

III. The multilateral export control regimes

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The four main multilateral export control regimes—the Australia Group (AG), the Missile Technology Control Regime (MTCR), the Nuclear Suppliers Group (NSG) and the Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-use Goods and Technologies (Wassenaar Arrangement, WA)—are informal groups of states which coordinate trade controls on goods and technologies that have uses in connection with chemical, biological, nuclear and conventional weapons (table 14.3).¹ The four regimes take all decisions by consensus and are politically rather than legally binding. Their participating states implement the controls prescribed by the regimes through national laws. The regimes also have an important norm-setting function beyond their membership.² In particular, many non-participating states have voluntarily decided to adhere to regime guidelines, adopt regime control lists and follow regime-issued guidance. The regimes also serve an important information-exchange function. The participating states share information on export licence denials and licences granted, and provide a framework in which policy, licensing, enforcement, technical and intelligence officers can meet and discuss implementation and proliferation challenges.

None of the four regimes admitted any new participating states (or partners) during 2019, despite a number of pending applications in several regimes. This reflects the inherent difficulty of balancing competing aims: universalizing the export control standards, maintaining functionality and confidentiality, and ensuring that decision-making procedures remain manageable. Many of the long-participating states have thought to achieve this balance by limiting admissions of additional states, which in all cases must be approved by consensus. However, there have also been cases in which participating states have blocked applications for membership due to political disputes that lie beyond the scope of the regime's objectives.³

As in previous years, common challenges faced by the regimes included keeping pace with technical developments, maintaining effective operations, and identifying and combating illicit procurement efforts. Geopolitical tensions continued to adversely affect the work of the regimes, particularly

¹ For brief descriptions and lists of the participating states in each of these regimes see annex B, section III, in this volume.

² Bauer, S., 'Main developments and discussions in the export control regimes', Literature Review for the Policy and Operations Evaluations Department of the Dutch Ministry of Foreign Affairs: Final Report (SIPRI: Stockholm, Aug. 2017), p. 62.

³ Bauer, S. and Maletta, G., 'Dual-use and arms trade controls', *SIPRI Yearbook 2017*, pp. 603–604; and Stewart, I. J., 'Export controls at the crossroads', *Bulletin of the Atomic Scientists*, Analysis, 15 Oct. 2015.

Table 14.3. The four multilateral export control regimes

Region (year established)	Scope	No. of participants ^a	2019 plenary chair	2019 plenary
Australia Group (1985)	Equipment, materials, technology and software that could contribute to chemical and biological weapons activities	43	Australia	3–7 June, Paris, France
Missile Technology Control Regime (1987)	Unmanned aerial vehicles capable of delivering weapons of mass destruction	35	New Zealand	7–11 Oct., Auckland, New Zealand
Nuclear Suppliers Group (1974)	Nuclear and nuclear related materials, software and technology	48 ^b	Kazakhstan	17–21 June, Nur-Sultan, Kazakhstan
Wassenaar Arrangement (1996)	Conventional arms and dual-use items and technologies	42	Greece	4–5 Dec., Vienna, Austria

^a Participant numbers are as of 31 December 2019.

^b In addition, the European Union and the chair of the Zangger Committee are permanent observers of the Nuclear Suppliers Group.

Sources: Australia Group; Missile Technology Control Regime; Nuclear Suppliers Group; and Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-use Goods and Technologies.

activities of a politically sensitive nature, such as the sharing of intelligence-based information on procurement efforts. In contrast, progress continued on the more technical aspects of the regimes' work, such as control list amendments. During the last several years, some of the regimes engaged more substantially with each other on specific overlaps in control lists and potential overlaps in coverage of emerging technologies.⁴ Engagement in these more formalized technical dialogue meetings has demonstrated a number of challenges, including resistance from certain members that have sought to maintain the principle that regime matters cannot be discussed with non-members. However, many participating states have also appreciated such engagement as a valuable tool to address rapid technological developments with cross-regime relevance.⁵ The MTCR—by means of its Technical Experts Meeting—was the first and only regime to develop a more structured process for arranging inter-regime informal meetings of experts.⁶

⁴ Brockmann, K., *Challenges to Multilateral Export Controls: The Case for Inter-Regime Dialogue and Coordination* (SIPRI: Stockholm, Dec. 2019).

⁵ Brockmann (note 4), pp. 22–23.

⁶ National regime delegate, Correspondence with the author, 25 Sep. 2019.

The Australia Group

The AG seeks to ‘minimise the risk’ of participating states contributing to the proliferation of chemical and biological weapons (CBW) by coordinating and harmonizing national export controls.⁷ Australia chairs the AG on a permanent basis. The AG was established in 1985 in response to the findings of a United Nations investigation into the use of chemical weapons in the 1980–88 Iran–Iraq War, which revealed extensive procurement by Iraq of precursor chemicals and materials from several Western states.⁸ The AG has since expanded its coverage from chemical weapons and associated production equipment and technology, to include biological weapons and equipment, materials and technology relevant to their development, production and use.⁹ The AG’s control lists defining these items are continuously updated through consensus decisions of the participating states. Since its creation the number of participants in the AG has grown from 18 to 43, including the European Union. No new participating states were admitted to the AG in 2019, with several applications still pending. The AG participants continued to encourage voluntary declarations of adherence by as many states as possible.¹⁰ The AG affords adherents increased access to information and support from AG participants to assist them in implementing the AG guidelines and control lists. Despite this offer, Kazakhstan remains the only officially declared adherent to have submitted to the AG chair a notification of political commitment to adherence to the guidelines and control lists of the AG.¹¹

In 2019, there were noteworthy developments in three key functional areas of the AG’s work: responding to chemical weapons proliferation and use cases; assessing and addressing technological developments; and conducting AG outreach to non-members and expert communities.

During the AG plenary in June 2019 in Paris, the participating states shared their concerns about efforts to ‘discredit’ the investigative work of the Organisation for the Prohibition of Chemical Weapons (OPCW) and expressed their support for the OPCW’s director-general, Technical Secretariat and the Investigation and Identification Team (IIT).¹² The AG

⁷ Australia Group, ‘The Australia Group: An introduction’, [n.d.]; and Australia Group, ‘Objectives of the Group’, [n.d.].

⁸ Australia Group, ‘The origins of the Australia Group’, [n.d.].

⁹ Australia Group, ‘The origins of the Australia Group’ (note 8).

¹⁰ Australia Group, ‘Statement by the chair of the 2019 Australia Group plenary’, 15 July 2019.

¹¹ Australia Group, ‘Australia Group adherents’, [n.d.].

¹² Australia Group, ‘Statement by the chair of the 2019 Australia Group plenary’ (note 10).

participants called on all states to fulfil their obligations under the 1992 Chemical Weapons Convention (CWC).¹³

The AG continued its technical discussions during the plenary. As in 2018, the AG had detailed discussions on the potential addition of novichoks precursors to its control lists.¹⁴ While the AG did not adopt list changes in this regard by the end of 2019, the OPCW for the first time amended Schedule 1 of the Annex on Chemicals to the CWC by adding agents of the novichok family in November 2019.¹⁵ The AG is not bound by the CWC schedules of chemicals, but the participants regard the work of the AG as ‘an effective means of implementing . . . key obligations in the CWC’.¹⁶ The AG participants identified the discussion of the potential listing of novichoks precursors as a priority for the coming year and welcomed the Slovak Republic’s offer to host an intersessional meeting in early 2020 that would address the possible listing of novichoks precursors and ‘more effective implementation of catch-all controls’.¹⁷

Participating states also shared approaches regarding intangible technology transfers, proliferation financing, procurement, trans-shipment and broader proliferation networks. Noting the rapid pace of new technological and scientific developments as well as the value of outreach to industry and academia, the AG Secretariat invited several guest speakers to address the plenary on relevant proliferation and technology development topics.¹⁸

During 2019, the AG further strengthened its outreach efforts to non-members and engagement with non-governmental experts. Following the dialogue meetings with Latin American states in 2017 and with African states in 2018, the AG organized a regional dialogue meeting for Middle Eastern states in Malta in March 2019.¹⁹ The AG participants agreed to increase follow-up with dialogue participants from previous meetings and reiterated the call for states to adopt the AG’s guidelines and control lists and to use them as a model of international best practice.²⁰

¹³ For a summary and other details of the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction (Chemical Weapons Convention or CWC) see annex A, section I, in this volume.

¹⁴ Australia Group, ‘Statement by the chair of the 2019 Australia Group plenary’ (note 10).

¹⁵ On the addition of novichoks see chapter 12, section II, in this volume; see also Costanzi, S. and Koblentz, G. D., ‘Controlling novichoks after Salisbury: Revising the Chemical Weapons Convention schedules’, *Nonproliferation Review*, Viewpoint (online 30 Sep. 2019).

¹⁶ Australia Group, ‘Relationship with the Chemical Weapons Convention’, [n.d.].

¹⁷ Australia Group, ‘Statement by the chair of the 2019 Australia Group plenary’ (note 10).

¹⁸ Researchers from King’s College London and from SIPRI provided presentations on proliferation challenges associated with cloud laboratories and additive manufacturing, and on countering proliferation financing. Australia Group, ‘Statement by the chair of the 2019 Australia Group plenary’ (note 10); Brockmann, K., ‘Advances in 3D printing technology: Increasing biological weapon proliferation risks?’, SIPRI WritePeace Blog, 29 July 2019; Lentzos, F. and Invernizzi, C., ‘Laboratories in the cloud’, *Bulletin of the Atomic Scientists*, 2 July 2019.

¹⁹ Australia Group, ‘Statement by the chair of the 2019 Australia Group plenary’ (note 10); Australia Group, ‘Statement by the chair of the 2018 Australia Group plenary’, 8 June 2018.

²⁰ Australia Group, ‘Statement by the chair of the 2019 Australia Group plenary’ (note 10).

The Missile Technology Control Regime

The MTCR seeks to prevent the proliferation of missiles and other unmanned delivery systems capable of delivering chemical, biological or nuclear (CBN) weapons. The largest industrialized states—known as the Group of Seven (G7)—originally created the MTCR in 1987 to help prevent the proliferation of nuclear weapons by controlling the export of goods and technologies related to missiles capable of carrying nuclear weapons.²¹ The scope of controls subsequently expanded to include ballistic and cruise missiles and all unmanned aerial vehicles (UAVs) capable of delivering CBN weapons.²² The MTCR covers any such system ‘capable of delivering a payload of at least 500 kg to a range of at least 300 km’, or destined to be used to deliver CBN weapons.²³ Since its creation by the G7, the MTCR’s membership has grown from 7 to 35 states (the partners). No additional partners were admitted to the MTCR in 2019. Three states—Estonia, Kazakhstan and Latvia—have unilaterally declared their adherence to the guidelines and control lists of the MTCR.²⁴

In 2019, the MTCR resumed holding an annual plenary (no partner had volunteered to chair and host a plenary in 2018). New Zealand assumed the chair of the MTCR for the period 2019/20 and hosted the plenary in October 2019 in Auckland. Ambassador Dell Higgie of New Zealand is the first female chair of the MTCR.²⁵ In light of the absence of a chair for the previous period, the MTCR partners discussed a range of internal operational issues, including its system for appointing a chair. To prevent a repeat of the issue, three states have already volunteered to assume the chair several years into the future. Austria will assume the chair of the MTCR at the next plenary for the period 2020/21.²⁶ The partners also supported Russia’s intention to assume the chair in 2021/22 and approved Switzerland’s offer to assume the chair for the period 2022/23.²⁷

The MTCR Technical Experts Meeting (TEM), Information Exchange Meeting (IEM) and the Licencing and Enforcement Experts Meeting (LEEM) each met during the plenary week in Auckland. The TEM reviewed the MTCR control list and agreed on a small number of changes, including to the description of thrust vector control subsystems and to the accuracy

²¹ Missile Technology Control Regime, ‘Frequently asked questions (FAQs)’, [n.d.]. The G7 states are Canada, France, Germany, Italy, Japan, the United Kingdom and the United States.

²² Missile Technology Control Regime, ‘Frequently asked questions (FAQs)’ (note 21).

²³ Missile Technology Control Regime, ‘MTCR Guidelines and the Equipment, Software and Technology Annex’, [n.d.].

²⁴ Missile Technology Control Regime, ‘Partners’, [n.d.].

²⁵ Missile Technology Control Regime, ‘Report by the MTCR chair: Auckland plenary meeting Oct. 2019’, 1 Nov. 2019.

²⁶ Missile Technology Control Regime, ‘Public statement from the Plenary Meeting of the Missile Technology Control Regime, Auckland, 11 Oct. 2019’ (‘Public statement’), 18 Oct. 2019.

²⁷ Missile Technology Control Regime, ‘Public statement’ (note 26).

parameters used for missile guidance and navigation systems.²⁸ The IEM and LEEM discussed rapid technological developments and changes in proliferator procurement practices.²⁹ Discussions focused on ballistic missile developments and tests, proliferation trends and procurement activities, strategies of programmes for means of delivery for CBN weapons, intangible technology transfers, catch-all controls, transit and trans-shipment, outreach to industry and export control enforcement.³⁰ The IEM, LEEM and TEM also held a joint meeting in which the MTCR partners discussed the evolution of procurement strategies and challenges to the effective implementation of export controls.³¹

One of the main impacts of the failure to find a plenary chair for the period 2018/19 was the absence in 2019 of outreach visits to non-members, which are commonly undertaken by the chair, and of representation of the MTCR at international conferences and events. France continued acting as the point of contact (POC) of the MTCR and organized two reinforced point of contact (RPOC) meetings in Paris in 2019.³²

The Hague Code of Conduct against Ballistic Missile Proliferation

The Hague Code of Conduct against Ballistic Missile Proliferation (HCOC) complements the MTCR, having originated within the MTCR in 2002 and since developing into an independent politically binding transparency and confidence-building instrument concerning ballistic missile proliferation.³³ In contrast to the export control regimes, which admit participating states by consensus decision, any state can subscribe to the HCOC by submitting its subscription to the Austrian Ministry for Foreign Affairs, which serves as the Immediate Central Contact for the HCOC. Subscribing states commit to implementing a limited range of transparency and confidence-building measures. In particular, they agree to provide annual declarations about national ballistic missile and space launch programmes and policies, and to exchange pre-launch notifications (PLNs) on launches and test flights of their ballistic missiles and space launch vehicles.³⁴

The 18th annual regular meeting of the HCOC took place in Vienna on 3–4 June 2019, with delegations from 74 of the 140 subscribing states in

²⁸ Missile Technology Control Regime, 'Report by the chair of the Technical Experts Meeting: Update of MTCR Annex', 18 Oct. 2019; and Missile Technology Control Regime, 'Equipment, Software and Technology Annex', 18 Oct. 2019 (for the changes, see 'Changes from previous version: (Shown in track changes)').

²⁹ Missile Technology Control Regime, 'Report by the MTCR chair' (note 25).

³⁰ Missile Technology Control Regime, 'Public statement' (note 26).

³¹ Missile Technology Control Regime, 'Public statement' (note 26).

³² Missile Technology Control Regime, 'Public statement' (note 26).

³³ Hague Code of Conduct, 'What is HCOC?', Jan. 2019.

³⁴ Hague Code of Conduct, 'How to join HCOC', Nov. 2018.

attendance—a slight increase from the previous year’s attendance.³⁵ Togo subscribed to the HCOC shortly before the regular meeting, becoming its 140th subscribing state.³⁶ The subscribing states discussed a range of developments in missile proliferation, such as the then impending demise of the Intermediate-range Nuclear Forces (INF) Treaty, and developments in the missile activities of the Democratic People’s Republic of Korea (DPRK, North Korea).³⁷ Germany reported to the regular meeting that, according to its assessment, the implementation rate of PLNs increased to 73.1% in 2018 from 66.9% in 2017.³⁸ It further reported 74 launches—29 ballistic missile launches and 43 space launches—by non-subscribing states in 2018.³⁹ A German proposal to enter into an open-ended discussion among subscribing states to clarify the threshold for when to issue PLNs received mixed reactions and did not find consensus in the meeting. In addition to the regular meeting, an extraordinary ‘informal expert meeting’ on 24 January 2019 provided another opportunity to exchange views.⁴⁰

Norway assumed the chair for the period 2019/20, taking over from Sweden.⁴¹ The subscribing states agreed for Switzerland to assume the chair for the 2020/21 period. The incoming Norwegian chair outlined the main objectives for the chair as being universalization and further implementation of the HCOC, and expansion of the HCOC’s relationship with the UN and ‘other non-proliferation mechanisms’ such as the Treaty on the Non-Proliferation of Nuclear Weapons (Non-Proliferation Treaty, NPT) of 1968.⁴²

Several outreach activities took place during Sweden’s tenure as chair, including regional seminars in the Caribbean region in November 2018, in South Asia in January 2019 and in West Africa in February 2019.⁴³ The chair made bilateral efforts towards universalization of the HCOC with several non-subscribing states, including leading an expert mission to Malaysia to discuss benefits of becoming a subscribing state.⁴⁴

³⁵ Hague Code of Conduct, ‘18th regular meeting of the subscribing states to the Hague Code of Conduct against Ballistic Missile Proliferation’, Press release, June 2019, p. 1; and Hague Code of Conduct, ‘17th regular meeting of the subscribing states to the Hague Code of Conduct against Ballistic Missile Proliferation’, Press release, June 2018, p. 1.

³⁶ Hague Code of Conduct, ‘18th regular meeting of the subscribing states to the Hague Code of Conduct against Ballistic Missile Proliferation’ (note 35), p. 1.

³⁷ Hague Code of Conduct, Immediate Central Contact (ICC), ‘18th HCOC Annual Regular Meeting: Chairperson’s summary/plenary decisions’, HCOC(19)016, 4 June 2019, para. 25.

³⁸ Hague Code of Conduct, ICC (note 37), para. 25.

³⁹ Hague Code of Conduct, ICC (note 37), para. 25.

⁴⁰ Hague Code of Conduct, ICC (note 37), para. 25.

⁴¹ Norwegian Ministry of Foreign Affairs, ‘Norway assumes chairmanship of the Hague Code of Conduct against Ballistic Missile Proliferation’, Press release, 4 June 2019.

⁴² Hague Code of Conduct, ICC (note 37), para. 4.

⁴³ Hague Code of Conduct, ICC (note 37), para. 2.

⁴⁴ Hague Code of Conduct, ICC (note 37), para. 2.

The Nuclear Suppliers Group

The NSG aims to prevent the proliferation of nuclear weapons by controlling transfers of nuclear and nuclear-related material, equipment, software and technology. The NSG was established in 1974 following India's first nuclear test—the first explosion of a nuclear weapon since the establishment of the NPT by a state not recognized as a nuclear-weapon state under the treaty. The number of participating states in the NSG has increased from an initial 7 at its inception to 48.⁴⁵ In 2019 the NSG participating states continued discussions on states' applications to participate in the NSG but did not find consensus on admitting any additional states. On the issue of the potential participation in the NSG of non-members to the 1968 NPT, the participating states continued their discussions on technical, legal and political aspects.⁴⁶ This involved discussion of the implementation of the 2008 Statement on Civil Nuclear Cooperation with India. The wider debate on this issue has received particular attention ever since the 2016 NSG plenary, after India and Pakistan submitted membership applications in that year.⁴⁷ The NSG made no decision to admit or reject the applications of either state in 2019.

Kazakhstan assumed the chair of the NSG in 2019 and hosted the plenary in Nur-Sultan on 20–21 June. At the plenary, Germany took over as chair of the Consultative Group, while Sweden continued to chair the Technical Experts Group and the USA continued to chair the Information Exchange Meeting.⁴⁸ The 2019 plenary continued to discuss developments in relation to North Korean nuclear activities and participating states expressed their support for ongoing diplomatic processes.⁴⁹ They reconfirmed their commitment to 'full and comprehensive implementation' of the nuclear weapon-related UN Security Council resolutions on North Korea.⁵⁰ They also noted the continued obligations under UN Security Council Resolution 2231 of 2015 concerning the Iranian nuclear programme, and the Joint Comprehensive Plan of Action (JCPOA), which set up a dedicated 'procurement channel' for the transfer of items, materials, equipment, goods and technology required

⁴⁵ Nuclear Suppliers Group, 'Participants', [n.d.].

⁴⁶ Nuclear Suppliers Group, 'Public statement of the 2019 NSG plenary', Nur-Sultan, Kazakhstan, 21 June 2019.

⁴⁷ For details on the export control exceptions afforded to India by the USA and India's efforts to build diplomatic support for membership, see Maletta, G. et al., 'The export control regimes', *SIPRI Yearbook 2019*, pp. 528–29; Bauer, S. et al., 'The export control regimes', *SIPRI Yearbook 2018*, pp. 431–33; Bauer, S. and Maletta, G., 'The export control regimes', *SIPRI Yearbook 2017*, pp. 600–601.

⁴⁸ Nuclear Suppliers Group, 'Public statement of the 2019 NSG plenary' (note 46).

⁴⁹ Nuclear Suppliers Group, 'Public statement of the 2019 NSG plenary' (note 46); On North Korean nuclear activities see chapter 9, section 2, in this volume.

⁵⁰ Most recently, UN Security Council resolutions 2371, 5 Aug. 2017; 2375, 11 Sep 2017; and 2397, 22 Dec. 2017. No UN Security Council sanctions-related resolution on North Korea has been added since 2017. For a summary of UN Security Council sanctions resolutions in response to North Korea's nuclear and ballistic missile tests, see Kile, S. N., 'International non-proliferation sanctions against North Korea', *SIPRI Yearbook 2018*, pp. 386–88.

for Iran's JCPOA-compliant nuclear activities.⁵¹ Despite the US withdrawal from the JCPOA, the NSG continued to receive briefings on the procurement channel and requested further such briefings.⁵²

During the plenary, participating states agreed on several changes to the NSG control lists, as part of the regular review to keep the NSG control lists up to date with technological developments.⁵³ In 2019 the NSG chair conducted an outreach programme with several nuclear industry organizations and non-participating states. At one such outreach event in April 2019, representatives from nuclear industry discussed issues including 'technology and industry developments in the context of NSG Guidelines and control lists'.⁵⁴ The NSG also convened another meeting with representation from nuclear industry in the June 2019 plenary week in Nur-Sultan. With a view to the next NPT Review Conference taking place in 2020, the participating states agreed to conduct an exercise to reach out to interested states on the margins of the Review Conference, 'to enhance understanding of the NSG and its Guidelines'.⁵⁵

In 2019, the participating states continued to consider both positive opportunities created by technological developments and the proliferation challenges created by new technologies in a variety of forums, both internally and during Track 1.5 workshops and conferences. NSG chairs and participating states discussed proliferation challenges posed by a number of technological advances and so-called emerging technologies, including additive manufacturing, cloud computing and advanced reactor design. Informal discussions also took place within the NSG and in other forums on how certain technologies, such as blockchain and artificial intelligence, could be used to improve the effectiveness of export controls.⁵⁶

The Wassenaar Arrangement

The WA seeks to increase transparency and responsibility in the transfers of conventional weapons and dual-use goods and technologies and to prevent such transfers from contributing to 'destabilising accumulations' of such weapons and technologies—including transfers to terrorists—that would endanger international and regional security and stability.⁵⁷ The WA was established on the basis of the 'Initial Elements' in 1996, as the successor to the Cold War era Co-ordinating Committee for Multilateral Export Controls

⁵¹ UN Security Council Resolution 2231 (2015), 20 July 2015, annex A. For more on the JCPOA see chapter 9, section III in this volume.

⁵² Nuclear Suppliers Group, 'Public statement of the 2019 NSG plenary' (note 46), p. 2.

⁵³ Nuclear Suppliers Group, 'NSG Part 1 and Part 2 Control Lists updated'.

⁵⁴ Nuclear Suppliers Group, 'Public statement of the 2019 NSG plenary' (note 46), p. 3.

⁵⁵ Nuclear Suppliers Group, 'Public statement of the 2019 NSG plenary' (note 46), p. 1.

⁵⁶ The author participated in several of these meetings as a presenter and moderator.

⁵⁷ Wassenaar Arrangement, 'About us', Updated 9 Aug. 2019.

(COCOM).⁵⁸ The WA's membership has expanded from 33 founding states to 42 participating states. India was the last state to be admitted in 2017. No new members were admitted in 2019.⁵⁹

The WA held its annual plenary on 4–5 December 2019 in Vienna, Austria, chaired by Greece.⁶⁰ Croatia assumed the chair on 1 January 2020 while Ukraine assumed the chair of the General Working Group and Italy assumed the chair of the Licensing and Enforcement Officers Meeting.⁶¹ Latvia continues to chair the Experts Group in 2020.

The participating states adopted a set of new control list items to the WA control lists.⁶² These included two new sets of controls on certain types of cyber-surveillance technologies that are used by intelligence agencies and law-enforcement agencies to monitor, retain and analyse communications data. Specifically, controls were added on 'communications monitoring equipment', which covers certain types of 'monitoring centres' that are used to collect, store and analyse data from multiple sources.⁶³ Controls were also added on 'digital investigative tools/forensic systems', which cover certain types of tools used to retrieve and analyse data stored on networks, computers and mobile devices.⁶⁴ The additions mean that five types of cyber-surveillance technologies are included in the Wassenaar Arrangement's dual-use list.⁶⁵ Controls were also added on 'cyber-warfare software, . . . sub-orbital aerospace vehicles, technology for the production of substrates for high-end integrated circuits, hybrid machine tools, and lithography equipment and technology'.⁶⁶ The participating states also amended existing control list items to clarify controls on 'ballistic protection, optical sensors, ball bearings, and inorganic fibrous and filamentary materials'.⁶⁷ They also reduced controls on some list items, including controls on 'certain laminates and commercial components with embedded cryptography'.⁶⁸

⁵⁸ Wassenaar Arrangement, 'About us' (note 57).

⁵⁹ Griffiths, P., 'Updates from the Wassenaar Arrangement', SMi 14th Annual Conference, Defence Exports, 2019, Amsterdam, 25–26 Sep. 2019, p. 2.

⁶⁰ Wassenaar Arrangement, 'Statement issued by the plenary chair on 2019 outcomes of the Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Goods and Technologies', Vienna, 5 Dec. 2019, p. 1.

⁶¹ Wassenaar Arrangement (note 60), p. 2.

⁶² Wassenaar Arrangement (note 60), p. 1.

⁶³ Wassenaar Arrangement (note 60), p. 1; and 'Monitoring centres: Force multipliers from the surveillance industry', *Privacy International*, 29 Apr. 2014.

⁶⁴ Wassenaar Arrangement (note 60), p. 1; and Fruhlinger, J., 'What is digital forensics? And how to land a job in this hot field', *CSO*, 25 Jan. 2019.

⁶⁵ Controls on 'Mobile telecommunications interception equipment' were added in 2012 and controls on 'Internet protocol (IP) network surveillance systems' and 'Intrusion software' were added in 2013. For more information, see Bromley, M., *Export Controls, Human Security and Cyber-surveillance Technology: Examining the Proposed Changes to the EU Dual-use Regulation* (SIPRI: Stockholm, Dec. 2017).

⁶⁶ Wassenaar Arrangement (note 60), p. 1.

⁶⁷ Wassenaar Arrangement (note 60), p. 1.

⁶⁸ Wassenaar Arrangement (note 60), p. 1.

The so-called emerging technologies of security concern that the WA continues to consider include intrusion software, UAV jamming systems, additive manufacturing equipment and novel spacecraft.⁶⁹ The participating states acknowledge and seek to address the challenge posed by ‘intertwined development of both civilian and military applications of these technologies’ and the ‘balancing act’ this requires.⁷⁰ Informal technical dialogues with the MTCR and the NSG will continue on the topic of additive manufacturing (3D printing) and other specific control list items ‘to avoid duplication’.⁷¹

As part of the 2019 WA plenary, the participating states also updated the guidance on ‘Best Practices for Exports of Small Arms and Light Weapons’, which was last updated in 2007. They also updated its guidance on ‘Best Practices for Disposal of Surplus/Demilitarised Military Equipment’ from 2000. The regular review cycle continued and identified other guidance for appropriate updating in 2020.⁷²

In 2019 the WA secretariat participated in a range of outreach activities, including international conferences, events and education initiatives. The secretariat participated in the Disarmament and International Security Affairs Fellowship programme in New Delhi, the 26th Asian Export Control Seminar in Tokyo, an OSCE-UNODA Scholarship for Peace and Security Training Programme, the 6th International Defense Technology Security Conference in Seoul, a World Trade Organization Capacity Building Workshop, the Fifth Conference of States Parties to the Arms Trade Treaty (ATT), and the UN Disarmament Fellows Programme.⁷³ In addition to the secretariat’s efforts, the Greek chair, the expert group chairs and several participating states participated in a technical outreach mission to Israel.⁷⁴

Conclusions

The four multilateral export control regimes continued to review their respective export control lists and guidelines in 2019, resulting in a number of control list amendments in each regime. Most significantly, the AG continued its consultations on the potential addition of novichoks precursors to its control lists and the WA added several types of cyber-surveillance technologies and a list item covering cyber-warfare software to its control

⁶⁹ Griffiths, P., ‘Multilateral export control regimes—the Wassenaar Arrangement’, Address to the 26th Asian Export Control Seminar, 26–28 Feb. 2019, Tokyo, p. 6.

⁷⁰ Griffiths (note 69), p. 6.

⁷¹ Griffiths (note 69), p. 9.

⁷² Griffiths (note 69), p. 9.

⁷³ Wassenaar Arrangement (note 60), p. 2. See e.g. Griffiths, P., ‘The Wassenaar Arrangement’s role for effective defence technology security and export control’, Defence Acquisition Programme Administration (DAPA) 6th International Defense Technology Security Conference, 20 June 2019, Seoul.

⁷⁴ Wassenaar Arrangement (note 60), p. 2.

lists. The regimes did not admit any new participating states (or partners) during 2019, despite a number of pending applications. Geopolitical tensions continued to affect the work of the regimes, particularly work of a politically sensitive nature, such as information sharing on procurement efforts. The NSG continued strengthening engagement with industry and consultation processes on emerging technologies. Several regimes engaged more substantially with each other on specific overlaps in control lists and potential overlaps in coverage of emerging technologies. Despite some concerns expressed by participating states, most of them appreciated such engagement as a valuable tool to address rapid technological developments with cross-regime relevance. The development of a more structured process for arranging inter-regime informal meetings of experts by the Technical Experts Meeting of the MTCR in 2019 was a significant first step towards improving inter-regime dialogue on technical issues.