III. The multilateral export control regimes

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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 the main multilateral export control regimes.[1] The four regimes are informal groups of participating states which agree on guidelines for the implementation of export controls on goods and technologies in the areas of chemical and biological weapons, missiles and other weapon of mass destruction (WMD) delivery systems, nuclear fuel cycle technologies and nuclear weapons, and conventional arms and dual-use goods and technologies (table 12.3). The participating states coordinate trade controls and related policies, share good practices on their implementation, and exchange information on proliferation cases, illicit acquisition attempts and licence denials, and in some cases licences granted.

One of the main functions of each regime is continually updating the regime's control lists and for that purpose discussing relevant technological developments. The regimes further create important forums for exchanges among national policy and licensing officials, technical experts, and enforcement and intelligence officers. Even though a regime's guidelines, control lists and good practice documents are agreed by consensus among the participating states, they are only politically rather than legally binding. The implementation of regime-prescribed trade controls and policies is up to the individual participating state through its national laws and national export control systems.

Since the Covid-19 pandemic largely subsided, in 2023 all multilateral export control regimes returned to their normal programmes of work and schedules of meetings. However, the Russia–Ukraine war continued to drive a deep divide between the Russian Federation and most other participating states—particularly Ukraine and its Western supporters. Researchers and former officials, primarily from the United States, continued raising questions about the need to overcome political blockages and the long-term viability of the regimes, especially those that include Russia as a member (i.e. the MTCR, the NSG and the WA), with some proposing the creation of a fifth regime.[2] However, there

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

[2] See e.g. Wolf, K., 'Advancing national security and foreign policy through sanctions, export controls, and other economic tools', Testimony before the US Senate Committee on Banking, Housing, and Urban Affairs, 28 Feb. 2023, pp. 13, 17; Casey, C. A., 'Export controls—international coordination: Issues for Congress', Congressional Research Service report no. R47684, 8 Sep. 2023; and Shivakumar, S., Wessner, C. and Tomoshige, H., 'Toward a new multilateral export control regime', Center for Strategic & International Studies (CSIS), 10 Jan. 2023.

Table 12.3. The four multilateral export control regimes

Regime (year established)	Scope	No. of participants[a]	2023 plenary	
			Chair	Location, date
Australia Group (1985)	Equipment, materials, technology and software that could contribute to chemical and biological weapons activities	43	Australia	Paris, 5–9 June
Missile Technology Control Regime (1987)	Uncrewed aerial vehicles capable of delivering weapons of mass destruction	35	Brazil	Rio de Janeiro, 30 Oct.–3 Nov.
Nuclear Suppliers Group (1974)	Nuclear and nuclear-related materials, software and technology	48[b]	Argentina[c]	Buenos Aires, 10–14 July
Wassenaar Arrangement (1996)	Conventional arms and dual-use items and technologies	42	India	Vienna, 30 Nov. 2023

[a] Participant numbers are as of 31 Dec. 2023.

[b] In addition, the European Union and the chair of the Zangger Committee are permanent observers of the Nuclear Suppliers Group (NSG).

[c] The NSG changed its procedures so that participating states host a plenary at the end of their period as chair. At the 2023 NSG plenary, Argentina handed the chair over to Brazil for the 2023–24 period.

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. See also annex B, section III, in this volume.

was little in the way of public acknowledgement or discussion of these issues, or how they could be addressed on the part of regime members. China—followed by several developing states—continued issuing thinly veiled criticism against the regimes at the United Nations First Committee, alleging that the regimes impose undue restrictions on exports to developing states 'for peaceful purposes' and calling for an alternative approach to multilateral trade controls.[3] Despite these trying circumstances, all regimes continued substantive work in their subsidiary bodies and adopted at least limited updates to their control lists.

The Australia Group

The AG provides a forum for participating states to coordinate and harmonize export controls on chemical and biological weapons and related dual-use goods and technologies. The AG participating states seek to reduce the risk

[3] See Bromley, M., Mustafić, S. and Yuan, J., 'China takes aim at the export control regimes: Targeted critique or misguided attack?', *WorldECR*, no. 125 (Dec. 2023/Jan. 2024).

of contributing to the proliferation of chemical and biological weapons.[4] In early 1984 a UN investigation found that chemical weapons used in the 1980–88 Iran–Iraq War had been produced using precursor chemicals, equipment and materials procured from several Western states.[5] This created significant momentum for strengthening trade control measures for the non-proliferation of chemical weapons, and an Australian initiative in 1985 led to the creation of the AG. While the initial focus of the AG was on chemical weapons and precursors, its coverage has since significantly expanded to include biological weapons and a wider range of equipment, materials and technology relevant to the development, production and use of chemical and biological weapons.[6] The AG is permanently chaired by Australia, which also runs an informal secretariat situated within the Australian Department of Foreign Affairs and Trade.

The AG has 43 participants including the European Union (EU), which is a member with full voting rights. No new participants were admitted to the AG during 2023 and the last state to join was India in 2018.[7] The AG continued encouraging non-participants to unilaterally adopt the AG guidelines and common control lists, and to notify the chair of their 'political commitment to adhere' for them to be officially recognized as AG adherents. Although Kazakhstan is the only state to have become an adherent since this procedure was introduced, this is not necessarily representative of the extent of global adoption of AG standards (or those of other multilateral export control regimes).[8] The EU, the USA and other participating states continued to promote the strengthening of national export control systems of non-participants, which usually involves the adoption of a version of the AG common control list (e.g. the EU common control list), and helps states meet their obligations under UN Security Council Resolution 1540 to have an adequate export control system.[9]

As part of its annual programme of work, the AG held an in-person intersessional meeting in Rome on 22–24 February 2023, hosted by Italy. The intersessional included an outreach session attended by several non-participating states.[10] On 5–9 June 2023 the AG held its regular annual plenary meeting in Paris, hosted by France and chaired by Australia. During the plenary the participants discussed international developments in the area of chemical

[4] Australia Group, 'Introduction', [n.d.]; and Australia Group, 'Objectives of the Group', [n.d.].
[5] Australia Group, 'History', [n.d.].
[6] Australia Group, 'History' (note 5).
[7] Australia Group, 'Australia Group participants', [n.d.].
[8] Australia Group, 'Australia Group adherents', [n.d.]; and Michel, Q. and Paile, S., 'Countries having adopted the EU dual-use list as national control list', European Studies Unit, University of Liège, Working document, [n.d.].
[9] UN Security Council Resolution 1540, 28 Apr. 2004, para. 3.
[10] Australia Group, 'Statement by the Chair of the 2023 Australia Group plenary', 9 June 2023, para. 21.

and biological weapons proliferation and use, and the role of the AG in contributing to international arms control and non-proliferation efforts, in particular the Biological Weapons Convention and the Chemical Weapons Convention.[11] At the plenary, the AG licensing and enforcement experts meeting (LEEM) exchanged experiences and cases, including enforcement challenges and lessons learned, with a particular focus on intangible transfers of technology (ITT).[12] Technical discussions in the AG continued and the participants agreed to add dipropylamine to the list of chemical weapons precursors and a 'minimum detection limit' to the control on toxic gas monitors and monitoring systems on the list of dual-use chemical manufacturing facilities and equipment and related technology and software.

During 2023 the AG chair and secretariat conducted outreach missions, including at the Asian Export Control Seminar in February 2023 and the US-organized Catch-All Controls Seminar in April 2023.[13] The AG also continued its practice of inviting experts to be guest speakers at the plenary. In 2023 the expert speakers included Interpol presenting on 'tracking of non-state actor biological capabilities' and SIPRI on 'responsible research and insights from academic teaching on raising awareness of security concerns'.[14]

The Missile Technology Control Regime

The MTCR seeks to prevent the proliferation of missiles and other uncrewed delivery systems capable of delivering chemical, biological or nuclear (CBN) weapons. In 1987 the Group of Seven (G7) largest industrialized states created the MTCR with the objective of contributing to the prevention of proliferation of nuclear weapons, by creating harmonized export controls on goods and technologies related to missiles capable of carrying such weapons.[15] Since then, the scope of the MTCR has expanded to include ballistic and cruise missiles, and all uncrewed aerial vehicles (UAVs) capable of delivering CBN weapons.[16] The MTCR participating states—referred to as 'the partners'—agreed to be particularly restrictive and exercise an 'unconditional strong

[11] Australia Group, 'Statement by the Chair of the 2023 Australia Group plenary' (note 10), paras 3–16. For a summary and other details of the Chemical Weapons Convention and the Biological Weapons Convention see annex A, section I, in this volume; for developments in 2023 see chapter 9, sections I and III, respectively.

[12] Australia Group, 'Statement by the Chair of the 2023 Australia Group plenary' (note 10), para. 17.

[13] Japanese Ministry of Foreign Affairs, 'The 29th Asian Export Control Seminar', 1 Mar. 2023; United Arab Emirates (UAE) Executive Office for Control and Non-proliferation, '"Regional Conference on Dual-Use Trade Control" discusses ways to achieve compliance in export controls and enhance cooperation in combating the proliferation of weapons of mass destruction', 17 Nov. 2022; and Australia Group, 'Statement by the Chair of the 2023 Australia Group plenary' (note 10), para. 21.

[14] Australia Group, 'Statement by the Chair of the 2023 Australia Group plenary' (note 10), para. 23.

[15] 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.

[16] Missile Technology Control Regime, 'Frequently asked questions (FAQs)' (note 15).

presumption of denial', and to only diverge from this on 'rare occasions' for transfers of items included in Category I of the MTCR control list.[17] Category I covers missiles and UAVs '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. Transfers of Category II items are subject to case-by-case licensing decisions by partner governments and to a strong presumption of denial if they are 'intended for use in WMD delivery'.[18] Category II covers missiles and UAVs with a maximum range of at least 300 km, and a wide range of less-sensitive and dual-use goods, materials and technologies for missile, UAV and space-launch applications.[19]

Since its creation, the membership of the MTCR has grown from 7 to 35 participating states, with India the last state to be admitted in 2016. Several applications continue to be pending.[20] In 2014 the MTCR introduced a formalized system for non-partner states to be recognized as 'adherents' to the MTCR guidelines and control lists. The MTCR encourages all states to submit declarations of adherence to the MTCR point of contact, run by France. The regime also provides incentives for becoming an adherent, including invitations to technical outreach meetings, briefings on control list changes, meetings with the MTCR chair and access to some presentations from the MTCR LEEM.[21] During 2023 Cyprus submitted its declaration of adherence, joining Estonia, Kazakhstan and Latvia as the fourth official MTCR adherent.[22]

The MTCR held an intersessional reinforced point of contact meeting in Paris on 19–20 April, hosted by France. The MTCR invited SIPRI to present an outside perspective on adapting the MTCR for current and future challenges during a side-event co-organized with France, Germany and Switzerland. As the partners had agreed in late 2022, the MTCR chair was handed from Switzerland to Brazil, which assumed the chair for the 2023–24 period. The 2023 annual plenary meeting of the MTCR took place from 30 October to 3 November in Rio de Janeiro, hosted by Brazil. The partners failed to agree on a public statement from the plenary for the second consecutive year and there appears to have been no agreement on the chair for the 2024–25 period. Brazil announced that it would 'strive to promote a balance between controlling sensitive missile technologies and the right to exchange, access, and develop these technologies for legitimate purposes',

[17] Missile Technology Control Regime, 'Frequently asked questions (FAQs)' (note 15).
[18] Missile Technology Control Regime, 'Frequently asked questions (FAQs)' (note 15).
[19] Missile Technology Control Regime, 'MTCR guidelines and the equipment, software and technology annex', [n.d.].
[20] Missile Technology Control Regime, 'Partners', [n.d.].
[21] Missile Technology Control Regime, 'Adherence policy', [n.d.].
[22] Missile Technology Control Regime, 'Partners' (note 20).

specifically in the context of space programmes.[23] This notably picks up both the theme of NewSpace, which had also been a focus at the previous plenary, and the renewed criticism from developing states that the MTCR and other multilateral export control regimes prevent their access to advanced technologies.[24]

During its chairship, Switzerland conducted visits to Singapore on 22 May and Malaysia on 23 May 2023—respectively the fifth and fourth official MTCR outreach missions to these two states.[25] In addition, the MTCR held a technical outreach meeting in Oslo on 16 June 2023 with 11 non-partners, hosted by Norway.[26] This meeting also provided an opportunity for inter-regime exchanges with the NSG and the Wassenaar Arrangement and engagement with the UN Security Council Resolution 1540 Committee. Outreach efforts also included presentations from the MTCR chair and expert group (co-)chairs at the 29th Asian Export Control Seminar.[27] The MTCR chair provided briefings to the EU and the North Atlantic Treaty Organization, as well as to the annual regular meeting of the Hague Code of Conduct.[28]

The Nuclear Suppliers Group

The NSG seeks to contribute to the non-proliferation of nuclear weapons by implementing guidelines for export controls on transfers of nuclear and nuclear-related material, equipment, software and technology. It was established as the 'London Club' of seven major nuclear supplier states in reaction to India's first nuclear test in 1974, the first explosion of a nuclear weapon by a state not recognized as a nuclear-weapon state by the Treaty on the Non-Proliferation of Nuclear Weapons (Non-Proliferation Treaty, NPT).[29] Initially, the NSG participants created a set of guidelines incorporating a list of items triggering International Atomic Energy Agency safeguards with a slightly different scope than the list previously created by the Zangger Committee.[30] Between 1978 and 1991, the NSG was largely inactive. However,

[23] Brazilian Ministry of Foreign Affairs, 'Plenary meeting of the Missile Technology Control Regime (MTCR)—Rio de Janeiro, October 30–November 3, 2023', Press Release no. 509, 1 Nov. 2023.

[24] Brockmann, K., 'The multilateral export control regimes', *SIPRI Yearbook 2023*, p. 545.

[25] Missile Technology Control Regime, 'Report by the MTCR Chair: Fifth outreach visit to Singapore', MTCR News, 1 Sep. 2023; and Missile Technology Control Regime, 'Report by the MTCR Chair: Fourth outreach visit to Malaysia', MTCR News, 1 Sep. 2023.

[26] MTCR Chair, Twitter, 20 June 2023, <https://twitter.com/MTCR_Chair/status/1671084956414619649>; and United Nations 1540 Committee, 'Event: Missile Technology Control Regime (MTCR) Technical Outreach Meeting (TOM)', Information note, [n.d.].

[27] MTCR Chair, Twitter, 16 Nov. 2022, <https://twitter.com/MTCR_Chair/status/1592913226395963393> and 16 Feb. 2023, <https://twitter.com/MTCR_Chair/status/1626144742558822412>; and UAE Executive Office for Control and Non-proliferation (note 13).

[28] MTCR Chair, Twitter, 17 Mar. 2023, <https://twitter.com/MTCR_Chair/status/1636746027213500417> and 16 June 2023, <https://twitter.com/MTCR_Chair/status/1669710128008839168>.

[29] Nuclear Suppliers Group, 'About the NSG', [n.d.].

[30] Zangger Committee, 'History', [n.d.].

following recommendations adopted at the 1990 NPT Review Conference, the 1992 NSG plenary established guidelines for transfers of nuclear-related dual-use equipment, material and technology, an information exchange, an exchange of denial notifications, and a requirement for a full-scale safeguards agreement for trigger list item recipients.[31] As of 31 December 2023 the NSG had 48 participating governments; the European Commission and the chair of the Zangger Committee have permanent observer status. No state has joined the group since 2013.[32] India continued to lobby for participating governments to approve its application and received public support from the USA in a joint statement from President Joe Biden and Prime Minister Narendra Modi in June 2023.[33]

In 2023 the NSG held its annual plenary week in Buenos Aires on 10–14 July. At the plenary the Argentinian foreign minister stressed the role of nuclear development in industrialization and the role of the NSG in guaranteeing the use of nuclear energy for peaceful purposes.[34] The incoming Brazilian chair made a similar argument when outlining her priorities for the chairship period.[35] The participating governments failed, as they had in 2022, to find consensus on a public statement, and the incoming chair was confined to providing information on the 'Chair's corner' of the NSG website. To this end, the Brazilian chair reported her intention to focus on 'further NSG engagement with industry', in particular small and medium enterprises in the nuclear sector.[36] The NSG presented on its recent activities to both participating governments and non-participants from Asia at the Asian Export Control Seminar.[37]

The NSG participating governments agreed several small changes to the NSG guidelines, part 1 (trigger list) and part 2 (dual-use list). The controls on deuterium and heavy water and on nuclear-grade graphite were clarified by an export note limiting controls on them if they are for reactor use. Controls on three new processes used for the production of heavy water or for heavy-water upgrader systems and for columns or towers packed with hydrogen isotope exchange catalyst were added to the trigger list.[38] Changes

[31] International Atomic Energy Agency, 'Communication received from the Permanent Mission of the Argentine Republic to the International Atomic Energy Agency on behalf of the participating governments of the Nuclear Suppliers Group', Information Circular 539 (revised), INFCIRC/539/Rev.8, 28 July 2022.

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

[33] White House, 'Joint statement from the United States and India', Briefing Room Statement, 22 June 2023.

[34] Argentinian Ministry of Economy, 'Argentina recibe al plenario del Grupo de Proveedores Nucleares que conforman 48 países' [Argentina welcomes the plenary of the Nuclear Suppliers Group, which consists of 48 countries], 13 July 2023.

[35] Nuclear Suppliers Group, 'Chair's corner', [n.d.].

[36] Nuclear Suppliers Group, 'Chair's corner' (note 35).

[37] Japanese Ministry of Foreign Affairs (note 13).

[38] Nuclear Suppliers Group, 'Explanation and comparison table of changes—Guidelines for nuclear transfers and annexes A, B and C of the guidelines for nuclear transfers (NSG Part 1 Guidelines)', Revision 14, July 2023.

to the NSG dual-use list reduced the scope of controls on platinized catalysts to those used in recovery of tritium and for the production or upgrading of heavy water, and adjusted the covered diameter of controlled composite structures in the form of tubes to align with those of controlled centrifuges. A change to controls on hydrogen/cryogenic distillation columns was made to account for new heavy-water production techniques.[39]

The Wassenaar Arrangement

The Wassenaar Arrangement is the main multilateral export control regime concerned with conventional weapons and a wide range of dual-use goods and technologies. It was created in 1996 as the successor to the cold war-era Coordinating Committee for Multilateral Export Controls (COCOM) through which Western states imposed restrictions on transfers of military equipment and dual-use items to the Eastern bloc. The creation of the WA marked a move away from the COCOM's approach of using export controls to target a specific group of adversarial states. Rather, the WA participating states aim to prevent transfers that contribute to 'destabilising accumulations' of conventional weapons and dual-use goods and technologies that could threaten international and regional security and stability. The scope of the WA was later expanded to preventing transfers to terrorists. Through the WA the participating states also aim to promote 'transparency and greater responsibility' in the transfers of conventional arms and dual-use goods and technologies. As of the end of 2023, 42 states were participating in the WA, which has not expanded since the admission of India in 2017.[40]

The 2023 WA plenary meeting took place on 30 November in Vienna and the WA chair subsequently issued a statement on its outcomes.[41] Updates to the dual-use goods and technologies and munitions list included new controls added on equipment used in the production of certain electronic components; and updates were made to existing controls on high-performance electronic equipment.[42] The changes also included clarifications on control list entries covering sonar, optical sensors, certain rocket propulsion technologies, encryption/decryption and technologies enabling the lawful interception of communications.[43] The WA also made minor updates to two of its public guidance materials: the 'Elements for controlling transportation of conventional arms between third countries' and the 'List of advisory ques-

[39] Nuclear Suppliers Group, 'Explanation and comparison table of changes—Guidelines for nuclear transfers and the annex of the guidelines for nuclear transfers (INFCIRC/254/Part 2)', Revision 12, July 2023.

[40] Wassenaar Arrangement, 'About us', 1 Dec. 2023.

[41] Wassenaar Arrangement, Statement issued by the plenary chair on 2023 outcomes, Vienna, 30 Nov. 2023.

[42] Wassenaar Arrangement, Statement issued by the plenary chair on 2023 outcomes (note 41), p. 1.

[43] Wassenaar Arrangement, Statement issued by the plenary chair on 2023 outcomes (note 41), p. 2.

tions for industry'.[44] These updates and a report of an expert group meeting having taken place in October 2023 suggest that substantive work, including technical exchanges, is still ongoing within the regime.[45]

However, no agreement could be reached on controls related to key emerging technologies, which the WA has been discussing for several years.[46] Although the fast pace of technological change makes it difficult to agree on control list updates before they already become partly outdated, geopolitical divisions are also playing a role in the lack of progress in adopting new control list items. Russia reportedly blocked US proposals for controls on certain quantum technologies.[47] The Netherlands indicated that it would propose new controls on manufacturing equipment for advanced semiconductors and associated software and technology, based on national controls introduced in March 2023 (see section IV). However, the Dutch minister for foreign trade and development cooperation noted that consensus in the WA was unlikely and that such a proposal might be blocked by Russia.[48] Linked to this, broader concerns about the lack of effectiveness of the WA, and calls from mainly US officials and commentators to replace or supplement it with a new regime, continued.[49] However, these criticisms tended to focus on geopolitical competition and national security issues, rather than on the international stability objective of the WA.

For the first time since 2018, the WA chair organised an Enhanced Technical Briefing. These briefings, usually held in Vienna, serve to present WA control list updates to non-participating states and to exchange information on practical implementation matters relating to licensing and enforcement.[50] Nearly 20 outreach partners, including some major arms exporters and importers, took part in the briefing.[51] As in previous years, the WA chair and

[44] Wassenaar Arrangement, 'Elements for controlling transportation of conventional arms between third countries', 1 Dec. 2023; and Wassenaar Arrangement, 'List of advisory questions for industry', 1 Dec. 2023.

[45] Permanent Mission of the Republic of Türkiye to the United Nations in Vienna, X, 5 Oct. 2023, <https://twitter.com/TR_UNVienna/status/1709835497462231351>.

[46] Brockmann (note 24), p. 548.

[47] See Center for Security and Emerging Technology (CSET), 'Fireside chat with Under Secretary Alan Estevez: Full event', YouTube, 1:04:20–1:04:54.

[48] Dutch Minister for Foreign Trade and Development Cooperation, 'Aankondiging aankomende exportcontrolemaatregelen voor geavanceerde productieapparatuur voor halfgeleiders' [Announcement of upcoming export control measures for advanced semiconductor manufacturing equipment], Media release, 8 Mar. 202.

[49] See e.g. Benson, E. and Mouradian, C., *Establishing a New Multilateral Export Control Regime*, CSIS Project on Trade and Technology report (CSIS: Washington, DC, Nov. 2023; US Congress Select Committee on the Strategic Competition between the United States and the Chinese Communist Party, 'Reset, prevent, build: A strategy to win America's economic competition with the Chinese Communist Party', 12 Dec. 2023; and CSET (note 47), 1:05:35–1:06:55.

[50] Wassenaar Arrangement, 'Outreach', Updated 1 Dec. 2023.

[51] Wassenaar Arrangement, Head of Secretariat, General Statement to the Ninth Conference of States Parties to the Arms Trade Treaty, Geneva, 21–25 Aug. 2023.

secretariat briefed the UN disarmament fellows during their visit to Vienna.[52] The WA delivered statements at the Ninth Conference of States Parties to the Arms Trade Treaty and the 29th Asian Export Control Seminar.[53] Finally, the WA contributed to a publication of the World Trade Organization (WTO) on international export controls and took part in the launch event, held during the WTO Public Forum.[54]

On 1 January 2024 India handed over the plenary chair to Italy.[55] Austria assumed the general working group chair, and Canada the licensing and enforcement officers meeting chair. Mexico continued to serve as chair of the experts group.

Conclusions

The repercussions of the Russia–Ukraine war continued to have a significant impact on the work of the three multilateral export control regimes that Russia participates in, particularly at the political and policy level. Russia prevented consensus on key decisions, including agreement on next regime chairs and plenary statements, further disrupting the fragile political agreement in the regimes. All regimes nevertheless managed to make incremental updates to their control lists and continued substantial discussions of technical developments, stressing the importance of this aspect of the regimes' work.

Of the four regimes, only the AG does not include Russia. In the other three regimes, only a very small number of participating states appeared to be acceptable to Russia for assuming the chair role—and Brazil taking on the role of chair for both the MTCR and the NSG during significantly overlapping periods reflects this difficulty. While the regimes have had issues in the past with a lack of states volunteering to take on the chair's responsibilities and committing the required resources, this situation has been reversed, with states volunteering across the regimes but consensus being blocked by one or a small number of participating states. Despite Brazil stepping up to meet the challenge in the short term, the lack of agreement on the next chair in several regimes indicates even more difficulties ahead.

Argentina and Brazil specifically chose to highlight the role of the regimes in enabling secure trade in sensitive technologies and the need to balance non-proliferation and international security objectives with the potential

[52] Wassenaar Arrangement, 'Outreach' (note 50).

[53] Wassenaar Arrangement, Head of Secretariat (note 51); and Japanese Ministry of Foreign Affairs (note 13).

[54] Wassenaar Arrangement, 'Outreach' (note 50); and Wassenaar Arrangement Secretariat, 'Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Goods and Technologies', World Trade Organization (WTO), *International Export Regulations and Controls: Navigating the Global Framework beyond WTO Rules* (WTO: Geneva, 2023).

[55] Wassenaar Arrangement, Statement issued by the plenary chair on 2023 outcomes (note 41), p. 2.

impact on states' technological and industrial development. Demonstrating the awareness and commitment of participating states on these issues appears particularly important in light of the criticism of the legitimacy of the regimes from developing states and China. General criticism of the regimes' effectiveness also continued from different stakeholders and particularly US actors. The US government initiated a series of minilateral sanctions and trade control mechanisms (see section IV) to advance its policy objectives vis-à-vis China, outside of the regime framework. In the area of advanced chip-making equipment, for example, these mechanisms have tended to follow earlier US approaches in targeting China.

While expectations for the regimes to achieve significant change were low under the difficult geopolitical circumstances, which were far from conducive to agreement on non-proliferation and arms control, the regimes nevertheless continued their work, with no substantial alternative or prospect for a short-term demise in sight.