10

Balancing Innovation, Development, and Security

Dual-Use Concepts in Export Control Laws

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In September 2011, innovation in influenza research led scientific researchers at the Erasmus Medical Center and the University of Wisconsin to announce the production of strains of the H5N1 virus which were highly transmissible in mammals.[1] This scientific study generated controversy about whether its benefits outweighed the potential risks, with public and scientific communities holding contrasting views on whether the publication of the research was justifiable, given that the findings could be misused for an act of biological terrorism. In April 2012, the Dutch government issued a licence for the 'export' of manuscripts detailing these modified strains of H5N1 with 'high pathogenicity in humans'.[2] As an item controlled by 'dual-use' regulation, the manuscripts were subject to European Union (EU) Council Regulation (EC) 428/2009, meaning that they required export authorization from the government before being transferred to the United States (USA) for publication in a scientific journal.[3] The chief researcher responsible for the manuscripts contested the export authorization requirement, but a Dutch court confirmed in September 2013 that the export licence was indeed required for the publication of the H5N1 research.[4]

All websites were last accessed 1 September 2017.

[1] Christos Charatsis, 'Setting the Publication of "Dual-Use Research" Under the Export Authorisation Process: The H5N1 Case' (2015) 1:1 *Strategic Trade Review* 56–72, 58–9.

[2] Ibid., 59–60.

[3] 'Exportvergunning voor publicatie onderzoek vogelgriepvirus', 27 April 2012, online at: www.rijksoverheid.nl/actueel/nieuws/2012/04/27/exportvergunning-voor-publicatie-onderzoek-vogelgriepvirus; Council Regulation (EC) No 428/2009 of 5 May 2009 setting up a Community regime for the control of exports, transfer, brokering, and transit of dual-use items, OJ 2009 No. L134, 29 May 2009.

[4] Case No. HAA 13/792, ECLI:NL:RBNHO:2013:8527 (District Court of North Holland, 20 September 2013). In June 2015, the Court of Appeal in Amsterdam annulled the District Court's decision on the ground that the researcher did not suffer any damages and the claim should not have been heard in the first place. Case No. 13/00661, ECLI:NL:GHAMS:2015:2913 (Amsterdam Court of Appeal, 18 June 2015) paras. 6.1–6.5.

The H5N1 controversy reminds us that technological invention, including innovation in biotechnology, may serve a 'dual' purpose. A 'dual-use' item is generally defined as an item which serves both civilian and military purposes. In fact, as will be explained in Section 10.1, a variety of materials, products, facilities, technologies, and information which are critical for sustaining our civilian lives could also be mobilized to strengthen the military capabilities of governments as well as non-state armed groups and terrorists. For instance, ordinary computers can be used to simulate nuclear reactions without the need of detonating an actual nuclear device, increasing the ease with which a clandestine nuclear weapons programme could be developed in secret.[5]

Dual-use items are subject to a wide range of international, EU, and national laws, as well as formally non-binding arrangements. One of the key areas of law is export control regulating the cross-border (as opposed to domestic) transfer of dual-use items. The importance of cross-border control was highlighted by the Gulf War, after which it was revealed that the Iraqi nuclear weapons programme had been sustained by the country's import of dual-use materials and products from a number of Western companies.[6] In order to regulate the production of weapons of mass destruction, countries have to limit the transfer of a wide range of materials, products, and technologies which are of use in civilian life, yet which could likewise be employed in the process of producing the weapons.

This chapter will examine the multifaceted nature of duality in the regulation of the cross-border transfer of dual-use items. Despite often being perceived as technical rules, at the heart of international, EU, and national export control laws and regulations is a difficult balancing act between potentially contradictory normative claims. It is essential to unpack the normative and political premises embedded in the export control law of dual-use items because of the significant consequences that flow for both technological innovation and sustainable development.

This chapter is organized in four sections. Section 10.1 will introduce several examples of dual-use items in order to illustrate the social relevance of their regulation. Section 10.2 will outline major international treaties and non-binding international arrangements which provide the basis for domestic and EU laws on the export control of dual-use items. Section 10.3 will highlight duality and dichotomy in existing regulatory frameworks. Finally, Section 10.4 will turn to the important role of national authorities in case-by-case risk assessment in the absence of coherent international guidance. By studying dual-use concepts, this chapter reveals how export control law and those who apply it strike a balance among competing

[5] William M. Evan and Bret B. Hays, 'Dual-use technology in the context of the non-proliferation regime' (2006) 22:1 *History and Technology* 105–13, 106–7.

[6] Daniel Joyner, *International Law and the Proliferation of Weapons of Mass Destruction* (Oxford: Oxford University Press, 2009), 30.

interests, including technological innovation, sustainable development, and the maintenance of international security.

10.1. DUAL-USE ITEMS IN OUR SOCIETIES

Virtually anything can serve dual or multiple purposes. For instance, a golf club can be an item of sporting equipment or a bludgeon, depending on the user. Duality which justifies export control is, however, different from this sporting goods example. Export control is directed at a particular kind of duality, that is, items that serve both civilian and military purposes.[7] A wide range of materials that sustain our daily lives also have military potential, giving rise to the need for export control. To illustrate the extent to which dual-use items are beneficial, I will refer here to three categories.

First, chemical compounds have both civilian and military purposes. Among the vast number of chemicals used for agricultural and industrial applications are the compounds called sodium fluoride and phosphorus trichloride. Sodium fluoride is used for the fluoridation of drinking water and the production of toothpaste,[8] and phosphorus trichloride is used in the production of organophosphate insecticides (found in pesticides) and glyphosate herbicides (found in weed killers).[9] As with many other chemical compounds, their proven civilian utility is accompanied by their potential military usage. Notably, sodium fluoride and phosphorus trichloride can be employed to synthesize the deadly chemical weapon, sarin. In 2013, a UN investigation found clear and convincing evidence that sarin was used against civilians in the Ghouta area of Damascus on 21 August 2013.[10] After the incident, blame was directed in part at the exporters of chemical compounds. The United Kingdom (UK), for instance, granted licences in January 2012 to export sodium fluoride and another chemical to Syria.[11] The British authorities found no grounds for refusal at that time.[12] Likewise, German authorities granted 98 licences for the export of

[7] E.g., Council Regulation (EC) No 428/2009, Art. 2(1).

[8] World Health Organization (WHO), 'Fluoride in Drinking-Water: Background Document for Development of WHO Guidelines for Drinking-Water Quality', WHO/SDE/WSH/03.04/96 (2004).

[9] L. Cisse and T. Mrabet, 'World Phosphate Production: Overview and Prospects' (2004) 15 *Phosphorus Research Bulletin* 21–5, 24. Phosphorus compounds are used in high-grade detergents, dental creams, and as a stabilizer in plastics: ibid., 21.

[10] *United Nations Mission to Investigate Allegations of the Use of Chemical Weapons in the Syrian Arab Republic: Final Report*, UN Doc A/68/663–S/2013/735 (13 December 2013), para. 109. The UN reported that a number of patients and survivors from the Ghouta incident were clearly diagnosed as intoxicated by an organophosphorous compound: ibid., para. 110.

[11] 'Letter to the Chair of the Committees from the Rt Hon Vince Cable MP, Secretary of State for Business, Innovation and Skills' (6 September 2012) in the UK House of Commons, Committees on Arms Export Controls, *First Joint Report of the Business, Innovation and Skills, Defence, Foreign Affairs and International Development Committees of Session 2013–14, Vol III* (17 June 2013) 90.

[12] Ibid.

dual-use chemicals to Syria between 1998 and 2011, including sodium fluoride.[13] Despite the lack of credible evidence of a link between exported chemicals and the actual 2013 incident in Syria, the governments were criticized for granting licences for the export of potentially harmful chemicals – as if the governments had facilitated the creation of nerve gas.[14]

Second, dual-use items are not only chemicals and other materials themselves but also extend to technology. For example, nanotechnology could be used to prevent the immune system from functioning by means of inhalable nanoparticles repurposed as a threat agent carrier.[15] Genetically modified organisms (GMOs), DNA sequence databases, and many aspects of synthetic biology are also considered dual-use.[16] This has led to extensive scientific and public debate and to the creation of the codes of conduct.[17]

Finally, not only technologies themselves but also the provision of 'technical assistance' can serve both civilian and military purposes. When government agencies or private companies provide consulting services or training programmes to foreign states and companies with or without the tangible transfer of dual-use items, such assistance may indirectly further the development of the weapons of mass destruction. An illustrative example is technical assistance with regard to the construction of nuclear power plants abroad; the benefit of such technical cooperation and assistance could also augment the recipient country's capacity to facilitate a nuclear weapons programme.[18]

[13] Ian Anthony, 'Exports of Dual-Use Chemicals to Syria: An Assessment of European Union Export Controls' (2014) 35 *EU Non-Proliferation Consortium: Non-Proliferation Papers* 1–13, 8–10.

[14] The titles of some British newspaper articles illustrate this condemnation. See, for example, Cahal Milmo, Andy McSmith, and Nikhil Kumar, 'Revealed: UK Government let British Company Export Nerve Gas Chemicals to Syria', Independent, 2 September 2013, online at: www.independent.co.uk/news/uk/politics/revealed-uk-government-let-british-company-export-nerve-gas-chemicals-to-syria-8793642.html; Mark Nicol, 'Britain Sent Poison Gas Chemicals to Assad: Proof That the UK Delivered Sarin Agent to Syrian Regime for Six Years', Daily Mail, 7 September 2013, online at: www.dailymail.co.uk/news/article-2415081/Britain-sent-poison-chemicals-Assad-Proof-UK-delivered-Sarin-agent-Syrian-regime.html. For an example from a German publication, see Von Sarah Kramer, 'Chemieexport nach Syrien: Eine Frage der Verantwortung', Der Tagesspiegel, 19 September 2013, online at: www.tagesspiegel.de/politik/chemieexport-nach-syrien-eine-frage-der-verantwortung/8818270.html.

[15] Margaret E. Kosal, 'Anticipating the Biological Proliferation Threat of Nanotechnology: Challenges for International Arms Control Regimes', in H. Nasu and R. McLaughlin, eds., *New Technologies and the Law of Armed Conflict* (The Hague: T. M. C. Asser Press, 2014), 161, 164–7.

[16] Elisa D. Harris, 'Dual-Use Threats: The Case of Biological Technology', in E. D. Harris, ed., *Governance of Dual-Use Technologies: Theory and Practice* (American Academy of Arts & Sciences, 2016), 62.

[17] For instance, in the Netherlands, the Royal Netherlands Academy of Arts and Sciences (KNAW) published an advisory report including a code of conduct for biosecurity in dual-use research: Royal Netherlands Academy of Arts and Sciences, *Improving Biosecurity: Assessment of Dual-Use Research* (December 2013), online at: www.knaw.nl/shared/resources/actueel/publicaties/pdf/advies-biosecurity-engels-web.

[18] Robert L. Brown and Jeffrey M. Kaplow, 'Talking Peace, Making Weapons: IAEA Technical Cooperation and Nuclear Proliferation' (2014) 58:3 *Journal of Conflict Resolution* 402–28; Giorgio

10.2. REGULATORY FRAMEWORKS

As illustrated in Section 10.1, materials, products, technologies, and even information which sustain our civilian lives can be used for military purposes. Given that the use of military equipment has historically proven to be the most visible and immediate means of endangering international peace and security, states have developed extensive regulatory frameworks on the export control of dual-use items to prevent their use by unauthorized entities seeking to acquire illegitimate military capabilities. This section will provide a brief overview of select regulatory frameworks before turning in the next section to consideration of the multiple levels of duality within these frameworks.

At the international level, a series of treaties regulating weapons of mass destruction aim, at least in part, to restrict the cross-border transfer of dual-use items. One of the earliest treaties concerning the regulation of weapons of mass destruction is the 1925 Geneva Protocol, which prohibited in war the use of poisonous gases and bacteriological methods of warfare.[19] Other major treaties include the 1968 Treaty on the Non-Proliferation of Nuclear Weapons (NPT),[20] 1972 Biological and Toxin Weapons Convention (BTWC),[21] and 1993 Chemical Weapons Convention (CWC).[22] These conventions are accompanied by United Nation Security Council (UNSC) Resolution 1540 on the non-proliferation of weapons of mass destruction.[23]

With respect to the 1968 NPT, the international legal basis for nuclear export controls is provided in Article III.2, under which states undertake not to transfer to non-nuclear-weapon states 'equipment or material especially designed or prepared for the processing, use or production of special fissionable material' unless such material is subject to the safeguards of the International Atomic Energy Agency (IAEA).[24] While the NPT itself does not provide the list of such materials subject to export control, the scope of Article III.2 has been specified by the understandings

Franceschini, 'Keeping Nuclear Cooperation Peaceful: The Technical Cooperation Program and the Safeguards Mandate of the International Atomic Energy Agency', in O. Meier, ed., *Technology Transfers and Non-Proliferation: Between Control and Cooperation* (London: Routledge, 2014), 103–4.

[19] Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare, 17 June 1925, 94 LNTS 65, in force 8 February 1928. On the scope of the Protocol, see R. R. Baxter and Thomas Buergenthal, 'Legal Aspects of the Geneva Protocol of 1925' (1970) 64:5 *The American Journal of International Law* 853.

[20] Treaty on the Non-proliferation of Nuclear Weapons, 1 July 1968, 729 UNTS 161, in force 5 March 1970.

[21] Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction, 10 April 1972, 1015 UNTS 163, in force 26 March 1975.

[22] Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction, 13 January 1993, 1974 UNTS 45, in force 29 April 1997.

[23] UN Doc S/RES/1540, 28 April 2004.

[24] NPT, Art. III.2.

and lists maintained by the Zangger Committee, composed primarily of the supplier states of nuclear-related technologies.[25] At the same time, Article III.2 of the NPT is not wide enough to provide a sufficient basis for the regulation of dual-use items precisely because the provision focuses on the items 'specifically designed or prepared' for the production of fissionable material.[26]

As for the 1972 BTWC, an international legal basis for export control is provided in Article III, under which states will not transfer 'any of the agents, toxins, weapons, equipment or means of delivery' prohibited by the Convention.[27] The BTWC list has no category of dual-use items, and also lacks a verification mechanism, despite several initiatives in the past among member states to establish one. Of these three international treaties, the 1993 CWC has the most developed regime of regulation of dual-use items. The CWC annexes three categories ('Schedules') of chemicals according to their applicability to chemical weapons and their commercial usage, and the treaty implementation is monitored by the Organization for the Prohibition of Chemical Weapons (OPCW).[28] For instance, phosphorus trichloride, one of chemical agents used for synthesizing sarin, is listed among the CWC's Schedule 3 dual-use chemicals which may be produced in large commercial quantities but whose properties mean that they 'might' still be used as a chemical weapon.[29]

Apart from these obligatory regimes, there are formally non-binding yet effective international arrangements concerning the export control of dual-use items.[30] With respect to the control of items relevant to the development of nuclear weapons, the limited usefulness of the 1968 NPT in the regulation of dual-use items increased the importance of the Nuclear Suppliers Group.[31] The Nuclear Suppliers Group was established after India's nuclear test in 1974 in order to control, not only the export of items specifically designed for nuclear weapons, but also the export of a wide range of dual-use materials.[32] The Iran–Iraq war led to the establishment of the Australia Group in 1985 in order to strengthen and harmonize export control measures concerning the prevention of chemical and biological weapons.[33] The Missile Technology Control Regime was initiated in 1987 for the purpose of controlling the transfer of missile technologies as the means of delivery.[34] On top of these treaties

[25] Joyner, *International Law and the Proliferation of Weapons of Mass Destruction*, 27–30.
[26] NPT, Art. III.2.
[27] BTWC, Art.. III.
[28] CWC, annex on Chemicals, A (Guidelines for Schedules of Chemicals).
[29] Ibid.
[30] Thilo 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* (London: Routledge, 2014), 58–60.
[31] Joyner, *International Law and the Proliferation of Weapons of Mass Destruction*, 31.
[32] Ibid., 29, 31.
[33] Javed Ali, 'Chemical Weapons and the Iran-Iraq War: A Case Study in Noncompliance' (2001) 8:1 *The Nonproliferation Review* 43–58, 50.
[34] Joyner, *International Law and the Proliferation of Weapons of Mass Destruction*, 40–1.

and voluntary arrangements on weapons of mass destruction, the Wassenaar Arrangement, established in 1996, provides an extensive list of dual-use goods and munitions which serve not only as weapons of mass destruction, but also as conventional weapons.[35] The Wassenaar Arrangement is built on CoCom (Coordinating Committee for Multilateral Export Control) which was the Western bloc's export control regime during the Cold War.[36] Under CoCom, the scope of controlled items was defined in the context of military capability competition between Western and Soviet Union blocks as a set of 'strategic items'.[37]

The effectiveness of these international treaties and non-binding export control regimes depends on implementation at the national and EU levels. Under EU law, the export of dual-use items is regulated foremost by Council Regulation (EC) No 428/2009 of 5 May 2009.[38] Annex I of the Regulation provides an extensive list of dual-use items subject to export authorization. The EU's regulation is based on the aforementioned international regimes. Under Council Regulation (EC) No 428/2009, whose preamble refers to UNSC Resolution 1540, the list of dual-use items is said to be the implementation of 'internationally agreed dual-use controls', including the Wassenaar Arrangement, the Missile Technology Control Regime, the Nuclear Suppliers Group, the Australia Group, and the CWC.[39]

Domestic law varies depending on each state. In the USA, the BTWC is implemented by the 1989 Biological Weapons Anti-Terrorism Act.[40] The 1989 Act criminalized knowingly developing, producing, stockpiling, transferring, acquiring, retaining, or possessing any biological agent, toxin, or delivery system for use as a weapon.[41] Apart from this, export control is primarily governed by the following three groups of regulations: (a) the Export Administration Regulations,[42] based on the Export Administrations Act, which include the Commerce Control List administered by the Bureau of Industry and Security of the Department of Commerce; (b) the International Traffic in Arms Regulations,[43] based on the Arms Export Control

[35] The Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Goods and Technologies, 'Initial Elements', 11–12 July 1996, para. I.1, online at: www.wassenaar.org/docs/IE96.html.

[36] Kenneth A. Dursht, 'From Containment to Cooperation: Collective Action and the Wassenaar Arrangement' (1997) 19:3 *Cardozo Law Review* 1079–123, 1098.

[37] Ian Anthony, 'The Evolution of Dual-Use Technology Controls: A Historical Perspective', in O. Meier, ed., *Technology Transfers and Non-Proliferation: Between Control and Cooperation* (London: Routledge, 2014) 26–8.

[38] Council Regulation (EC) No 428/2009. Council Regulation (EC) No 428/2009 was amended most recently by Commission Delegated Regulation (EU) 2017/2268 of 26 September 2017. For background, see Anna Giulia Micara, 'Current Features of the European Union Regime for Export Control of Dual-Use Goods' (2012) 50:4 *Journal of Common Market Studies* 578–93, 578.

[39] Council Regulation (EC) No 428/2009, Annex I.

[40] Biological Weapons Anti-Terrorism Act of 1989, Pub. L. 101–298.

[41] Prohibitions with Respect to Biological Weapons, 18 U.S.C. § 175 (a).

[42] 15 CFR §§ 730 *et seq*.

[43] 22 CFR §§ 120 *et seq*.

Act, which include the US Munitions List administered by the State Department; and (c) a series of regulations issued, based on executive orders, by the Office of Foreign Assets Control (OFAC) of the Department of the Treasury.[44] Dual-use items are primarily regulated by the Commerce Control List, which provides an extensive list of dual-use items in keeping with other international regimes such as the Wassenaar Arrangement.[45]

10.3. MULTIFACETED DUALITY AND DICHOTOMY

As seen in the overview in Section 10.2, states have committed themselves to the export control of dual-use items at both the international and domestic levels. These commitments are ultimately for the broad objective of regional and international peace and security, as elucidated in the founding document of the Wassenaar Arrangement.[46] What is often overlooked, however, is a choice or weighting – and its social consequences – of certain normative claims in designing and applying the export control of dual-use items. Here, I refer to some facets of duality and dichotomy which are accommodated in the legal frameworks on the export control of dual-use items.

10.3.1. *Peaceful versus Non-peaceful Purposes*

As noted in the introduction, dual-use items are essentially defined as items that have both civilian and military purposes, as illustrated by the definition in the EU's dual-use regulation.[47] While this seems straightforward, the duality of civil and military purposes is merely a starting point in regulating the transfer of dual-use items. Other value-laden tests that justify export control have frequently been employed together, with context-dependent exceptions.

One such value-laden test is the dichotomy of peaceful versus non-peaceful purposes. The NPT, BTWC, and CWC – three international treaties regulating the weapons of mass destruction – all employ the dichotomy of 'peaceful' versus 'non-peaceful' purposes as one broad yardstick to determine the permissibility of the transfer of materials.[48] For instance, under the CWC, states are prohibited from transferring chemical weapons,[49] but such weapons are defined as including

[44] See the list of sanctions-related regulations, US Department of the Treasury, 'Financial Sanctions: Code of Federal Regulations', online at: www.treasury.gov/resource-center/sanctions/Pages/CFR-links.aspx.

[45] 'Initial Elements'.

[46] Ibid.

[47] Council Regulation (EC) No 428/2009, Art. 2(1).

[48] Johannes Rath, Monique Ischi and Dana Perkins, 'Evolution of Different Dual-use Concepts in International and National Law and Its Implications on Research Ethics and Governance' (2014) 20 *Science and Engineering Ethics* 769–90, 774–5.

[49] CWC, Art. I.1(a).

toxic chemicals 'except where intended for purposes not prohibited under this Convention', namely industrial, agricultural, research, medical, pharmaceutical, 'or other peaceful purposes'.[50] Under the BTWC, states are prohibited from transferring any of the agents or toxins,[51] but the prohibition is applicable to certain types and quantities of biological agents which have 'no justification for prophylactic, protective or other peaceful purposes'.[52] This definition is also employed in domestic implementing legislation. Under the US 1989 Biological Weapons Anti-Terrorism Act, which implements the BTWC, it is illegal to transfer biological agents or toxins if it is 'for use as a weapon', namely for purposes 'other than prophylactic, protective, bona fide research, or other peaceful purposes'.[53]

Not surprisingly, the understanding of what constitutes 'peaceful purposes' varies significantly depending on national authorities and their political contexts. The flexibility of the terms impacts the effectiveness of the BTWC, which regulates dual-use items without a list of regulated items or a verification mechanism.[54] The highly subjective concept of 'peaceful purposes' also casts doubt on the legitimacy of the BTWC, since it allows politically powerful industrial states to apply the Convention in their favour. Controversy pertains to, for instance, whether or not 'biodefence' systems can be considered for peaceful purposes. The fear of a bioterrorism attack has already led several states to develop highly dangerous biological agents and put in place protective measures against such agents, as part of the country's military defence capacity. For instance, Poland reported in 2004 that it operationalized several 'military Biological Response Teams'.[55] The expansion of the US biodefence programme attracted international concern.[56] Given the uncertainty about the meaning of peaceful purposes, Beard critically observed that industrial states have taken advantage of the flexibility of the term 'peaceful purposes' in order to justify the extensive restriction of the transfer of dual-use materials, technology, and information to developing states.[57]

10.3.2. *States versus Non-state Actors*

A second dichotomy in export control of dual-use items – as well as wider international law – is that of states and non-state actors. This dichotomy is based on the

[50] Ibid., Art. II.9(a).
[51] BTWC, Art. III.
[52] Ibid., Art. I(1).
[53] Prohibitions with Respect to Biological Weapons, (c).
[54] BTWC.
[55] Meeting of the States Parties to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction, UN Doc BWC/MSP/2004/MX/WP.72 (29 July 2004).
[56] Jack M. Beard, 'The Shortcomings of Indeterminacy in Arms Control Regimes: The Case of the Biological Weapons Convention' (2007) 101:2 *American Journal of International Law* 271–321, 293.
[57] Ibid., 312–13.

assumption that the existence of non-state armed groups or terrorists necessitates a more cautious approach to the regulation of the transfer of dual-use items. The 2001 September 11 terrorist attacks, together with a series of anthrax attacks in the USA, alerted governments and the wider public to the possible destructive use of biological agents by terrorist groups.[58] The EU in its 2003 European Security Strategy regarded the proliferation of weapons of mass destruction as 'potentially the greatest threat to our security', and referred to the possibility of terrorist attacks with biological weapons and chemical and radiological materials.[59] Political attention has been directed in particular at the prevention of weapons of mass destruction from being accessible to terrorist groups and non-state armed groups.

Against this background, the UNSC adopted Resolution 1540, making 'non-state actors' a point of distinction with which to limit or prohibit the accessibility of certain technologies.[60] Resolution 1540 affirmed that 'proliferation of nuclear, chemical and biological weapons' constituted a threat to international peace and security.[61] The UNSC expressed grave concern about the risk of proliferation by non-state actors, and imposed on member states the obligation to refrain from providing support to non-state actors who 'attempt to develop, acquire, manufacture, possess, transport, transfer or use nuclear, chemical or biological weapons and their means of delivery', and to adopt and enforce appropriate effective laws to prohibit such acts.[62]

While it may seem reasonable to assume that non-state actors carry a significantly greater risk, the concept is broad enough to encompass all actors that are not states, including private companies and research institutions which sustain a country's economic development and innovation. Despite the variance among non-state actors, the broad dichotomy of states versus non-state actors may inform the way export licence requirements are strengthened and applied by relevant national authorities.

10.3.3. *Safe versus Sensitive Destinations*

The third level of dichotomy pertains to the division between safe and 'sensitive' countries of destination. This dichotomy is based on the assumption that stringent export control is needed for exports of dual-use items to sensitive countries in order to mitigate the risk of non-authorized access.

[58] H. Clifford Lane, John La Montagne, and Anthony S. Fauci, 'Bioterrorism: A Clear and Present Danger' (2001) 7 *Nature Medicine* 1271–3; Ronald M. Atlas, 'Bioterrorism Before and After September 11' (2001) 27 *Critical Reviews in Microbiology* 355–79.

[59] European Council, European Council, 'A Secure Europe in a Better World: European Security Strategy' (12 December 2003), 3–4.

[60] UN Doc S/RES/1540, paras. 1–2.

[61] Ibid., para. 1 of the preamble.

[62] Ibid., para. 8 of the preamble, paras. 1–2.

States apply their export control laws and regulations differently depending on the destination of the dual-use items being exported. If the UNSC imposes arms embargoes on certain states, UN member states are internationally obliged to restrict the export of arms and related materials to those targeted countries.[63] Twenty-seven mandatory arms embargoes as well as five non-mandatory arms embargoes have been established by the UN from 1966 to 2015, including those against the Democratic Republic of Congo, North Korea, Sudan, Libya, Somalia, Eritrea, Iraq, and the Central African Republic.[64] In addition, economic sanctions have been applied by the EU, like-minded states, and individual states.[65]

Beyond these distinctions, several states have designated 'sensitive' destination countries on which stringent export controls are imposed. For instance, in the Netherlands, twenty-two countries, including India, Israel, and Pakistan, are designated as 'sensitive countries'; this means, for instance, that any brokering activities involving these countries may have to be reported to the Central Licensing Office.[66]

Destination-based distinctions also arise in the case of 'catch-all' control, which is designed not to overburden industries as well as licensing authorities. For instance, in Japan, catch-all control is applied to areas *other than* the category of states (called 'white countries') which are considered safe, including Australia, Belgium, Canada, France, the Republic of Korea, the Netherlands, the United Kingdom, and the United States of America.[67]

Destination-based control may appear necessary in order to mitigate the risk of misuse of dual-use items while avoiding overly burdensome export control regulations. If catch-all control was applied to all destinations, this would impose significant restrictions on industries and incur excessive regulatory cost. At the same time, for one country to designate other countries as a whole as 'sensitive', thus requiring stringent control for all the dual-use items, is presumptuous. 'Sensitive countries' are identified through a risk assessment of each country's instability and fragility over a certain period of time. Such a broad categorization embedded in the export control of industrial states limits the accessibility of a wide range of goods to

[63] As part of the obligation under the UN Charter: Charter of the United Nations, 26 June 1945, 1 UNTS XVI, in force 24 October 1945, Art. 25.

[64] SIPRI (Stockholm International Peace Research Institute), Database: Arms Embargoes, online at: www.sipri.org/databases/embargoes.

[65] Michael Brzoska, 'International Sanctions Before and Beyond UN Sanctions' (2015) 91 *International Affairs* 1339–49, 1343–44.

[66] Handboek Strategische Goederen En Diensten (April 2016) 25, online at: www.rijksoverheid.nl/onderwerpen/exportcontrole-strategische-goederen/documenten/rapporten/2006/10/23/handboek-strategische-goederen. Those sensitive countries are: Afghanistan, Angola, Belarus, Burma/Myanmar, Congo, DPRK, Egypt, Eritrea, Guinea (Conakry), India, Iraq, Iran, Israel, Ivory Coast, Lebanon, Liberia, Pakistan, Somalia, Sudan, South Sudan, Syria, and Zimbabwe.

[67] Export Trade Control Order, Cabinet Order No 378 of 1 December 1949 (last amended 1 April 2016), Appended Table 3. Those countries are: Argentina, Australia, Austria, Belgium, Bulgaria, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, the Republic of Korea, Luxembourg, the Netherlands, New Zealand, Norway, Poland, Portugal, Spain, Sweden, Switzerland, the United Kingdom, and the United States of America.

countries designated sensitive and inevitably affects their entire industry and economic development.

10.3.4. *Economic Development versus Security*

The fourth facet of duality is the one between development and international peace and security. This duality, or dilemma, is accommodated in the provisions of the NPT, BTWC, and CWC. While these treaties provide the basis for export control, they also provide potentially contradictory provisions which require member states to cooperate and not to hamper economic and technological development.[68] Under Article IV(2) of the NPT, for instance, member states 'in a position to do so' shall cooperate to further peaceful nuclear energy use 'with due consideration for the needs of the developing areas of the world'.[69] According to Article X of the BTWC, member states have the 'right to participate' in the 'fullest possible exchange of equipment, materials and scientific and technological information' for the peaceful use of biological agents.[70] Member states must also 'avoid hampering the economic or technological development' of other member states or 'international cooperation in the field of peaceful bacteriological (biological) activities'.[71] Likewise, Article XI of the CWC requires member states to avoid hampering economic or technological development and international cooperation.[72]

Developing countries have levelled criticisms that industrial countries have not committed themselves to the obligations to cooperate under these treaties. In fact, Leslie sheds light on 'paradigmatic differences' among states and institutions concerning the non-proliferation of the weapons of mass destruction.[73] For many countries belonging to the Non-Aligned Movement, non-proliferation regimes are part of wider political bargains involving the economic development of the global 'south'.[74] Some members of the Movement have thus been trying to situate the provisions on development and international cooperation 'on an equal footing' with the prohibition of the transfer of biological agents.[75]

[68] Oliver Meier, 'Dual-Use Technology Transfers and the Legitimacy of Non-Proliferation Regimes', in O. Meier, ed., *Technology Transfers and Non-Proliferation: Between Control and Cooperation* (London: Routledge, 2014), 4–6.

[69] NPT, Art. IV(2).

[70] BTWC, Art. X(1).

[71] Ibid., Art. X(2).

[72] CWC, Art. XI(1).

[73] Russell Leslie, 'The Good Faith Assumption: Different Paradigmatic Approaches to Nonproliferation Issues' (2008) 15 *The Nonproliferation Review* 479–97, 480.

[74] Ibid.

[75] Oliver Meier and Iris Hunger, *Between Control and Cooperation: Dual-Use, Technology Transfers and the Non-Proliferation of Weapons of Mass Destruction* (Osnabrück: Deutsche Stiftung Friedensforschung, 2014), 23.

The tension between industrial countries and developing countries is evident within the BTWC regime. Article X of the BTWC, the provision concerning international cooperation, did not garner much attention in the meetings of BTWC member states until the 1990s.[76] In 1993, the Non-Aligned and Other Developing Countries criticized the BTWC's ad hoc group of governmental experts (called VEREX) who were identifying and examining potential verification measures for being led by the 'interests of the developed countries' without due regard to the legitimate interests and concerns of developing countries.[77] Industrial states did formally acknowledge the importance of Article X in 1998, but this did not immediately lead to concrete proposals.[78] At the 2006 Sixth Review Conference, the Non-Aligned Movement proposed a plan of action to implement Article X which, nevertheless, did not gain approval.[79]

At the 2011 Seventh Review Conference, members of the Non-Aligned Movement once again put forward the issue of implementation of Article X. At this time Iran, for example, relied on Article X in criticizing 'arbitrary export control regimes'[80] and observed that the restriction of dual-use application of know-how, materials, and equipment necessary for medical goods and agricultural biologic material was 'a blatant discriminatory action in direct violation of Article X'.[81] The Iranian position can be contrasted with Denmark's observation, which emphasized biosecurity as 'an essential element that should be considered whenever biological materials, know-how and technology is transferred'.[82] In a presentation to the Seventh Review Conference a group of developing countries 'marked disparities' resulting from asymmetries in the development of states parties, and identified the full implementation of Article X as a 'fundamental priority'.[83]

[76] Iris Hunger, 'Regulating Transfers of Biological Dual-Use Technology: the Importance of a Serious Debate', in O. Meier, ed., *Technology Transfers and Non-Proliferation: Between Control and Cooperation* (London: Routledge, 2014), 137–54.

[77] Statement of the Non-Aligned and Other Developing Countries Before the Meeting of the Ad Hoc Group of Government Experts to Identify and Examine Potential Verification Measures from a Scientific and Technical Standpoint, BWC/CONF.III/VEREX/WP.150 (4 June 1993), 2. See Hunger, 'Regulating Transfers of Biological Dual-Use Technology'ibid.

[78] Hunger, 'Regulating Transfers of Biological Dual-Use Technology'.

[79] Proposal for a Plan of Action on Implementation of Article X: Submitted by the States Parties of the Non-Aligned Movement and Other States, BWC/CONF.VI/WP.39 (8 December 2006). See Hunger, 'Regulating Transfers of Biological Dual-Use Technology'.

[80] Seventh Review Conference of the States Parties to the Biological and Toxin Weapons Convention, Implementation of Article X of the Convention, Background Information Document Submitted by the Implementation Support Unit, BWC/CONF.VII/INF.8 (23 November 2011), para. 177 (Iran).

[81] Ibid., para. 160 (Iran).

[82] Ibid., para. 131 (Denmark).

[83] Seventh Review Conference of the States Parties to the Biological and Toxin Weapons Convention, The Establishment of a Mechanism to Promote the Full Effective and Non-Discriminatory Implementation of Article X of the Convention, Submitted by Cuba on Behalf of the Group of the Non Aligned Movement and Other States, BWC/CONF.VII/WP.26 (29 November 2011), para. 4.

10.3.5. *Military versus Human Security*

While some of the dichotomies discussed in this chapter are oriented towards enhancing inter-state security, dual-use export control has also been influenced by the concept of 'human security' (as contrasted with state security) and, in particular, the protection of human rights.[84] Integrating these normative perspectives into dual-use export control further reduces the dominance of the 'military versus civilian' dichotomy as the starting point of duality.[85] Yet in practice, this integration provides a justification for the extension of technology and equipment subject to export control.

Human security and human rights are broad terrains which overlap and depend on each other but still have their own distinct languages. Human rights are prescribed by domestic and international legal instruments primarily to regulate the conduct of public authorities based, at least traditionally, on the public–private divide so as to identify those responsible for human rights violations.[86] Human security, on the other hand, is a much more flexible paradigm which calls for 'people-centred' and 'prevention-oriented' responses[87] beyond the public–private distinction and without a strong sense of holding decision-makers responsible.[88] According to the UN General Assembly's formulation in 2005, human security aspires to achieve 'freedom from fear and freedom from want'[89] and such freedoms are realized 'with an equal opportunity to enjoy all [individuals'] rights and fully develop their human potential'.[90] The protection of human rights should thus be regarded as one of the elements of human security. At the same time, human security's all-encompassing

[84] UNDP, *Human Development Report 1994* (New York: Oxford University Press for UNDP, 1994), 22–4; Commission on Human Security, *Human Security Now* (New York: Commission on Human Security, 2003), 2.

[85] While human security is by no means a legal concept, the UN General Assembly resolutions regarding human security employ certain normative languages such as rights and entitlement: *2005 World Summit Outcome*, UN Doc A/RES/60/1 (24 October 2005), para. 143; *Follow-Up to Paragraph 143 on Human Security of the 2005 World Summit Outcome*, UN Doc A/RES/66/290 (25 October 2012), para. 3(a).

[86] Shahrbanou Tadjbakhsh and Anuradha Chenoy, *Human Security: Concepts and Implications* (London: Routledge, 2007), 127.

[87] Follow-Up to Paragraph 143 on Human Security of the *2005 World Summit Outcome*, para. 3(b).

[88] Tadjbakhsh and Chenoy, Human Security. The UN General Assembly also made it clear that human security 'does not entail additional legal obligations on the part of States': ibid., para. 3(h).

[89] *2005 World Summit Outcome*, para. 143.

[90] Ibid; *Follow-Up to Paragraph 143 on Human Security of the 2005 World Summit Outcome*, para. 3(a). Needless to say, there are different versions of human security: see Gerd Oberleitner, 'Human Security: A Challenge to International Law?' (2005) 11 *Global Governance* 185–203, 186–9; Rhoda E. Howard-Hassmann, 'Human Security: Undermining Human Rights?' (2012) 34 *Human Rights Quarterly* 88–112, 91–3. Within the UN, however, the concept of human security has developed around three elements: freedom from fear, freedom from want, and human rights: see Fen O. Hampson and Christopher K. Penny, 'Human Security', in T. G. Weiss and S. Daws, eds., *The Oxford Handbook on the United Nations* (Oxford: Oxford University Press, 2007), 539.

narrative readily allows varying priorities to be given to human rights against potentially conflicting economic and political exigencies.[91]

There is nothing novel in the practices of international organizations and states that employ violations of human rights (if not human security) as a ground for imposing sanctions strategically directed against the policies of particular states or non-state actors. Sanctions may involve the prohibition or restriction of the export of certain military or dual-use items.[92] In fact, the first two sanctions regimes imposed by the UNSC during the Cold War – one against South Rhodesia and another against South Africa – were instigated against the regimes' racist national policies.[93] Since the 1990s, non-UN sanctions against internal repression have been instigated, for instance, against Myanmar by the USA and the EU,[94] possibly under the broad interpretation of Article XX exceptions to the General Agreement on Tariffs and Trade (GATT).[95] Respect for human rights has also been one of the normative

[91] See Howard-Hassmann, 'Human Security', 106–11. For instance, the Canadian government put a greater emphasis on the prevention of physical violence and the promotion of democracy and human rights, while the Japanese government put more emphasis on ensuring 'freedom from want': Amitav Acharya, 'Human Security: East versus West' (2001) 56 *International Journal* 442–60; David Bosold and Sascha Werthes, 'Human Security in Practice: Canadian and Japanese Experiences' (2005) 1 *Internationale Politik und Gesellschaft* 84–101.

[92] In this sense, sanctions regimes (which are in principle temporary and directed against particular policies) and dual-use export control (which is a regular control) can overlap in terms of the types of restrictions imposed. Differences between sanctions and dual-use export control must be understood in the light of particular legal instruments. Within the EU, dual-use export controls form an integral part of the Common Commercial Policy, while restrictive measures (sanctions) are adopted according to the Common Foreign and Security Polity.

[93] While Security Council Resolutions 232 and 418 (which imposed sanctions on South Rhodesia and South Africa, respectively) did not directly refer to violations of individual rights, Resolution 253 (on South Rhodesia) condemned all measures of political repression 'which violate[d] fundamental freedoms and rights of the people of Southern Rhodesia' and Resolution 418 (on South Africa) condemned, at least in the preamble, the system of apartheid: UN Doc S/RES/253 (29 May 1968), para. 1; UN Doc S/RES/418 (4 November 1977), para. 6 of the preamble.

[94] For the USA, e.g., US Presidential Executive Order 13047, 'Prohibiting New Investment in Burma' (20 May 1997). For the EU, e.g., Common Position 96/635/CFSP of 28 October 1999, OJ 2001 No. L286, 8 November 1996; Council Regulation 1081/2000 of 22 May 2000, OJ 2000 No. L122, 24 May 2000; Council Decision 2010/232/CFSP of 26 April 2010, OJ L105; Council Decision 2013/184/CFSP of 22 April 2013, OJ L 111; Council Decision (CFSP) 2017/734 of 25 April 2017, OJ 2017 No. L108, 26 April 2017.

[95] In particular, human rights-based trade sanctions may be interpreted as achieving GATT Article XX(a) (public morals) and (b) (human ... life or health) objectives, although the measures must be necessary to achieve these objectives and comply with the requirements in the chapeau of Article XX. See, e.g., Robert Howse and Jared M. Genser, 'Are EU Trade Sanctions on Burma Compatible with WTO Law?' (2007) 29 *Michigan Journal of International Law* 165–96, 182–96; Sarah H. Cleveland, 'Human Rights Sanctions and International Trade: A Theory of Compatibility' (2002) 5:1 *Journal of International Economic Law* 133–89; Rachel Harris and Gillian Moon, 'GATT Article XX and Human Rights: What Do We Know from the First 20 Years?' (2015) 16 *Melbourne Journal of International Law* 432–83.

pillars for the regulation of arms exports,[96] as well as for prohibitions or restrictions on the export of goods which could be used for torture and other cruel treatment.[97]

However, unlike sanctions and arms export restrictions, regular dual-use export control policies were not traditionally intertwined with respect for human rights. Within the EU, under Article 8(1) of Council Regulation (EC) No 428/2009, a member state can prohibit or impose an authorization requirement on the export of dual-use items 'for reasons of public security or human rights considerations'.[98] Yet such residual considerations do not occupy a central place in export control. After all, 'dual-use' items are defined by the duality of civilian and military purposes.[99]

Yet in the process of reviewing the EU's dual-use regulation, the European Commission proposed that it should adopt a 'human security' approach, thus situating the protection of fundamental rights as one of the normative pillars of a comprehensive policy review. In October 2013, in accordance with the scheduled review of Regulation (EC) 428/2009,[100] the European Commission presented a report on the implementation of the dual-use regulation to the Council and the Parliament.[101] This was followed by the European Commission's adoption in April 2014 of a Communication in which the Commission undertook to consider a 'human security' approach to recognize the inextricable linkage between security and human rights.[102] The Commission explained, albeit merely in a footnote, that the human security approach 'intends to place people at the heart of EU export control policy'.[103] As explained in the impact assessment conducted by the Commission in 2015, the human security approach is contrasted with the 'traditional military and

[96] E.g., European Council, 'Declaration on Non-Proliferation and Arms Exports' (Presidency Conclusions, Luxembourg, 28–29 June 1991, Annex VII); Council Common Position 2008/944/CFSP of 8 December 2008 Defining Common Rules Governing Control of Exports of Military Technology and Equipment, OJ 2008 No. L335/99, Art. 2(2) (criterion two, respect for human rights as well as humanitarian law); Arms Trade Treaty, 3 June 2013, 52 ILM 988, in force 4 December 2014, Art. 7(1)(b)(ii) (a serious violation of international human rights law).

[97] Council Regulation (EC) No 1236/2005 of 27 June 2005 concerning trade in goods which could be used for capital punishment, torture, or other cruel, inhuman, or degrading treatment or punishment, OJ 2005 No. L200, 30 July 2005.

[98] Article 8(1) of Council Regulation (EC) No 428/2009 of 5 May 2009.

[99] Ibid., Art. 2(1).

[100] Ibid., Art. 25(2).

[101] European Commission, Report from the Commission to the Council and the European Parliament on the Implementation of Regulation (ec) No 428/2009 Setting up a Community Regime for the Control of Exports, Transfer, Brokering and Transit of Dual-Use Items, COM(2013) 710 final (16 October 2013).

[102] European Commission, Communication from the Commission to the Council and the European Parliament: The Review of Export Control Policy: Ensuring Security and Competitiveness in a Changing World, COM(2014) 244 final (24 April 2014), 6.

[103] Ibid.

state-centred approach to security' and calls for the extension of dual-use concepts beyond military and WMD-related end uses.[104]

Consideration of human security has allowed the European Commission to put a stronger emphasis on the protection of fundamental rights. In September 2016, the European Commission submitted a proposal to amend Council Regulation (EC) No 428/2009. The proposal no longer used the term 'human security' but instead adhered to one of its elements, namely, the protection of human rights, and, in particular, the rights to privacy, freedom of expression, and freedom of association.[105] In practice, the invocation of human rights as a normative pillar, in the light of the EU's action plan,[106] paved the way for the Commission's proposal to strengthen the export control over 'cyber surveillance technologies'.[107]

There is nothing novel in the export control of cyber surveillance items and the incorporation of human rights as a normative yardstick. Cyber surveillance technologies were already subject to export control according to the amendments agreed at the 2012 and 2013 meetings of the Wassenaar Arrangement.[108] In response, the EU added 'IP network communications surveillance systems' and some other cyber technologies to the export control list in 2014.[109] '[H]uman rights considerations' have also been invoked under Council Regulation (EC) 428/2009 in order to control the export of cyber technologies. For example, in 2012, Italy notified that, for reasons of public security and human rights, it had imposed an authorization requirement on the export of a set of telecommunication items (Public LAN database centralized monitoring system, Internet and 2G/3G services) to the Syrian Telecommunications Establishment.[110]

Nevertheless, the European Commission's proposal moved consideration of human rights from a marginal element to one of the basic grounds for export control. Under the Commission's September 2016 proposal, the very definition of dual-use items has been modified to encompass 'cyber-surveillance technology which can be used for the commission of serious violations of human rights or

[104] European Commission, Commission Staff Working Document, Impact Assessment, Report on the EU Export Control Policy Review, SWD(2016) 315 final (28 September 2016), 28.

[105] European Commission, Proposal for a Regulation of the European Parliament and of the Council Setting up a Union Regime for the Control of Exports, Transfer, Brokering, Technical Assistance and Transit of Dual-Use Items (recast), COM(2016) 616 final (28 September 2016), 6.

[106] Council of the European Union, Council Conclusions on the Action Plan on Human Rights and Democracy 2015–2019, 10897/15 (20 July 2015), 24.

[107] European Commission, 'Proposal for a Regulation', 6.

[108] See Innokenty Pyetranker, 'An Umbrella in a Hurricane: Cyber Technology and the December 2013 Amendment to the Wassenaar Arrangement' (2015) 13:2 *Northwestern Journal of Technology and Intellectual Property* 153–80, 162–80.

[109] Commission Delegated Regulation (EU) No 1382/2014 of 22 October 2014 amending council regulation (EC) No 428/2009 setting up a community regime for the control of exports, transfer, brokering and transit of dual-use items, OJ 2014 No. L371, 30 December 2014.

[110] Information Note 2012/C 283/05, OJ No. C283, 19 September 2012.

international humanitarian law'.[111] To regard cyber surveillance technologies as a dual-use item involves a fundamental conceptual shift from the traditional civilian–military dichotomy to a much more normatively charged definition of duality. Human rights-based export control requires EU institutions and national authorities to use their own assessments of the human rights situation of the third country to which cyber technology is exported. This may further intensify the existing tension between industrial countries and developing countries, where economic security – or freedom from want – is not, in the long run, unaffected by the export control regimes.

10.4. RISK ASSESSMENT

As illustrated in Section 10.3, regulatory frameworks integrate multiple levels of duality and dichotomy, which together construct the export control of dual-use items. The result of multifaceted duality and dichotomy is that uncertainty is embedded within these laws and regulations. In the absence of coherent guidance for the interpretation and reconciliation of some levels of duality, the permissibility of the export of dual-use items is ultimately determined through an assessment undertaken by state officials tasked with granting export licences. Apart from the cases in which the transfer of dual-use items is prohibited, responsible officials and their entities must make a determination as to whether they can license the transfer of particular dual-use items. It is not the scientific data that ultimately determine whether or not a licence is granted; instead, it is an assessment of 'risk' that requires a determination of the likelihood that particular items will be used for prohibited purposes. Such an assessment must be made without any definite 'assurances that [states'] trading partners will not use the gains from trade to augment military power and ultimately threaten their security'.[112]

Any national authority responsible for granting a licence takes into account information such as the country of destination, the end-user, the nature of the goods, and their proposed end use. Responsible authorities also take into account the risk that the exported goods may fall into the hands of terrorists. Apart from the export control list, however, 'there is hardly any guidance' for the assessment of the risk that a dual-use material could be used for prohibited purposes or by certain actors.[113]

[111] According to the proposal of September 2016, Art. 2(1)(b) reads as follows: '"dual-use items" shall mean items, including software and technology, which can be used for both civil and military purposes, and shall include: … (b) cyber surveillance technology which can be used for the commission of serious violations of human rights or international humanitarian law, or can pose a threat to international security or the essential security interests of the Union and its Member States': ibid., Art. 2(1)(b).

[112] Matthew Fuhrmann, 'Exporting Mass Destruction? The Determinants of Dual-Use Trade' (2008) 45:5 *Journal of Peace Research* 633–52, 634.

[113] Rath, Ischi, and Perkins, 'Evolution of Different Dual-use Concepts in International and National Law and Its Implications on Research Ethics and Governance', 777.

It is generally 'difficult to establish the criteria against which risk could be assessed' and international frameworks have not provided guidance specific enough to direct individual risk assessment.[114]

In the absence of detailed yardsticks, a country's risk assessment can be significantly influenced and altered by a particular incident and related media controversy. This is illustrated by the experience of Dutch authorities in exporting an industrial chemical (monoethylene glycol) to Syria.[115] On 22 May 2013, NRC Handelsblad, a Dutch national newspaper, reported that the Netherlands had exported glycol to Syria, describing it as 'a raw material for poison gas'.[116] The Dutch Minister for Foreign Trade and Development Cooperation informed the Dutch Parliament that glycol had been exported to Syria by Dutch companies for possible civilian end use in 2003 and from 2008 to 2010.[117] It was revealed that the Dutch secret service had informed the government that monoethylene glycol could be used for the production of chemical materials.[118] Yet at that time, the risk assessment did not find any basis to restrict the export of the commodity. In August 2003, US authorities warned the Netherlands that a shipment of glycol that was destined for Syria could be employed by the Syrian missile programme. The shipment was initially stopped by Belgian authorities, who ultimately had no legal authority to prevent it, as glycol was not on any list of dual-use items.[119] Efforts to find out how the exported glycol was actually used proved difficult, as glycol is not listed by the CWC and therefore assessment by the OPCW is not required.[120] Despite the scarcity of evidence on how the exported glycol was used in Syria, this controversy led the Netherlands to propose the inclusion of glycol on the Australia Group's list of dual-use items, and it was subsequently added to the EU's list of sanctions against Syria.[121]

The risk assessment of dual-use items inevitably involves a certain amount of subjectivity. In order to maximize the trade benefit of dual-use items while minimizing

[114] Anthony, 'The Evolution of Dual-Use Technology Controls', 59.

[115] Anthony, 'Exports of Dual-Use Chemicals to Syria', 10.

[116] NRC Handelsblad, 'Syrië importeerde jarenlang grondstof gifgas uit Nederland' (22 May 2013), online at: www.nrc.nl/nieuws/2013/05/22/grondstof-gif-uit-nederland-naar-syrie-geimporteerd-a1434558.

[117] Minister voor Buitenlandse Handel en Ontwikkelingssamenwerking (BHOS), 'Berichtgeving over levering door Nederland van grondstof voor chemische wapens aan Syrië' (kst-22054-222) (22 May 2013), online at: https://zoek.officielebekendmakingen.nl/kst-22054-222.html; Minister voor BHOS, 'Uw verzoek inzake de levering van glycol aan Syrië' (14 June 2013), online at: www.rijksoverheid.nl/binaries/rijksoverheid/documenten/kamerstukken/2013/06/14/kamerbrief-over-de-levering-van-glycol-aan-syrie/kamerbrief-over-de-levering-van-glycol-aan-syrie.pdf; Anthony, 'Exports of Dual-Use Chemicals to Syria', 10.

[118] BHOS (22 May 2013), ibid.

[119] BHOS (14 June 2013).

[120] 'Antwoord vragen van het lid Sjoerdsma over glycol' (ah-tk-20122013-3149) (4 September 2013), online at: https://zoek.officielebekendmakingen.nl/ah-tk-20122013-3149.html.

[121] Council Regulation (EU) No 36/2012 of 18 January 2012 concerning restrictive measures in view of the situation in Syria and repealing Regulation (EU) No 442/2011, OJ 2012 No. L16, 19 January 2012.

the security risk of such goods, states have incentives to trade with allies that are more likely to use dual-use technology for its stated purpose.[122] A study by Fuhrmann shows that 'democracy' has been one of the informal indicators for licensing by the USA of the export of dual-use goods.[123] While this may or may not hold true for the licensing practices of other countries, the multiple levels of duality create uncertainty and allow for discretion on the part of national authorities. Decisions that determine the permissibility of licences may be influenced by political biases, path dependence, and media coverage.

10.5. CONCLUSION

The regulation of dual-use materials has evolved in order to respond to the adverse effects of technological development on our societies. Today, the idea that a material or product is of dual use may carry a negative connotation in that the material could endanger our society. Yet at the beginning of the twentieth century, the fact that a certain material or technology was of dual character still held a positive meaning: civilian and military usages could together modernize our societies. It was World War I that altered our understanding of dual-use items. The destructive effect of chemical weapons during the war revised the positive image of duality attached to our technological inventions.

The application of export control laws and regulations to dual-use items is by no means a 'technical' or 'scientific' undertaking. Scientific data and technical assessment are necessary at the initial stage in order to determine whether a particular item has a dual character at all. Nevertheless, the decision to authorize the transfer of particular products involves a choice among conflicting normative perspectives.[124] As explored in Section 10.3 of this chapter, the dichotomy of civilian versus military purposes is merely a starting point for determining the permissibility of cross-border transfer. The export of dual-use items is informed by the peacefulness of purposes, the identity of end users, the sensitivity of destinations, and the need for international cooperation.

Every decision to grant a licence entails a normative choice or weighting among these multiple levels of duality and dichotomy, which are rooted in wider international legal discourse. Among the multiple levels of duality and dichotomy outlined in Section 10.3 of this chapter, the most fundamental duality pertains between development and security. On the one hand, the export of materials and products is foundational for a market economy, technological innovation, and economic and social development. Consequently, states, especially industrial countries, ought to allow cross-border transfer of dual-use items as much as possible. By restricting

[122] Fuhrmann, 'Exporting Mass Destruction?', 636–7.
[123] Ibid.
[124] Anthony, 'The Evolution of Dual-Use Technology Controls', 43–4.

the transfer of dual-use goods and technologies, both the exporting and importing states necessarily limit the social benefit of technological innovation. In the long run, export control jeopardizes a country's agricultural and industrial development, which is particularly problematic for developing countries. On the other hand, however, security concerns have led many states to make an international commitment to the prevention of the proliferation and use of weapons of mass destruction. This can be achieved only if states refrain from the transfer of dual-use materials as much as possible. In particular, in order to prevent terrorists from developing weapons of mass destruction, greater caution must be exercised when allowing the international transfer of dual-use items. All decisions to grant export licences constitute an act of striking a balance between these two normative demands.