1(b) TPNW, States Parties are barred from directly or indirectly transferring 'to any recipient whatsoever' (*ie* a State, a natural or a legal person) nuclear weapons and other nuclear explosive devices, or control over them. In parallel, Article 1.1(c) TPNW prohibits all States Parties from receiving, directly or indirectly, the transfer or control over any such weapons or devices.

These two prohibitions are broader than the ones set forth by the NPT, as they cover non-State actors and do not require full ownership, or the execution of a payment or another form of consideration. Moreover, they also extend to transfers made through intermediaries or third parties where there is knowledge that they will be used to produce a nuclear weapon or other nuclear explosive device.

3 Export Controls on Biological and Chemical Weapons, Materials, Equipment and Dual-Use Items

Export controls on biological and chemical weapons, materials and equipment are regulated respectively by the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction (BWC) and the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction (CWC).[18] The two abovementioned treaties are complemented by the informal regime of the Australia Group (AG).

The BWC entered into force in 1975, categorically banning for the very first time an entire category of weapons of mass destruction.[19] However, the BWC did not establish an implementation body or a verification regime.[20]

The Convention, which currently binds 183 States Parties, prohibits the development, production, stockpiling or acquisition[21] of biological weapons,

18 Both the BWC and CWC rest on and supplement the 1925 Geneva Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare.

19 See ch 23 Poli; J Littlewood, 'The Biological and Toxin Weapons Convention' in M Crowley and others (eds), *Preventing Chemical Weapons: Arms Control and Disarmament as the Sciences Converge* (Royal Society of Chemistry 2018) 69–100; A Kelle, *Prohibiting Chemical and Biological Weapons: Multilateral Regimes and Their Evolution* (Lynne Rienner Publishers 2014).

20 A proposal to put in place a verification mechanism – the draft Protocol negotiated within the Ad Hoc Group – was ultimately shelved in 2001 due to US opposition.

21 Although the BWC does not contain an explicit prohibition, the 1996 Fourth Review Conference affirmed that the use of biological weapons will certainly be considered a breach of the Convention.

equipment or means of delivery, as well as of microbial or other biological agents or toxins 'whatever their origin or method of production, of types and in quantities that have no justification for prophylactic, protective or other peaceful purposes' (art I).

This general-purpose definition of prohibited items was reaffirmed by the Eighth Review Conference, which declared that all naturally or artificially created or altered microbial and other biological agents and toxins, as well as their components, regardless of whether they affect humans, animals or plants, which are not used for peaceful purposes, are unequivocally covered by Article I.[22]

Article III obliges States not to transfer to any recipient whatsoever, directly or indirectly, such bioagents, toxins, weapons, equipment or means of delivery. States are also prohibited from assisting, encouraging, or inducing any other State or group of States to manufacture or otherwise acquire such equipment and materials.

At the same time, Article X requires States: a) to facilitate the fullest possible exchange of equipment, materials and scientific and technological information for the peaceful use of biological agents and to cooperate on the prevention of diseases; and b) to implement the Convention 'in a manner designed to avoid hampering the economic or technological development of State parties.'

Unfortunately, even though BWC Review Conferences can reach additional understandings and agreements to interpret, define, or elaborate the meaning or scope of a provision of the Convention or to provide instructions, guidelines, or recommendations on how a provision should be implemented, they have never adopted lists of bioagents to facilitate the implementation of the obligations arising from Articles I and III BWC.[23] While the general-purpose criterion adopted by Article I allows the BWC to catch scientific and technological advances, the absence of legal clarity remains a major challenge both for non-proliferation and scientific research. As we will see, this gap is addressed – not without controversy – by the Australia Group.

The CWC, which currently applies to 193 States Parties, entered into force in 1997 after years of lengthy negotiations which accelerated only with the easing

22 The treaty provides for regular Review Conferences to assess national implementation measures and to establish confidence-building measures. On the outcome of the last Review Conference, see GS Pearson, 'Time for Structural Changes to Make the Biological and Toxin Weapons Convention More Effective' (2016) 1(1) Global Security: Health, Science and Policy 23–38.

23 The BWC Implementation Support Unit (ISU) regularly updates a document that provides information on the understandings and additional agreements reached by Review Conferences.

of tensions between superpowers and as a reaction to the threat of chemical warfare during the first Gulf War.

In marked contrast to the BWC, not only was the Organisation for the Prohibition of Chemical Weapons (OPCW) formally established but also a very stringent inspection regime.[24]

Pursuant to Article I.1, States Parties undertake 'never under any circumstances' to use, develop, produce, otherwise acquire, stockpile or retain chemical weapons, or to transfer, directly or indirectly, chemical weapons to anyone.

These prohibitions have to be balanced with the right to develop, produce, transfer and use toxic chemicals and their precursors for all the purposes not prohibited by the Convention (art VI CWC). In addition, the CWC reaffirms the freedom of scientific research on chemicals and encourages States Parties to cooperate and not to maintain trade restrictions that would hamper economic and technological development (art XI CWC).

With respect to transfers, reference must be made to: a) the broad definition of chemical weapons provided by Article II; b) the three Schedules contained in the Annex on Chemicals, where toxic chemicals and precursors are grouped by relevance to chemical weapons production and potential legitimate peaceful use; and c) the Annex on Implementation and Verification (in particular, Parts VI, VII and VIII).

Schedule 1 chemicals are those of the highest lethal or incapacitating toxicity and/or risk to the object and purpose of the Convention. They have a primary military use and very few commercial applications. They may only be transferred between States Parties for research, medical, pharmaceutical or protective purposes. Transfers have to be promptly notified to the Technical Secretariat. Retransfer is not allowed.

On 7 June 2020, the first 'change'[25] ever adopted to the CWC Annex on Chemicals entered into force, adding Novichok (the nerve agent used in the

24 See ch 23 Poli; W Krutzsch and others (eds), *The Chemical Weapons Convention: A Commentary*, (Oxford 2014); J Littlewood, *The Biological Weapons Convention: A Failed Revolution* (Ashgate 2004); R Trapp, 'The Chemical Weapons Convention – Past Success, Current Challenges', in M Crowley and others (eds), *Preventing Chemical Weapons: Arms Control and Disarmament as the Sciences Converge* (Royal Society of Chemistry 2018) 27–68.

25 These changes were adopted in accordance with the simplified amendment procedure established by art XV.4 and .5 CWC. See OPCW Technical Secretariat, 'Note by the Technical Secretariat: Consolidated Text of Adopted Changes to Schedule 1 of the Annex on Chemicals to the Chemical Weapons Convention', S/1820/2019, December 23, 2019.

2018 attempted assassination of a former Russian agent in Salisbury, UK) and carbamate agents to the Schedule 1 list of toxic chemicals.[26]

Schedule 2 chemicals are those of the next highest relative toxicity which pose a significant risk to the object and purpose of the Convention. They have some commercial uses and may only be transferred between States Parties. The exporting State is required to obtain from the recipient State an end-use and end-user certificate and the assurance that transferred chemicals will only be used for purposes not prohibited under the Convention. No retransfers are permitted.

Schedule 3 chemicals are those of lowest relative toxicity and/or risk to the object and purpose of the Convention. Since they have wide commercial uses, they may be transferred also to third States but under the conditions required for Schedule 2 chemicals.[27]

Even if they do not list all the chemicals and precursors prohibited by the Convention (which are defined in a very comprehensive way by Article II), the Schedules of the Annex on Chemicals play a very important role for the regime's effectiveness as they identify the agents subject to declaration requirements and verification measures. Keeping these Schedules up to date is, therefore, key for the CWC to stay abreast of new developments.

Notably, in 2013, after Bashar al-Assad's regime crossed the red line by carrying out a ruthless chemical attack in Ghouta against the civilian population, Syria was forced by international pressure to ratify the Convention. Subsequently, UN Security Council Resolution 2118 (2013) called on Syria to relinquish its arsenal of sarin, mustard gas and other nerve agents, and authorised Member States to acquire, control, transport, transfer and destroy all the Syrian chemical weapons, materials and equipment identified by the OPCW. The UN-OPCW Joint Mission made possible the transfer of chemical weapons and their components out of an unstable country ravaged by a civil war, for their safe neutralisation and destruction at sea or in specialised facilities. The OPCW clarified that the decision to allow such transfers was due to the

26 See S Costanzi and Gregory D Koblentz, 'Controlling Novichoks After Salisbury: Revising the Chemical Weapons Convention Schedules' (2019) 26(5–6) The Nonproliferation Review 599–612.

27 Ammonium nitrate and other explosive precursors are not included in the CWC lists. Ammonium nitrate was used in the deadly Oklahoma City bombing of April 1995 and was the cause of the devastating explosion in the port of Beirut in 2020. It is the main component of ammonium nitrate fuel oil (ANFO) and can easily be turned into an improvised explosive device (IED).

extraordinary character of the situation and did not create any precedent for the future.[28]

The BWC and CWC provisions on non-proliferation of biological and chemical weapons are complemented by the soft-law instruments adopted by the Australia Group (AG).[29]

The creation of this new informal regime was prompted by the discovery that Iraq had used tabun, sarin and mustard gas against Iran, in stark violation of the 1925 Geneva Protocol. In the 1980s, Iraq was in fact able to legitimately buy industrial chemicals on the international market for its WMD programme. In response, 15 countries introduced export controls on certain chemicals, but these measures lacked an overall strategy. Therefore, in 1985, while the negotiations on the CWC were still ongoing, those 15 countries and the European Commission decided to meet under the AG umbrella to further minimise the risk of proliferation of chemical weapons, coordinate their national export control laws and enhance their cooperation (for example, by sharing intelligence about the risk of CBW proliferation and terrorism).

By 1990, the scope of the AG activities was broadened to cover, together with chemicals, also bioagents and dual-use chemical and biological technologies and equipment. After 9/11, the AG started to focus also on items that could potentially be used by terrorists.

Today the AG counts 42 members, which are all parties to the BWC and CWC, plus the European Union.

Members commit to use licensing measures to ensure that the exports of certain bioagents, chemicals and dual-use manufacturing facilities, equipment, technology and software do not contribute to the development or use of CBW. To these ends, the AG issues common control lists on chemical weapons precursors (Novichok was added to this list in 2020); dual-use chemical manufacturing facilities and equipment and related technology and software; human and animal pathogens and toxins (which include the MERS- and SARS-related coronaviruses);[30] plant pathogens; and dual-use biological equipment and related technology and software.

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28 OPCW Executive Council Decision, 'Destruction of Syrian Chemical Weapons', EC-M-33/DEC.1, 27 September 2013.

29 RJ Mathews, 'Chemical and Biological Weapons Export Controls and the "Web of Prevention": A Practitioner's Perspective' in B Rappert and C McLeish (eds), *A Web of Prevention: Biological Weapons, Life Sciences and the Governance of Research* (Routledge 2007) 163–171; J Seevaratnam, 'The Australia Group' (2006) 13(2) The Nonproliferation Review 401–415; A Kelle, 'CBW Export Controls: Towards Regime Integration?' in Joyner (2006) (n 1) 101–118.

30 To date, the AG has not clarified whether export controls should apply to samples of the SARS-CoV-2 virus or related genetic sequences. This lack of clarity is particularly

In addition, the AG Guidelines for Transfers of Sensitive Chemical or Biological Items outline some of the factors that members have to take into account when evaluating export requests. Members are expected to deny export licences when there is persuasive information that an item is intended to be used in a CBW programme or for CBW terrorism, or that a significant risk of diversion exists.

Participants have no legal obligation to apply AG lists and guidelines and they have often used their discretion when implementing national export controls, also adopting more restrictive measures than those agreed to within the Group.

Overall, the AG's activities have attracted strong criticism, especially from countries in the Non-Aligned Movement (NAM), which consider it to be essentially a cartel restricting trade and hampering international cooperation in an illegitimate way. In particular, NAM countries contend that export control measures adopted by AG members are inconsistent with the obligations they had assumed under the BWC and CWC and result in a breach of the right of the other treaty parties to benefit from the fullest possible exchange of equipment, materials and scientific and technological information for peaceful purposes (as provided by Article X.1 BWC and, even more clearly, by Articles XI.1 and XI.2(c) CWC[31]). Furthermore, they deem the application of more stringent restrictions than those envisaged by treaty law capable of altering the already precarious balance between the two parallel goals of non-proliferation and international scientific cooperation.[32] The inclusion in the AG control lists of almost 50 precursors that do not appear in the CWC Schedules is seen as particularly problematic.[33]

On the contrary, AG members consider the establishment of national export licensing mechanisms integral to the proper implementation of the obligations arising from Article I.1(a) and (d) CWC and Articles I and III BWC. In particular, they argue that their export controls effectively ensure that the legitimate

worrisome at a time when access to samples or fragments is critical to develop vaccines, drug treatments and diagnostic tools.

31 Art XI.2(c) CWC establishes that CWC parties shall not maintain among themselves any restrictions incompatible with the obligations arising from the Convention which would restrict or impede trade and the development and promotion of scientific and technological knowledge in the field of chemistry for peaceful purposes.

32 J Husbands, 'Cooperation on Biosecurity as Part of a Strategy to Prevent Misuse of the Life Sciences' in O Meier (ed), *Technology Transfers and Non-Proliferation: Between Control and Cooperation* (Routledge 2014) 155–175; JP Zanders, 'Chemical Weapons Convention (CWC) Article XI and the Future of the CWC', in O Meier (ed), *Technology Transfers and Non-Proliferation: Between Control and Cooperation* (Routledge 2014) 176–203.

33 Joyner (2009) (n 1) 120.

trade of materials, equipment and technology used for peaceful purposes can proceed unhindered.

The fact that the BWC still lacks a multilateral monitoring and verification mechanism may support this argument, but the same does not stand for chemical weapons, given that the OPCW is the sole body responsible for verifying States Parties' compliance with the CWC.

4 Concluding Remarks

From all of the above, it appears clear that the interaction between CBRN treaties and informal export control regimes raises several important issues, especially when the latter have been established to 'complement' a treaty regime.

When a treaty and an informal regime are intertwined, two views are possible:

On the one hand, the adoption of lists, guidelines and understandings by a subset of States Parties to the relevant treaty can be deemed inconsistent with the obligations arising from multilateral non-proliferation treaties. This is the standpoint adopted, for instance, by some NNWS, which contend that the NSG has exceeded the terms of NPT Article III.2 when setting additional conditions for exports of nuclear dual-use items; and by NAM countries, which argue against the restrictions adopted by members of the Australia Group on bioagents and chemical precursors that do not appear in the CWC Schedules.

In particular, export controls implemented by NSG and AG members are considered to result in a breach of the right of the other treaty parties to benefit from the fullest possible exchange of equipment, materials and scientific and technological information for peaceful purposes.

Similarly troublesome is the 2008 NSG decision to allow India to resume nuclear trade despite the fact that this country did not have IAEA full-scope safeguards in place. This exception, which amounts to a divorce of the NSG from the NPT, increased tensions among NPT parties and likely postponed India's accession to the Treaty as a NNWS.

On the other hand, the soft-law instruments adopted by informal regimes can be considered a useful tool to clarify the provisions set forth by the non-proliferation treaty to which they are connected.

In particular, lists of controlled items can help the interpreter to shed light on the meaning of certain treaty terms. In fact, such lists constitute subsequent practice adopted by a group of States Parties in the application of the treaty after its conclusion and, therefore, they can certainly be considered a

supplementary means of treaty interpretation under Article 32 of the Vienna Convention on the Law of Treaties (VCLT), at least with respect to the application of the treaty provisions to members of the informal regime.[34] However, it remains doubtful whether these lists can be employed as a supplementary means of treaty interpretation to solve a potential dispute between a member of the informal regime and a treaty party that does not participate in the regime.

In our view, the said lists cannot be considered instruments adopted by one or more treaty parties 'in a close temporal and contextual relation with the conclusion of the treaty' which are accepted by the other parties as an instrument related to the treaty. Therefore, they cannot be used to provide a contextual interpretation of the treaty to which they are connected, according to Article 31.2(b) VCLT.[35]

Nor can such lists be treated as subsequent practice under Article 31.3(b) VCLT, since this would require a common understanding regarding the interpretation of the treaty accepted by *all the parties* to the treaty.[36] This reading of Article 31.3(b) VCLT, which requires the support of all States Parties, was confirmed by the ICJ in the *Whaling in the Antarctic case*.[37]

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34 Pursuant to art 32 of the VCLT, one may resort to supplementary means of interpretation to confirm or corroborate the meaning resulting from the application of art 31 VCLT, or to determine the meaning when the interpretation according to art 31 VCLT a) 'leaves the meaning ambiguous or obscure', or b) 'leads to a result which is manifestly absurd or unreasonable'.

35 See ILC, 'Draft conclusions on subsequent agreements and subsequent practice in relation to the interpretation of treaties, with commentaries' (2018) 13.

36 For a different opinion, according to which the lists and guidelines adopted by informal regimes fall within art 31.3(b) VCLT, see T Marauhn, 'Global Governance of Dual-Use Trade: The Contribution of International Law' in O Meier (ed), *Technology Transfers and Non-Proliferation: Between Control and Cooperation* (Routledge 2014) 58 and Joyner (2009) (n 1) 34–6.

37 International Court of Justice (ICJ), *Whaling in the Antarctic case* (2014) para 83. The conclusion reached by the Court on the resolutions adopted by the International Whaling Commission does not exclude, however, that they can be used as supplementary means of treaty interpretation pursuant to art 32 VCLT.

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