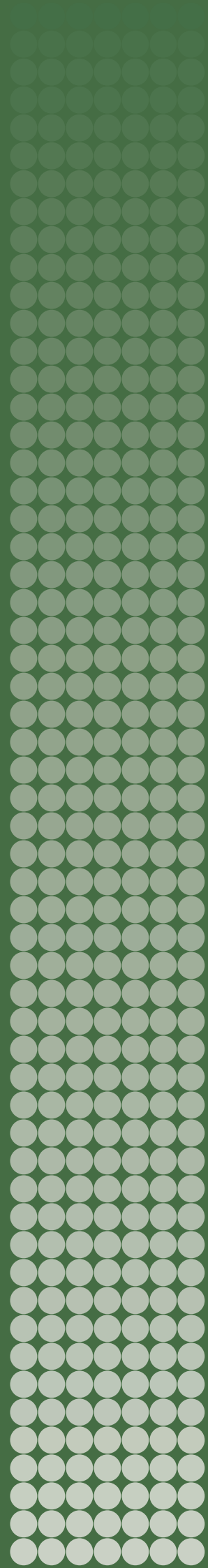


CHALLENGES TO MULTILATERAL EXPORT CONTROLS

The Case for Inter-regime Dialogue and Coordination

KOLJA BROCKMANN



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December 2019



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Kolja Brockmann,
December 2019

Abbreviations

AG	Australia Group
ATT	Arms Trade Treaty
BRICS	Brazil, Russia, India, China and South Africa
CBN	Chemical, biological and nuclear (weapons)
COCOM	Coordinating Committee on Multilateral Export Controls
EU	European Union
IAEA	International Atomic Energy Agency
MTCR	Missile Technology Control Regime
NPT	Nuclear Non-Proliferation Treaty
NSG	Nuclear Suppliers Group
TEM	Technical Experts Meeting
UPR	Unidirectional positioning repeatability
WA	Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-use Goods and Technologies

Executive summary

The multilateral export control regimes are informal groups of states that coordinate export controls and related strategic trade control instruments on proliferation-relevant goods and technologies and military items. The four main regimes—the Australia Group (on chemical and biological weapons), the Missile Technology Control Regime, the Nuclear Suppliers Group and the Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-use Goods and Technologies—play a key role in setting norms for supply-side non-proliferation policies and state behaviour. If appropriately designed, carefully targeted and effectively applied, export controls can reveal and frustrate proliferation efforts or increase their financial and diplomatic costs.

The regimes' key functions include maintaining and updating common control lists, exchanging information, developing and publishing guidance documents on export control implementation, and outreach to non-members. In addition, they provide a forum for licensing, enforcement and technical experts to discuss technological developments and particularly challenging export control issues. The memberships of all four regimes have expanded considerably and become more diverse since their establishment. However, membership expansion has not only been welcomed but has also been criticized for making it more difficult to reach consensus decisions.

The regimes are facing a growing number of common challenges. They are struggling to overcome structural challenges to fulfilling their functions, including resource limitations and the frequent duplication of work. The harmonization and effective implementation of export controls is also hampered by perceptions that their effects on the industries and economic competitiveness of participating states are disproportionate and unequal. Moreover, the speed of development of emerging technologies such as additive manufacturing, robotics and artificial intelligence (AI) is placing additional demand on the ability of the regimes to formulate and adopt controls in an effective, proportionate and timely manner. Many of these emerging technologies cut across the traditional boundaries of non-proliferation governance instruments, institutions and regimes but are still discussed separately in each regime. Indeed, there are already some overlaps of established technologies in the control lists of several regimes that need to be addressed. Export control implementation challenges with cross-regime relevance require harmonization of practices and the production of guidance materials. However when the regimes address them, each does so independently. This raises questions about the efficiency of the system of separate regimes and broader questions about their health and functioning.

Inter-regime dialogue and coordination efforts can help address these challenges and recently gained more salience. Relevant dialogue formats and coordination activities include coordination meetings between a state's delegations to the different regimes; bilateral meetings with other states' delegations or multilateral meetings in groups of like-minded states; topical track 1.5 workshops involving regime delegates, technical and policy experts, and representatives from research and industry; regional meetings and working groups on export controls; and dedicated inter-regime dialogue and coordination activities. However, geopolitics, the regimes' different memberships and specific adversarial relationships between states that are not members of all regimes affect their ability to work together. Thus, the level of official exchanges and engagement between the regimes is currently limited.

Considering the substantial investment of political capital, resources and time needed for inter-regime dialogue, as well as the current lack of certainty surrounding them, the regimes need to be selective in pursuing such efforts. The regimes

should pursue inter-regime dialogue and coordination efforts targeted at emerging technologies with cross-regime relevance, such as additive manufacturing, robotics and AI. Regime discussions in these areas are currently most in need of and most suitable for pursuing such efforts. The regimes should also explore ways to stimulate cross-regime learning and coordination on the provision of guidance materials on particularly challenging issues where harmonization would be particularly valuable. The avoidance of duplication and the streamlining of coordination processes could improve the quality of the regimes' functions while also helping to reduce costs and increasing inclusivity.

Setting up inter-regime dialogue and coordination activities should follow a clear formula that can be easily reproduced for inter-regime activities on different topics. The regime members should identify and task particularly well-placed chairs of the regime's subsidiary bodies or the secretariat with leading the preparation and set-up of dialogue meetings. They should identify and select topics that allow for a technical or operational discussion without encroaching on politically sensitive issues or key national interests. The parameters of the discussion and the scope of what is to be shared should be agreed by the members of the regimes involved prior to the dialogue to guide the discussion and keep it focused on specific outcomes. The regime members should set clear, realistic goals that are perceived as both beneficial and achievable by the regimes and the participating states. They should also formulate and agree on clear mandates for the dialogue participants and should coordinate and ensure their compatibility to enable progress towards the goals identified. The dialogue parties should consult beforehand and clarify their responses to expected difficulties and how discussions can be structured and conducted to be most beneficial.

In addition to regime-level meetings, the individual members of the regimes should continue actively engaging in bilateral and regional coordination among states with a particular interest. To foster technical discussions on technologies where regime interaction would still be too controversial or face certain limitations, regime members could increase the number of, and funding for, track 1.5 consultations. Such consultations should involve regime members and technical and policy experts from academia, research institutes, industry and think tanks.

1. Introduction

States maintain systems for controlling the trade in arms and dual-use goods and technologies (referred to as ‘export controls’) that are set up to further non-proliferation and international peace and security. The four contemporary multilateral export control regimes (‘the regimes’)—namely 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 supply-side non-proliferation instruments.¹ The regimes are informal groups of states that provide a forum in which to coordinate and harmonize export control policies, share information, issue guidance and maintain control lists.²

International export control efforts have faced a growing number of challenges over the past several years. Emerging technologies such as additive manufacturing, synthetic biology, robotics and artificial intelligence are widely viewed as generating potential threats that demand prompt action. The speed at which developments in these areas of technology are advancing is placing additional demand on the ability of states’ export control systems to respond in an effective and proportionate manner. Many of these new technologies cut across the traditional topical divides of the non-proliferation governance instruments, institutions and regimes. Moreover, items of concern are increasingly transferred in intangible form, taking advantage of the ever-expanding capabilities of digital information sharing, communications and the automation of production technologies. These and other developments pose broader challenges to the health and functioning of the multilateral export control regimes and call for a refocusing on their key functions to ensure their essential role in non-proliferation efforts.

One approach, which has long been discussed and recently gained more salience, is to contribute to addressing these challenges through dialogue and coordination efforts between the regimes. This report argues that inter-regime dialogue and coordination activities are a particularly valuable mechanism in deliberations on potential controls on emerging technologies that have cross-regime relevance. This mechanism should also be pursued to stimulate cross-pollination and coordination on the provision of guidance materials. The regimes should thus develop a process that establishes the necessary conditions to facilitate inter-regime dialogue and coordination efforts.

Each regime focuses on a particular area of proliferation risk and threats to international peace and security: nuclear weapons (NSG), chemical and biological weapons (AG), missiles and other delivery systems (MTCR), and conventional weapons and dual-use items (WA). Their mandates and composition have evolved from specific circumstances and factors, leading them to approach export controls in these areas separately, deepening the siloed approach of their international governance.³ However, export control policies and implementation guidance developed by the regimes are

¹ The Zangger Committee is not considered in detail in this report because, while it maintains a ‘trigger list’ that covers single-use nuclear items and equipment that would trigger the application of nuclear safeguards by the International Atomic Energy Agency (IAEA), it does not control nuclear-related dual-use goods and technologies. In addition, the Zangger Committee’s main task of maintaining the trigger list is today implemented by harmonization with the relevant control lists of the NSG. For more information on the Zangger Committee see <<http://zanggercommittee.org>>.

² Control lists specify those proliferation-relevant goods and technologies to the transfers of which national authorities have to apply licensing requirements and additional scrutiny. They include technical parameters and thresholds that are chosen to allow states to apply export controls in a way that only targets particularly relevant transfers and minimises the impact on economic competitiveness.

³ On the origins of each regime, see Australia Group, ‘The origins of the Australia Group’, [n.d.]; Missile Technology Control Regime, ‘Frequently asked questions (FAQs)’, [n.d.]; Nuclear Suppliers Group, ‘About the NSG’, [n.d.]; and Wassenaar Arrangement, ‘About us’, Updated 9 Aug. 2019.

often overlapping or the same, as they commonly deal with the same export control challenges. In many states and in the European Union (EU), the controls originating in the regimes are combined and implemented through a single control list for dual-use goods and another control list for military items and munitions. This raises questions over the efficiency of a system of separate regimes.⁴

Despite the regimes having similar membership, there are some significant differences regarding their composition, with some particularly important states—including Brazil, China, India and Russia—not part of all regimes. Geopolitics and specific adversarial relationships between states that are not members of all regimes affect their ability to work together. As such, there is only a limited level of official exchange and engagement between the regimes. Discussions that are bilateral or within groups of like-minded regime members are more common. At the regime level, official discussions, coordination or information sharing—each of which would require a consensus mandate from all regime members—rarely take place. Discussions of a growing number of emerging technologies with cross-regime relevance and technologies covered by multiple regime control lists have recently started taking place across some of the regimes. Now is therefore a good time to take stock of how the regimes are dealing with the associated challenges and consider areas of good practice and cross-regime learning.

This report aims to dispel some of the misperceptions about the structure and workings of the regimes. It analyses current export control challenges and emerging technologies with relevance to multiple regimes and highlights overlaps and complementarity in the guidance material produced by the regimes. It also examines whether current discussions on these issues could benefit from dialogue and coordination between relevant regimes. It further reflects on lessons learned from previous engagement between the regimes to determine in which areas and at what levels participating states may want to consider further exploring the merits of, and effective approaches to, inter-regime dialogue and coordination.

Section 2 discusses the existing multilateral export control system by outlining the role of export controls, the main functions of the regimes and the evolution and current status of their membership. Section 3 examines the cross-cutting challenges that threaten the effectiveness, efficiency and cohesion of the regimes. It outlines export control challenges common to all regimes and obstacles to the implementation of common regime functions. Section 4 focuses on the use of inter-regime dialogue and coordination as a tool to mitigate the challenges the regimes are currently facing. It considers the challenges to different inter-regime dialogue and coordination formats and describes the good practices that can be derived from recent experiences with such instruments. Section 5 summarizes the main findings of this report and formulates policy recommendations for states participating in the regimes and—where relevant—the regime secretariats, chairs and subsidiary bodies.

⁴ Gahlaut, S. et al., *Roadmap to Reform: Creating a New Multilateral Export Control Regime* (The University of Georgia, Center for International Trade and Security: Athens, GA, 2004).

2. The system of multilateral export control regimes

The regimes are informal groups of states that coordinate export controls and related strategic trade-control instruments on proliferation-relevant goods and technologies and military items (see table 2.1). They are not codified in legally binding international agreements and are only politically binding for the participating states. However, the guidelines and control lists they maintain are implemented by participating states through their national laws. The regimes have come to function as key norm-setters in the area of supply-side non-proliferation policies and state behaviour, including for non-participating states, a growing number of which voluntarily adhere to their guidelines and adopt their control lists.⁵

After World War II, a number of Western states under the leadership of the United States started to coordinate and harmonize their policies concerning the restriction of transfers of military and dual-use goods and technologies to the states of the Eastern Bloc through the Coordinating Committee on Multilateral Export Controls (COCOM).⁶ COCOM was established in 1950 and disbanded in 1994 after the dissolution of the Soviet Union and disintegration of the Warsaw Pact had essentially made it obsolete. The aims of the other regimes that were established before and after 1994 and which remain in place are more inclusive. They centre on the non-proliferation of chemical, biological and nuclear (CBN) weapons and their delivery systems to all states and preventing destabilising accumulation of conventional weapons (see table 2.1).⁷ The role and coverage of these regimes has continuously expanded in the post-cold war period in response to cases of proliferation such as Iraq's conventional and WMD programmes and the activities of the A. Q. Khan network.⁸ In 2004, United Nations Security Council Resolution 1540 for the first time introduced a requirement for all states to have adequate export controls in place, in particular to prevent terrorists from acquiring CBN weapons.⁹ Following the introduction of Resolution 1540, the regimes started to frame their activities in part as providing a public good and contributing to the effective implementation of Resolution 1540 by harmonizing export controls and promoting unilateral adherence to the regimes' guidelines and control lists among both members and non-members of the regimes.

Thus the regimes fulfil some key functions in supply-side non-proliferation and conventional arms trade control, including maintaining and updating common control lists, sharing information on licence denials (in the WA also on granted licences) and detected procurement attempts, and providing guidance documents on export control implementation. In addition, they provide a forum for licensing, enforcement and technical experts to discuss particularly challenging questions—including aspects within and beyond export controls. They also engage in outreach and transparency activities with non-members, regional groups and other relevant actors such as industry and research institutions.

⁵ 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* (IOB: The Hague, Aug. 2017), p. 62.

⁶ See US Office of Technology Assessment, 'Ch. VIII: Multilateral export control policy, The Coordinating Committee (CoCom)', *Technology and East-West Trade* (US Office of Technology Assessment: Washington, DC, 1979), p. 153; Mastanduno, M., *Economic Containment: CoCom and the Politics of East-West Trade* (Cornell University, Ithaca NY; 1992).

⁷ Bertsch, G. K. and Cupitt, R. T., 'Nonproliferation in the 1990s: Enhancing international cooperation on export controls', *The Washington Quarterly*, vol. 16, no. 4 (1999), p. 53; and Lipson, M., 'The reincarnation of CoCom: Explaining post-cold war export controls', *The Nonproliferation Review*, vol. 6, no. 2 (winter 1999), p. 33.

⁸ See e.g. Kile, S. N., 'Nuclear arms control and non-proliferation', *SIPRI Yearbook 2005: Armament, Disarmament and International Security* (Oxford University Press: Oxford, 2005), pp. 552–55.

⁹ United Nations Security Council Resolution 1540, 28 Apr. 2004.

Table 2.1. Overview of the multilateral export control regimes

Regime (year established)	Scope	Decision-making and subsidiary bodies	No. of participants (as of 1 Dec. 2019)
Australia Group (1985)	Equipment, materials, technology and software that could contribute to chemical and biological weapons activities	Plenary Implementation Group Licensing and Enforcement Experts Meeting (LEEM) Reinforced Point of Contact (RPOC) Meeting	43
Missile Technology Control Regime (1987)	Unmanned aerial vehicles capable of delivering weapons of mass destruction	Plenary Information Exchange Meeting (IEM) LEEM Technical Experts Meeting RPOC Meeting Point of Contact (POC) Meeting	35
Nuclear Suppliers Group (1974)	Nuclear and nuclear- related materials, software and technology	Plenary Consultative Group IEM LEEM Technical Expert Group POC Meeting	48 ^a
Wassenaar Arrangement (1996)	Conventional arms and dual-use goods and technologies	Plenary General Working Group Experts Group Licensing and Enforcement Officers Meeting (LEOM) Vienna Points of Contact	42

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

Sources: Australia Group, <<https://www.australiagroup.net/>>; Missile Technology Control Regime, <<https://mtr.info/>>; Nuclear Supplier Group, <<https://www.nuclearsuppliersgroup.org/>>; and Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-use Goods and Technologies, <<https://www.wassenaar.org/>>.

The role of the multilateral export control regimes

States' strategies to curb the proliferation of CBN weapons and their delivery systems and to prevent destabilizing accumulations of conventional weapons are traditionally divided between those policies targeting the supply of goods and technologies and those seeking to reduce the demand for such weapons. Among the range of existing non-proliferation policies—including disarmament and non-proliferation treaties, bans on particular types of weapons, targeted sanctions and (maritime) interdiction principles—export controls are the main supply-side instrument. They perform this function by regulating the supply of weapons and goods and technologies required for weapon programmes. To implement these policies, states impose licensing requirements that provide oversight and scrutiny of the trade in controlled items and a legal basis for the possible denial of such transfers.

Export controls are by no means a silver bullet against proliferation and they were never envisioned as such.¹⁰ Indeed, while the regimes are frequently criticized for their purported inability to prevent proliferation, such criticism is often based on a limited understanding of their role and capabilities. It is important to recognize that they are but one governance instrument among the range of arms control and non-proliferation tools available to states.¹¹ If appropriately designed, carefully targeted and effectively applied, export controls can reveal, frustrate and increase the financial

¹⁰ Joyner, D. H., 'Restructuring the multilateral export control regime system', ed. D. H. Joyner, *Non-proliferation Export Controls: Origins, Challenges, and Proposals for Strengthening* (Ashgate: Aldershot, 2006), p. 219.

¹¹ Beck, M. and Gahlaut, S., 'Creating a new multilateral export control regime', *Arms Control Today*, Apr. 2003.

and diplomatic costs of proliferation efforts, thus granting the relevant authorities additional time to attempt to dissuade a proliferator or implement other policies or coercive measures.¹² Such measures can include sanctions regimes, interdictions of transfers, offers of incentives, confidence-building measures and arms control agreements. More controversially, these efforts have also taken the form of counter-proliferation by sabotage or military means.¹³ In addition, export licensing increases states' oversight and awareness of flows of critical goods and technologies, even if no licence denials are being issued. Export controls should thus be seen as a system that ensures peaceful uses of transfers of sensitive items through licensing and transparency, rather than only as a means of achieving non-proliferation.¹⁴

Export controls alone will not prevent a determined state with even modest industrial and technological capabilities from obtaining, for example, missiles or nuclear weapons, particularly as the globalization of international supply chains and the concurrent development and spread of technology, knowledge and production capabilities run counter to such regulatory efforts. The fact that a small number of states have pursued, and in some cases even continue to pursue, CBN weapon programmes, including through foreign assistance and acquisition of dual-use goods and technologies, does not necessarily imply a failure of the regimes. The limitations to the impact of export controls are especially pronounced if export controls are only loosely applied by supplier states or if a state sponsor or ally who is a major supplier of the desired technology continues to provide strategic goods or assists in the circumvention of controls.¹⁵ Nevertheless, even in the case of existing CBN weapons or missile ownership, export controls can still help to slow down and increase the costs of efforts to advance to the next generation of such systems.¹⁶

Since the inception of the regimes, the coverage of supply-side controls has increased beyond the creation and implementation of licensing requirements for exports of specific lists of goods and technologies, to include a range of other issues. These include logistical and other intermediary services such as brokering, transit and trans-shipment. Non-list-based controls, such as end-use and end-user controls, as well as controls on technology and the instruments to enforce them, such as compliance audits, have also significantly expanded. In addition to expansions in their coverage and ambition, the regimes have also grown in their membership and institutional capabilities. As such, the regimes have come to fulfil an expanded range of tasks and functions related to export control.

The mandate and key functions of the multilateral export control regimes

The original mandate of the regimes was to facilitate the harmonization of export control policies and the implementation of national controls, as well as to provide a forum for coordination, information sharing and the creation of international standards for the trade in strategic goods and technologies.¹⁷ The regimes have key functions that they are mandated to fulfil and have evolved to fulfil, which are reflected in the responsibilities of the respective subsidiary bodies in the regimes. The technical

¹² Anthony, I. et al., 'Multilateral weapon-related export control measures', *SIPRI Yearbook 1995: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 1995), pp. 622–30; and Beck and Gahlaut (note 11).

¹³ See e.g. Tamsett, J., 'The Israeli bombing of Osiraq reconsidered: Successful counterproliferation?', *Nonproliferation Review*, vol. 11, no. 3 (fall/winter 2004), pp. 70–85.

¹⁴ Evans, S. A. W., *Revising Export Control Lists* (Flemish Peace Institute: Brussels, Mar. 2014), pp. 4–5.

¹⁵ Kile (note 8), pp. 552–55.

¹⁶ Fischer, D., 'The London Club and the Zangger Committee: how effective?', eds K. Bailey and R. Rudney, *Proliferation and Export Controls* (University Press of America: Lanham, MD, 1993), p. 39.

¹⁷ Joyner (note 10), p. 219.

expert meetings of the regimes are generally tasked with keeping the various control lists up to date with developments in technology, global supply and military relevance of technologies and weapons. Information exchange meetings provide a forum in which to share information on specific proliferation concerns in certain states, wider proliferation trends, procurement attempts and associated licence denials. Notably, the functions and their specific implementations differ slightly in each regime; for example, the WA relies on positive information sharing through notifications about licences granted for transfers to non-members, while the other regimes rely only on the sharing of licence denials. These meetings also give states the opportunity to exchange information on methods used by proliferators to circumvent controls, finance proliferation efforts and, for example, obscure or falsify end-use and end-user certifications in licensing applications. Each regime convenes a meeting that deals with licensing and enforcement issues, in particular to share enforcement and prosecution cases and discuss licensing operations and best practices in the enforcement of export control violations. In addition, each regime operates at least one type of point of contact mechanism for intersessional communications, as an information channel and in some cases for administrative support. The four main functions—updating regime control lists, information exchange, developing and publishing guidance and good practice documents, and outreach to non-members and other stakeholders—are discussed in more detail below.

Updating regime control lists

In each of the regimes, any change to the control lists requires a consensus decision by all members. Such a change can be the addition of a new control-list item, the modification of an existing list item or the de-listing of an item. While each regime has its own procedure for changes, these procedures are all similarly structured. One state, or a group of states, needs to submit a formal proposal that provides a justification for the suggested change based on certain criteria. Notably, the regimes ask different questions and have some differing criteria for determining whether new items should be added to the control lists. For example, in the WA, a criterion against the addition of an item is that the item is available outside of the regime membership. This is particularly relevant because of the growing capabilities of non-members such as China in emerging technology areas that are under consideration for addition to the control lists. In the NSG, in contrast, such availability is not a formal criterion during list change deliberations. However, special criteria apply to the definition and listing of goods and technologies on the NSG trigger list.¹⁸

The process of completing a change to a control list may frequently take two to four years; however, if there is wide-ranging agreement on the urgency with which a specific aspect should be addressed, the regimes sometimes also act more quickly.¹⁹ The rate at which changes to the regime control lists are made has increased significantly over time, with few changes when the regimes first started, to frequent changes each year being discussed and decided during recent annual plenaries. The volume of proposals under discussion and of agreed changes to the control lists varies considerably across the regimes, with the WA currently discussing and implementing the largest number of changes to the control list each year.²⁰ Notably, several regimes have at times made

¹⁸ Brockmann, K., 'Drafting, implementing, and complying with export controls: the challenge presented by emerging technologies', *Strategic Trade Review*, vol. 4, no. 6 (spring/summer 2018), p. 11.

¹⁹ For several recent examples of timelines of changes to regime control lists see Varesi, J. et al., Presentation at BIS 2018 Annual Conference on Export Controls and Policy: Emerging Technology and National Security Policy, 14 May 2018, pp. 5, 16–17.

²⁰ As of June 2019, the WA list review process was discussing 102 national proposals and non-papers. It claims to resolve 80% of such proposals each year. See Griffiths, P., 'The Wassenaar Arrangement's role for effective defence

a concerted effort for a comprehensive review of their control lists. For example, between 2010 and 2013 the NSG undertook a fundamental review of its control list and implemented around 100 changes.²¹ Since then, it has been operating a standing technical working group that is responsible for continually updating the lists, instead of convening such meetings on demand by the plenary, as was previously the case.

Information exchange

Within each regime, members share with each other information on licensed exports and licence denials, as well as intelligence that their agencies have gathered which can help to identify proliferation activities by states and terrorists and specific companies and brokers involved in procurement attempts. This type of information is particularly important in informing national licensing decisions. It is also crucial for the implementation of ‘no undercut’ policies (i.e. a pledge by members not to approve a particular export to a specific state that another member had previously denied, without first consulting that member), which are applied in almost all regimes, and non-list-based controls that rely on knowledge about specific end users and the operational methods of actors involved in proliferation activities.²² In all regimes, there are significant disparities in the intelligence-gathering capabilities of member states and their participation in intelligence-sharing frameworks such as the ‘Five Eyes’.²³ There is also no requirement for members to disclose all licensing information and relevant intelligence; states frequently choose not to share information, especially if they deem it too sensitive to share with particular members of the regimes. Sensitive information is instead often only shared with close partners bilaterally or through other forums.

Issues with the effectiveness of regime information-exchange mechanisms have at times become public; for example, a 2002 report by the United States General Accounting Office noted the lack of even basic information sharing by many members of the NSG and criticized the level of transparency among members.²⁴ It also emphasized a lack of timeliness in sharing information on licence denials in established reporting time frames or failure to share them altogether.²⁵ While some of these issues have been resolved through the creation of secure electronic information-sharing systems for the regime members, regime delegates frequently point to the impact of geopolitics on the willingness of states to share sensitive information with all regime members.²⁶

Developing and publishing guidance and good practice documents

In order to harmonize the implementation of regime export controls, each of the regimes has agreed guidelines set out in its founding or guiding documents. The emergence of specific export control challenges has led the members of the regimes to agree on additional guidance, through amendments and additions to their guiding documents, the publication of national good practice or best practice documents²⁷

technology security and export control’, Statement delivered at the Defence Acquisition Programme Administration’s (DAPA) 6th International Defence Technology Security Conference, Seoul, 20 June 2019.

²¹ Cándano, D., ‘Export controls and emerging threats: a view from the Nuclear Suppliers Group’, Intervention at the EU Export Control Forum, 13 Dec. 2018.

²² It should be noted that in contrast to the other regimes, in the WA there is a requirement to inform another member that had previously denied the same licensing application, rather than an explicit no-undercut policy that would commit member states to also deny such an application in most cases.

²³ The ‘Five Eyes’ is an intelligence-sharing arrangement between Australia, Canada, New Zealand, the United Kingdom and the United States that evolved from the 1946 UKUSA Communication Intelligence Agreement.

²⁴ Beck and Gahlaut (note 11); and US General Accounting Office (GAO), *Strategy Needed to Strengthen Multilateral Export Control Regimes*, GAO-03-43 (GAO: Washington, DC, 2002).

²⁵ US GAO (note 24).

²⁶ National regime delegates, Interviews with the author, 17 July 2019 and 25 Sep. 2019.

²⁷ It should be noted that the regimes and their participating states are not consistent in the use of ‘good practice(s)’ and ‘best practice(s)’ and both terms are used interchangeably to describe guidance documents that describe implementation practices that are viewed as particularly useful or effective.

submitted by member states or the issuing of agreed good/best practice documents by the regimes, compiled and formulated with input from interested members, not all of which are publicly available. The models used vary significantly among the regimes, including with regard to the way this guidance is either integrated in existing regime documents or issued as stand-alone documents, and the extent to which these documents are made public and shared with non-members.²⁸ For example, the WA has published on its website more than 20 ‘individual best practice documents’ on multiple issue areas, including, among others, guidance for general use, arms transfers, transit and trans-shipment, industry and academia, intangible transfers of technology, and end-use and end-user controls.²⁹ In contrast, the AG has published only a few guidance and information booklets, but some agreed policies are integrated in the AG guidelines and other information and guidelines are shared internally among the participating states.³⁰ Similarly, the NSG has published only three national good practice documents, but other agreed policies—for example, a catch-all clause added in 2004—have been integrated in the NSG ‘Guidelines’ or shared internally.³¹

Outreach to non-members and other stakeholders

The regimes have been criticized since their inception for lack of transparency, exclusive membership and a purported discriminatory effect against non-members.³² This has changed to some extent following the adoption of Resolution 1540, as the regimes have since derived additional legitimacy from its binding requirement for states to have export controls and the contribution that the regimes’ work makes towards its implementation.³³ Both in order to address these concerns and to increase voluntary adherence to the regimes’ guidelines and control lists by non-members, the regimes engage in outreach to non-members, accession candidates and other stakeholders, including international and regional organizations, industry and research institutions. Nonetheless, members have realized that to create acceptance of the regimes and reduce the impression that they are secretive and closed ‘clubs’ of developed countries, they need to increase transparency.

Outreach and transparency activities can help to (a) reduce non-member misconceptions about the regimes; (b) inform non-members about the value of adopting the regimes’ guidelines and control lists; (c) enable discussions with potential candidates for regime membership; (d) exchange information on common challenges and best practices; and (e) strengthen and spread the underlying non-proliferation norms. The levels and targets of outreach activities prioritized by the regimes vary. However, there is a notable trend towards increasing these activities and widening the range of stakeholders engaged in regime outreach events.³⁴ For example, the AG convened regional dialogue meetings in 2017 for states from Latin America and in 2018 for states in Africa, and has expressed its plan to continue this practice because of its perceived success.³⁵ The NSG held an industry outreach event in conjunction with the World Association of Nuclear Operators and the World Nuclear Association

²⁸ National regime delegates, Interviews with the author, 5 July 2019 and 17 July 2019.

²⁹ WA, ‘Best practices and guidelines’, Updated 9 Aug. 2019.

³⁰ Australia Group (AG), ‘Publications’, [n.d.]; and AG, ‘Guidelines for transfers of sensitive chemical or biological items’, [n.d.].

³¹ Nuclear Suppliers Group (NSG), ‘National practices’, [n.d.]; and NSG, ‘Guidelines’, [n.d.].

³² Latham, A. and Bow, B., ‘Multilateral export control regimes: bridging the north–south divide’, *International Journal*, vol. 53, no. 3 (summer 1998), p. 466.

³³ Bauer, S. and Brockmann, K., ‘The Proliferation Security Initiative and UN Security Council Resolution 1540’, *Literature Review for the Policy and Operations Evaluations Department of the Dutch Ministry of Foreign Affairs* (note 5), pp. 74–77.

³⁴ See e.g. Maletta, G. et al., ‘The export control regimes’ in ‘Dual-use and arms trade controls’, *SIPRI Yearbook 2019: Armament, Disarmament and International Security* (Oxford University Press: Oxford, 2019), pp. 521–531.

³⁵ Maletta et al. (note 34), pp. 523–524.

in 2018, which was the first official NSG event of this kind.³⁶ In recent years, the WA has organized informal discussion meetings on emerging technologies between policy and technical experts and industry representatives from participating states ahead of the WA plenary meetings.³⁷

Outreach and engagement with other international and regional organizations, and particularly with the other regimes, can sometimes be difficult. For example, while the NSG regularly provides a presentation at the Nuclear Non-Proliferation Treaty (NPT) review conferences, formal engagement with the International Atomic Energy Agency (IAEA) has been difficult because of, among other reasons, the reservations of IAEA members that are not members of the NSG.³⁸ Nevertheless, this type of engagement has also slowly been increasing in recent years. In a presentation to the 2015 NPT review conference, the NSG chair at the time specified that the range of outreach partners included ‘multilateral institutions and regimes’.³⁹ Moreover, as part of its outreach, the WA pursues informal technical dialogue activities with the MTCR and the NSG on control list issues.⁴⁰ The WA, through its secretariat, has actively engaged with the Arms Trade Treaty (ATT),⁴¹ particularly during the ATT Conferences of States Parties and with the ATT secretariat.⁴²

Membership of the multilateral export control regimes

The membership of all four regimes has expanded considerably (see figure 2.1) and has become more diverse since their establishment. This has contributed to the universalization of the regimes’ export control standards and the underlying non-proliferation norms. There are now 30 states that are members of all four regimes, most of which are Western industrialized states, including the Group of Seven states (see table 2.2). Emerging supplier states, including the BRICS states—Brazil, Russia, India, China and South Africa—and other major developing countries such as Mexico, are also members of some of the regimes. Notably, in the past four years, India has joined three of the four regimes and improved its status as an export destination with key supplier states, particularly the United States.⁴³ However, membership expansion has been criticized for negatively affecting the ability of the regimes to reach consensus decisions and for potentially decreasing the willingness of states to be transparent and share information with regime members.⁴⁴ Accordingly, decisions on membership applications and the direction of future membership development of the regimes continue to be controversial.⁴⁵ This reflects at least two—in part contradictory—objectives that the regimes seek to balance: the universalization of their control lists and guidelines, and their ability to fulfil their functions in an effective and timely manner.

³⁶ NSG, ‘Public statement of the 2018 NSG plenary’, Jūrmala, Latvia, 15 June 2018.

³⁷ Griffiths, P., ‘Updates from the Wassenaar Arrangement’, Statement delivered to the SMi Defence Exports Conference 2019, Amsterdam, 25–26 Sep. 2019.

³⁸ Treaty on the Non-Proliferation of Nuclear Weapons, opened for signature 1 July 1968, entered into force 5 Mar. 1970, INFCIRC/140, 22 Apr. 1970; National regime delegate, Interview with the author, 28 Mar. 2019.

³⁹ Grossi, M. and Goorevich, R., Presentation delivered during a side event on the margins of the 2015 Review Conference of the Nuclear Non-Proliferation Treaty, New York, 6 May 2015.

⁴⁰ WA, Statement issued by the plenary chair on 2018 outcomes of the Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-use Goods and Technologies, Vienna, 6 Dec. 2018; Griffiths (note 37), p. 7.

⁴¹ Arms Trade Treaty, opened for signature 3 June 2013, entered into force 24 Dec. 2014.

⁴² Griffiths, P., Statement delivered at the 5th Conference of States Parties to the Arms Trade Treaty, Geneva, 26–30 Aug. 2019.

⁴³ Sayre, A., ‘India’s upgrade in export control status and bid to enter “dual use” controls club point to expansion of non-proliferation efforts’, *SanctionsAlert*, 2 Feb. 2017.

⁴⁴ Beck, M. D. and Jones, S. A., ‘The once and future multilateral export control regimes: Innovate or die’, *Strategic Trade Review*, vol. 5, no. 8 (winter/spring 2019), pp. 67–68; See e.g. the extensive works by the University of Georgia’s Center for International Trade and Security.

⁴⁵ Speier, R., ‘Can the missile technology control regime be repaired?’, ed. J. Cirincione, *Repairing the Regime* (Routledge: New York, 2000), p. 208.

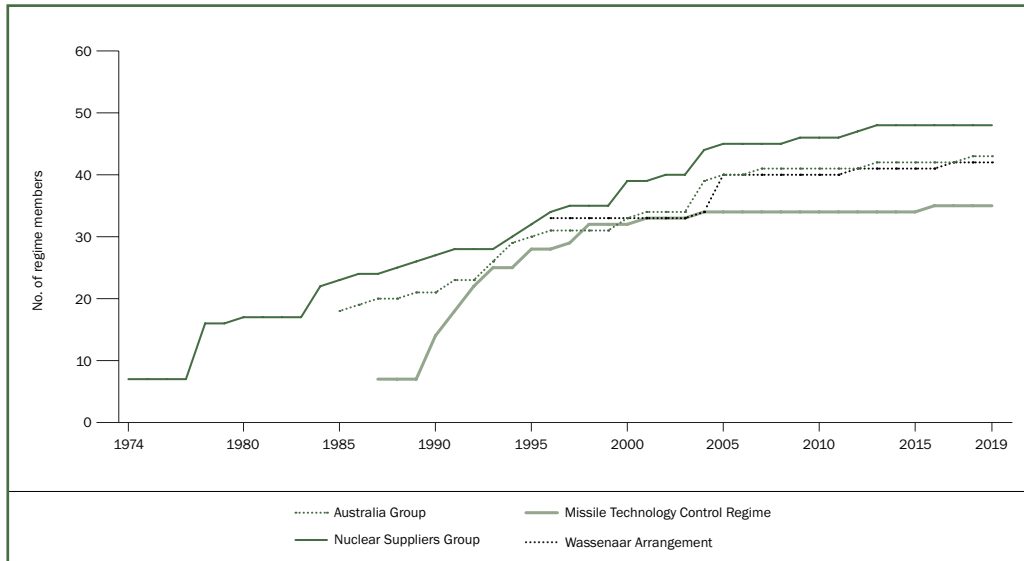


Figure 2.1. Growth in number of participating states in the multilateral export control regimes, from regime commencement to 2019

Sources: Australia Group, 'Australia Group Participants', [n.d.]; Missile Technology Control Regime, 'MTCR partners', [n.d.]; Nuclear Supplier Group, 'Participants'; and Wassenaar Arrangement, 'Public documents, vol. IV—background documents and plenary-related and other statements', [n.d.].

The universalization of regime export controls is key to limiting proliferation effectively. In today's globalized economy, the control of exports alone often does not suffice. Smaller, non-exporting, transit and trans-shipment states also have an important role to play in control and interdiction efforts. As such, their adherence to regime controls and participation in enforcement discussions and information sharing are important contributions to the effectiveness of the regimes. While adherence to and the adoption of regime guidelines and control lists have increased, including among non-members, effective implementation often depends on access to intelligence about procurement attempts and insights into trends in the operational methods of proliferation networks—such information is limited to regime members.⁴⁶

The regimes have to react to rapid technological developments that pose proliferation risks and to other trends and challenges, such as changing typologies of procurement activities. The ability of the regimes to make timely decisions is therefore important to fulfilling their key functions. A larger group of members with diverse political views and economic interests can slow down decision making, particularly if there are fundamental differences among members. The like-mindedness of regime members is therefore often conflated with the ability of the regimes to take decisions. Some caution should, however, be exercised over this assumption. It is often difficult to find consensus on membership applications and entirely new control list items even among fairly like-minded states, such as the AG participants or the EU member states. Discussions on technical details, such as the definition and adjustment of control-list parameters, are usually shaped by scientific and industrial considerations, but these are difficult to decouple from economic and political interests.⁴⁷ In addition, geopolitical competition and specific interstate issues can also break consensus among groups of generally like-minded states.

Membership in the regimes is very appealing to states for reasons of prestige associated with being part of the group of suppliers, access to and influence in shaping the future of multilateral control standards and lists, and being part of the regimes'

⁴⁶ Anthony, I., Ahlström, C. and Fedchenko, V., *Reforming Nuclear Export Controls: The Future of the Nuclear Suppliers Group*, SIPRI Research Report no. 22 (SIPRI: Stockholm, 2007), p. 28.

⁴⁷ Evans (note 14), p. 14.

Table 2.2. Group of Seven and BRICS membership in the multilateral export control regimes

State	AG	MTCR	NSG	WA
Brazil		X	X	
Canada	X	X	X	X
China			X	
France	X	X	X	X
Germany	X	X	X	X
Italy	X	X	X	X
India	X	X		X
Japan	X	X	X	X
Russia		X	X	X
South Africa		X	X	X
UK	X	X	X	X
USA	X	X	X	X

AG = Australia Group; MTCR = Missile Technology Control Regime; BRICS = Brazil, Russia, India, China and South Africa; Group of Seven = Canada, France, Germany, Italy, Japan, United Kingdom, United States; NSG = Nuclear Supplier Group; WA = Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-use Goods and Technologies.

Note: 'X' indicates membership of the indicated state in the corresponding export control regime.

Sources: Australia Group, 'Australia Group participants', [n.d.]; Missile Technology Control Regime, 'MTCR partners', [n.d.]; Nuclear Supplier Group, 'Participants'; and Wassenaar Arrangement, 'About us', [n.d.].

information exchange. Several supplier states have nevertheless deliberately chosen to remain outside of certain regimes for various reasons, including to forgo restrictions on and potential critique of their own export practices.⁴⁸ For example, China and Israel remain outside of the MTCR, despite being the main exporters (next to the USA) of military drones such as armed unmanned aerial vehicles.⁴⁹ US companies have frequently criticized the purported advantages this provides for their Chinese and Israeli competitors; in response, the USA has sought to introduce fundamental changes to MTCR control parameters to reduce their restrictive impact on the export of military drones.⁵⁰

The differences in membership of the regimes are particularly relevant in the context of inter-regime dialogue and coordination. The fact that there are states that are part of one regime, but not of another that could be a desirable dialogue partner, means that inter-regime activities could involve the sharing of potentially confidential information with non-members. This is one of the main reasons for states to object to inter-regime dialogue and coordination activities. There are nevertheless many export control challenges and obstacles to effective operation that are common to all the regimes, which such activities could help to address.

⁴⁸ Joyner (note 10), p. 216.

⁴⁹ Horowitz, M. C., 'Drones aren't missiles, so don't regulate them like they are', *Bulletin of the Atomic Scientists*, 26 June 2017.

⁵⁰ Bauer, S. et al., 'The export control regimes' in 'Dual-use and arms trade controls', *SIPRI Yearbook 2018: Armament, Disarmament and International Security* (Oxford University Press: Oxford, 2018), pp. 428–429; Insinna, V., 'General Atomics: Export restrictions help China grow its drone tech', *DefenseNews*, 18 Aug. 2017.

3. Common challenges faced by the multilateral export control regimes

The regimes face a wide range of overlapping challenges. Five of these challenges are particularly relevant in the context of the use of inter-regime dialogue and coordination: (a) overcoming structural challenges to the implementation of regime functions; (b) harmonizing and implementing export controls effectively; (c) identifying and agreeing on timely controls on emerging technologies; (d) addressing overlaps in the control lists of several regimes; and (e) avoiding contradictory guidance on the implementation of export controls.

Overcoming structural challenges to the implementation of regime functions

The structural conditions under which the regimes operate present difficulties for them in the implementation of some of their key functions. The two main factors that challenge the effectiveness and efficiency of the regimes are resource limitations and frequent duplication of work.

Departments and policy areas in governments, ministries and authorities generally compete for available resources. The levels of resources available in the relevant authorities in different states to implement export controls and contribute to the work of the regimes vary considerably. Some states lack human and financial resources to participate and contribute in a meaningful way in regime processes. For example, they do not have sufficient technical expertise in their licensing authority to continually assess technological developments and have only one or two staff who have to attend all meetings. Introducing a large number of additional regime processes and meetings—for example, introducing a new process for every emerging technology—would overload the meeting schedule and therefore put serious strain on the available resources of some member states. The regime process and its decisions need to reflect the capacities of all states or be supported in a way that allows for states to access the required resources. Many states will resist broadly defined controls that could significantly increase the number of licensing applications that their national authorities would receive. This is not only the case in small states that generally lack resources, but is also the case with states that are large exporters, where this could significantly increase the number of licences.

An area that has considerable scope for improving efficiency is reducing unnecessary duplications that result from the parallel structures of the regimes. Presentations and discussions are often repeated in multiple regimes because of small differences in membership, despite the limited time available for regime meetings in any given year. The regimes produce guidance materials on the same issue with little specificity to the particular regime. Many regime members have therefore previously expressed a desire to increase the effectiveness of the regimes by pooling knowledge and engaging issues across the regimes.⁵¹

Harmonizing and implementing export controls effectively

The regimes aim to harmonize export controls in a way that does not disproportionately and unequally affect the industries and economic competitiveness of states implementing such controls. Establishing harmonized best practices and reaching common understandings on implementation practices, for example of non-list-based controls,

⁵¹ Anthony et al. (note 46), p. 31.

is thus a key factor in preventing export controls from having an uneven impact on national industries. Through their convening function for national export licensing and enforcement officers, the regimes play a valuable role in improving the craft and practice of export control implementation. However, this is also the area where there is arguably the most significant overlap and duplication of work in the current regimes system.

An analysis of the press releases produced after each of the regimes' annual plenaries reveals that the substantive export control issues discussed have remained relatively consistent not only over time, but also across regimes (table 3.1). In most years, each regime has tackled many of the same topics as the other regimes. For example, intangible transfers of technology have been an official discussion topic in at least three of the four regimes in each year between 2015 and 2018.⁵² Similarly, brokering controls have been a discussion topic in almost all regimes in each year from 2012 to 2015. Other similarly salient implementation challenges that have been discussed regularly in each regime include the implementation of non-list-based export controls, such as catch-all controls. These discussions usually take the form of presentations of national practices, cases and non-papers. Members of multiple or all regimes often repeated their presentations in each regime because the practices and implementation of controls in these areas are the same in their national export control system. In the light of the limited time available during the regimes' annual plenaries and inter-sessional meetings, this practice is inefficient when considering the regimes system as a whole. It demonstrates the challenge of balancing the efficiency of the regimes with their differences in memberships.

Controlling emerging technologies

Technological developments commonly involve new risks or the amplification of existing threats that require review and threat assessment to discern the necessity and appropriateness of export controls. Despite the hype surrounding many such novel technologies, they have often reached only limited application and both their full potential and their impact remain somewhat uncertain. Tracking the development of a multitude of such technologies and evaluating their proliferation relevance present significant challenges to national export control authorities. Replicating these functions to the extent of reaching common risk assessments and agreeing on the necessity for list-based controls in a consensus-based forum such as the regimes can be even more difficult. The review process also includes developing an understanding of where there are limitations to the effectiveness and appropriateness of export controls and where there is a need to strengthen other complementary governance mechanisms, either instead or in parallel. This is especially the case for technologies that are increasingly adopted by militarily relevant industries and are characterized by rapid development, novelty and disruptive capability, but have not yet reached their full potential—commonly referred to as emerging technologies.⁵³ For these technologies, there are often no agreed technical standards defining those qualities related to proliferation concerns. Several emerging technologies are relevant to the objectives of multiple regimes. Key examples include production technologies (such as additive manufacturing), advanced materials and other general-purpose technologies such as

⁵² In 2018 the MTCR plenary did not take place as no partner had volunteered to assume the plenary chair and host the meeting. The NSG does not provide sufficiently detailed information on specific implementation-related topics discussed during a plenary, but personal communications between the author and national regime delegates (17 July 2019) have confirmed that the challenges associated with intangible transfers of technology have been discussed in these past years.

⁵³ Brockmann (note 18), p. 7.

Table 3.1. Selected implementation challenges discussed in regime annual plenaries, 2011–18

Year	Intangible transfers of technology	Catch-all controls	Brokering controls
2011	MTCR	–	MTCR, NSG
2012	AG, MTCR	AG, MTCR	AG, MTCR, NSG
2013	AG, MTCR	AG, MTCR, WA	AG, MTCR, WA
2014	AG, MTCR	AG, MTCR	AG, MTCR, NSG
2015	AG, MTCR, WA	AG, MTCR, WA	AG, MTCR, WA
2016	AG, MTCR, WA	AG, MTCR, WA	MTCR, WA
2017	AG, MTCR, WA	MTCR, WA	–
2018 ^a	AG, WA ^a	AG ^a	– ^a

AG = Australia Group; MTCR = Missile Technology Control Regime; NSG = Nuclear Supplier Group; WA = Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-use Goods and Technologies.

Notes: The NSG rarely provides detailed information on the specific export control implementation challenges that are discussed during its annual plenary meetings.

^a In 2018 the MTCR did not meet for an annual plenary meeting as no member state had volunteered to assume the rotating chair, which customarily hosts the plenary.

Sources: Australia Group, ‘Publications’, [n.d.]; Missile Technology Control Regime, ‘Press releases’, [n.d.]; Nuclear Suppliers Group, ‘Documents’, [n.d.]; and Wassenaar Arrangement, ‘Public documents, vol. IV—background documents and plenary-related and other statements’.

robotics and artificial intelligence.⁵⁴ Each of these technologies has the potential to be used to help to develop, produce or enhance the capabilities of both conventional weapons and CBN weapons.

Reaching agreement on why a certain emerging technology should be controlled, which implies reaching a common assessment of the proliferation risks and probable impact of the technology, is particularly difficult if it relates to proliferation risks addressed in multiple regimes. This means that states need to agree both on the threat and the need and the appropriateness of export controls before moving to identify and decide on specific list items and technical parameters. The task of accommodating concerns over the proportionality of controls of states whose domestic research and industries would be particularly affected by such controls is increasingly complex. The more regimes and therefore membership combinations that are involved, the more difficult it is to come to a consensus assessment that can be turned into concrete proposals.⁵⁵ Discussions on proposals concerning emerging technologies therefore often take longer than other proposals; they also frequently need to be redefined during the process because of technological advances and changes in global market supply, and to adjust to initial implementation experiences.⁵⁶

Increasing the coordination and situational awareness of existing research efforts and industrial applications in proliferation-sensitive areas could ease some of these difficulties. However, especially in the case of strategic technologies, states have an interest in preserving any advantage they may have over other countries and maintaining some level of opacity over the maturity of their national capabilities. This can limit their willingness to share sensitive information in the regimes and similar forums.⁵⁷ The absence of agreed international standards that could provide for

⁵⁴ The US Government published a list of such emerging technologies, some of which are of cross-regime relevance, for consideration to be export controlled in an advance notice of proposed rulemaking (ANPRM) in 2018. US Department of Commerce, Bureau of Industry and Security, ‘Advance notice of proposed rulemaking: review of controls for certain emerging technologies’, *Federal Register*, vol. 83, no. 223 (19 Nov. 2018).

⁵⁵ Brockmann (note 18), p. 10.

⁵⁶ Griffiths (note 20).

⁵⁷ This is reflected in or underlies several comments submitted in response to an ANPRM by the US Government that seeks comment on a list of 14 ‘emerging technology’ categories that should potentially be controlled. See e.g. Evans, S. A. W., Comment on the Bureau of Industry and Security (BIS) Proposed Rule: Review of Controls for Certain Emerging Technologies, 10 Jan. 2019.

meaningful parameters of control-list items further complicates regime discussions. For example, in the case of additive manufacturing machines, standards and technical parameters are yet to be identified that could sufficiently distinguish machines of concern from the vast amount of general-purpose machines produced in this sector.⁵⁸ Even after parameters are identified, the control-list items need to be designed in a way that ensures both controllability—meaning that the volume of controlled transfers can be handled by the responsible authorities—and relevance—meaning that the technical thresholds will not become obsolete within a short period of time.⁵⁹

Technical experts in the export control authorities need to keep themselves updated on technological developments that currently may not pose a proliferation threat or may not have developed a destabilizing effect but that have the potential to do so in the future.⁶⁰ This is particularly true for the supplier states of such technologies who have to balance economic interests and the development of foreign competition with their future threat perception. As such, the role of engaging in foresight work (i.e. forecasting and scenario planning etc.), specifically with regard to emerging strategic technologies, is important and needs to be incorporated into consultation processes to inform discussions within the regimes.

Discussions on these technologies mainly take place separately in each of the regimes. Consultations between regimes at the technical level could further the understanding of aspects of a technology based on the different regime perspectives. Such activities can thus improve the quality of controls and increase the understanding required to design the specific technical parameters of a listed item, while preventing unnecessary overlaps using different technical parameters in future controls on the same technology.

Preventing and addressing control-list overlaps

Several categories of goods and technologies are relevant to the non-proliferation efforts of multiple regimes and have therefore been listed on multiple regime control lists (see table 3.2).

While the reasons for controlling a certain good or technology differ, there is commonly a close correlation in the technical nature of concerns.⁶¹ For example, the MTCR, the NSG and the WA all cover high-performance resin-impregnated fibrous or filamentary materials. The technical concern in each regime is based on the ability of this material to be used to produce lightweight high-performance components and structural elements, with applications including the solid rocket motor casings for ballistic missiles, the structural components of fighter jets and gas centrifuge rotors.⁶² Many of these overlapping listings thus share technical parameters that are used to define the good or technology. However, there may be differences between regime control lists in the exact values listed for a parameter, reflecting the specific application of a good or technology that is of relevance to the regime. These technical parameters not only need to be precise enough to define the specific quality of the good or technology that makes its proliferation relevant, but also need to protect against rapidly becoming obsolete by having sufficient scope to cover potential technological

⁵⁸ Brockmann, K. and Kelley, R., *The Challenge of Emerging Technologies to Non-proliferation Efforts: Controlling Additive Manufacturing and Intangible Transfers of Technology* (SIPRI: Stockholm, Apr. 2018), pp. 29–30.

⁵⁹ Brockmann (note 18), pp. 10–11.

⁶⁰ Beck and Gahlaut (note 11).

⁶¹ Government senior adviser on export control technical policy, Correspondence with the author, 25 Sep. 2019.

⁶² Government senior adviser on export control technical policy, Correspondence with the author, 25 Sep. 2019.

Table 3.2. Key technology areas covered across the multilateral export control regimes

Technology area	Coverage on regime control list			
	AG	MTCR	NSG	WA
Advanced materials		X	X	X
Advanced manufacturing	X	X	X	X
Chemicals: energetics		X	X	X
Chemicals: precursors	X	X	X	X
Electronics		X	X	X
Lasers			X	X
Navigation and guidance		X		X
Rockets and ballistic missiles		X		X
Subtractive manufacturing			X	X
Unmanned aerial vehicles	X	X		X

AG = Australia Group; MTCR = Missile Technology Control Regime; NSG = Nuclear Supplier Group; WA = Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-use Goods and Technologies.

Note: 'X' indicates that the regime's control lists include at least one list item that covers goods or technology in the indicated broad technology area.

Source: Government senior adviser on export control technical policy, Briefing provided to the author, 25 Sep. 2019.

developments.⁶³ Therefore, identifying and defining such parameters are complex tasks.

Where there are diverging opinions on the nature of the parameters, overlaps in the regimes' control lists can lead to contentious discussions between the regimes (see below) and create additional challenges for the effective implementation of such controls. Having more than one principal technical parameter identifying the same type of item or technology places an additional burden on companies, research institutes and other researchers seeking to comply with controls. This is also the case for licensing officials seeking to apply these controls, particularly if they need to be applied in combination in one national control list.⁶⁴ This type of challenge mainly results from the failure of regimes to coordinate effectively and find common solutions, highlighting the need for inter-regime dialogue and coordination at the technical expert level on control parameters.

One example of this type of inconsistency between regimes, which led to contentious discussions between two of them, is the protracted issue over the control parameters for machine tools. Machine tools are covered by both the NSG and the WA control lists, but the two regimes define them using different technical parameters. The NSG control list uses accuracy as the main defining parameter; the WA, however, modified the main parameter of its machine tool controls in 2015, adopting unidirectional positioning repeatability (UPR) instead of accuracy.⁶⁵ To address the challenges posed by their differing approaches, the NSG and the WA have engaged in dialogue at the technical expert level to exchange views and consider ways forward. However, to date, these efforts have not come to fruition: no consensus could be found among the members of the NSG to adopt UPR because of differences between them over certain

⁶³ Brockmann (note 18), p. 10.

⁶⁴ National regime delegate, Correspondence with the author, 25 Sep. 2019.

⁶⁵ In the case of machine tools, *repeatability* describes the variation of results of a series of identical commands for a positioner—which may, for example, position the cutter in a milling machine—to move to a particular position. As such, it describes the consistency with which the machine manages to stay within a specific tolerance. *Unidirectional positioning repeatability* calculates this value only for moves from one specific direction to the programmed position, instead of from both directions. *Accuracy* is commonly measured in terms of inaccuracy, thus describing the maximum deviation of an indicated value from an agreed standard or true value. *Positioning accuracy* of machine tools describes the inaccuracy measured in a specific test program under specific test conditions (defined in the control list).

aspects of the use of UPR as a defining parameter for machine tools in the NSG specific context.⁶⁶ Another example of an overlap in the control lists of regimes that recently led to inter-regime activities was the listing of lasers by both the NSG and the WA. Reflecting on good practices and lessons learned from using inter-regime dialogue and coordination to deal with overlaps could inform and improve such processes and the understanding of limitations.

Providing guidance materials for export control implementation

There are broader export control challenges that are not specific to the types of weapons, goods and technology covered by the respective regimes; for example, effective control of intangible transfers of technology, cloud computing, brokering and trans-shipment, and effective outreach to industry, research and academia. As part of their current mandate, the regimes are producing and sharing guidance material and good/best practice documents on the implementation of such controls and related measures. The development of such guidance materials takes place separately in each regime and the guidance produced is not always publicly available. The public guidance materials are commonly used in outreach and capacity building beyond the membership of the regimes.

The potential production and promotion of contradictory guidance materials by different regimes, as well as the related inefficiencies in the use of time and resources in each regime because of duplication of efforts, present another problem. Naturally, members of multiple or all regimes have a better overview and can compare what the regimes are discussing and agreeing on. As such, they are best positioned to ensure that there are no contradictions in the produced guidance materials. However, many of the states that are members in all regimes are also those with the largest delegations and different experts as delegates in each respective regime. This means that some regime-specific experts may not have knowledge of guidance discussions across the regimes and are therefore dependent on good coordination and information sharing at the national level, including within their respective authorities. However, the extent of this issue varies considerably among regime members.⁶⁷ Having separate discussions in each regime on issues that could benefit from common guidance often leads to the situation that a state submits and presents its national guidance in all four regimes.⁶⁸ Many outreach and capacity-building programmes, such as those funded by the USA and the EU as well as those undertaken in the implementation of Resolution 1540, use and promote the guidance materials and good/best practice documents published by the regimes. It is therefore necessary to explore the extent to which inter-regime dialogue and coordination on the creation or updating of such guidance materials could make regime discussions on specific cross-regime challenges more efficient and improve the quality and harmonization of the resulting guidance materials.

⁶⁶ Government senior adviser on export control technical policy, Correspondence with the author, 25 Sep. 2019.

⁶⁷ National regime delegate, Correspondence with the author, 31 Oct. 2019.

⁶⁸ National regime delegates, Interview with the author, 26 June 2019.

4. Challenges and good practices in inter-regime dialogue and coordination

Types of inter-regime dialogue and coordination activities

Several types of dialogue formats and coordination activities can contribute to resolving challenges related to export controls faced by the regimes. Five types of such activities are of particular importance: (a) coordination meetings between the different regime delegations within a state; (b) bilateral or multilateral meetings with other states' delegations or in groups of like-minded states; (c) topical track 1.5 workshops involving regime delegates,⁶⁹ technical and policy experts, and representatives from research and industry; (d) regional-level meetings and working groups on export controls; and (e) dedicated inter-regime dialogue and coordination activities.

Coordination between the different regime delegations of a state

Among regime members, the larger states generally have large delegations composed of specialized technical and policy experts for each regime, sent from multiple ministries and agencies.⁷⁰ Technical experts are often only responsible for one specific portfolio or technology area, which they also cover in their daily classification and licensing work. Particularly in the case of emerging technologies and technologies with cross-regime relevance, it is therefore indispensable for there to be a sufficient level of engagement and coordination among the delegations to the different regimes, at all levels. In addition, this helps to build and maintain institutional memory across relevant national authorities. One way of facilitating this type of coordination is the implementation of an inter-agency contact group on export controls that meets regularly to discuss both political and technical issues, and to identify areas of mutual concern that require more detailed engagement. In addition, there should ideally be a technical policy lead who heads the technical expert delegations to multiple or all regimes, has oversight of these coordination efforts and liaises with the heads of delegation at the policy level.⁷¹ A considerable share of the regime members do not have the same level of capacity and instead have to rely on local embassy staff and delegates from their ministries who often do not have technical expertise.⁷² While coordination among a smaller group of regime delegates and experts is easier, the lack of technical expertise is problematic and still provides an argument for identifying technical leads who can coordinate and prioritize where they need to source additional technical expertise, for example from universities or research institutes in their state or by liaising with other states.

Bilateral and multilateral coordination with other states or in groups of like-minded states

There are a large number of bilateral discussions taking place between the delegations from key states and particularly between those with closer partnerships.⁷³ These talks can contribute to the identification of compromise solutions, help discern expected voting behaviour and enable frank discussions on politically sensitive policy or technical

⁶⁹ 'Track 1.5' describes dialogue activities, or diplomacy more broadly, that involve both government officials and non-governmental experts, engaging in an unofficial capacity. Traditional diplomacy conducted by government officials in their official capacity is often called 'track 1' diplomacy, while dialogues exclusively at the non-governmental expert level are described as 'track 2' dialogues.

⁷⁰ Evans (note 14), p. 20.

⁷¹ Government senior adviser on export control technical policy, Correspondence with the author, 25 Sep. 2019.

⁷² Evans (note 14), p. 20; and National regime delegate, Interview with the author, 30 Aug. 2019.

⁷³ National regime delegates, Interviews with the author, 17 July 2019 and 25 Sep. 2019.

questions. In addition, they offer the fastest way of engagement between national experts in the relevant authorities and ministries, and between delegates who know each other from attending the regime meetings, often over many years. According to several regime delegates, much of this type of engagement and the level of coordination and sharing of perspectives can be highly dependent on personalities.⁷⁴ This type of engagement often results in small, exclusive circles that are relatively stable and seldom change or grow significantly. While often effective for the participants, the lack of inclusivity and formalization can be problematic and create vulnerabilities. Particularly in the long run, changes in regime members' delegations can disrupt or set back such channels and the benefits they bring.

Regional-level coordination and working groups on export controls

Coordination at the regional level can align positions, help to prop up specific regional perspectives and interests, and strengthen negotiating positions of a group of regime members. However, the EU is currently the only regional arrangement that harmonizes and coordinates on matters of export control in a meaningful way.

The EU's common dual-use export control legislation incorporates the control lists of all regimes. There are two bodies within the EU that have coordinating functions in the area of dual-use export controls: the Working Party on Dual-use Goods, which is chaired by the Council of the EU,⁷⁵ and the Dual-use Coordination Group, which is chaired by the European Commission. The Working Party on Dual-use Goods serves as a preparatory body for issues related to the application of export controls and to coordinate among regime members from the EU, mainly at the political level in Brussels rather than at the technical level, relying on national technical experts sent by member states. Notably, the participants in these coordination meetings in Brussels often differ from the delegations of member states that participate in the regime plenaries and subsidiary bodies. The regime delegates from EU member states nevertheless get together for pre-meetings ahead of each regime meeting, to coordinate on immediate issues, agenda items and presentations.⁷⁶ In contrast, the Dual-use Coordination Group is more concerned with the implementation of EU dual-use export controls within the EU. It engages in information exchange, implementation reviews and outreach activities, including on technical issues concerning control-list updates and intra-community transfers.⁷⁷ It has also set up several Technical Expert Groups on specific export control challenges and produces EU guidance materials.⁷⁸

Topical track 1.5 multi-stakeholder activities organized by non-state actors

Meetings and workshops on specific topics with relevance to regime export controls are periodically organized by non-governmental organizations, think tanks, universities and other non-state actors. These often involve a cross-section of relevant stakeholders, including regime delegates with policy and technical expertise, researchers, export control officers, technical experts from companies, and representatives from scientific and research institutes.⁷⁹ These so-called track 1.5 events often

⁷⁴ National regime delegates, Interviews with the author, 17 July 2019.

⁷⁵ The Council of the EU's Working Party on Dual-use Goods was established pursuant to Art. 19 of the Rules of Procedure of the Council. Council of the EU, 'Working Party on Dual-use Goods', Updated 9 Nov. 2017.

⁷⁶ National regime delegates, Interview with the author, 17 July 2019.

⁷⁷ European Commission, 'Report from the Commission to the European Parliament and the Council 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(2018) 852 final, 14 Dec. 2018.

⁷⁸ See e.g. the EU guidance on internal compliance programmes published in Aug. 2019. Commission Recommendation (EU) 2019/1318 of 30 July 2019 on internal compliance programmes for dual-use trade controls under Council Regulation (EC) no. 428/2009.

⁷⁹ SIPRI frequently organizes such events through its Dual-use and Arms Trade Control Programme. See e.g. SIPRI, 'SIPRI hosts workshop on intangible transfers of technology (ITT)', 27 Feb. 2018.

provide an opportunity to discuss export control policy questions and implementation challenges in an informal setting among a group of stakeholders with diverse perspectives. While these events can rarely achieve concrete outcomes for the policy process in the regimes, they are nonetheless valued for being a forum that faces fewer of the constraints of more formal regime or interstate settings. Track 1.5 events can sometimes facilitate an exchange on controversial topics that are unlikely to be placed on the agenda of formal meetings.⁸⁰ Several regime delegates identified a distinct lack of workshops or conferences specifically focusing on technical issues that are currently discussed in one or multiple regimes.⁸¹ As most of these workshops are sponsored by states through funding for research projects, their absence may reflect a lack of funding dedicated to technical-level analyses of regime issues. In addition, there is only a small number of states that engage in these technical discussions and have the resources to fund additional activities.

Dedicated inter-regime dialogue and coordination activities

Inter-regime dialogue on export control challenges with cross-regime relevance, such as intangible transfers of technology, trans-shipment and operational methods of procurement attempts, is not a new idea. It has been one of the potential advantages highlighted by those advocating an overarching regime structure and has already been implemented in an ad hoc fashion between some of the regimes.⁸² The potential benefits from increased cooperation between the regimes have long been acknowledged by their members.⁸³ Already in 1999, for example, the MTCR and the NSG discussed ‘the scope of information sharing and other means of improving efficiency’, including the usefulness of cross-regime seminars and workshops and ways to harmonize technical parameters, terminology and definitions.⁸⁴ However, inter-regime discussions have remained relatively rare and little information on them has been made public.

Inter-regime dialogue and coordination activities have usually taken the form of small meetings of a select group of delegates from two regimes which have each been given a mandate by their respective regime to discuss a specific, defined topic. Setting up inter-regime meetings is very challenging, not least due to the sensitive political implications and the different compositions of members of the regimes. Despite the requirement for a mandate for each delegation sent by a regime, the discussions in dialogue and coordination formats are informal. The outcomes of the discussions only feed into the policy process of the respective regime. The delegations neither take decisions on behalf of the regimes nor enter into any binding agreements.

The most frequent pairings of regimes have tended to be those where similarities in concerns and in goods and technologies exist. This is mainly the case between the MTCR and the WA and between the NSG and the WA (see table 3.2). In contrast, the AG has seldom been part of inter-regime discussions because of objections by a state that is a member of all regimes except the AG, preventing approval of a mandate for dialogue and coordination. Challenges that have inhibited the use of inter-regime dialogue and coordination or have negatively impacted the effectiveness of these measures are discussed in detail below.

⁸⁰ National regime delegates, Interviews with the author, 17 July 2019 and 30 Aug. 2019.

⁸¹ Current and former national regime delegates, Interviews and correspondence with the author, 24 Sep. 2019 and 25 Sep. 2019.

⁸² Joyner (note 10), p. 224; and Cándano (note 21).

⁸³ Anthony, I. et al., ‘Multilateral weapon-related export control measures’, *SIPRI Yearbook 1995: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 1995), pp. 599-600, 619-22.

⁸⁴ Government senior adviser on export control technical policy, Correspondence with the author, 25 Sep. 2019.

Challenges to inter-regime dialogue and coordination

As an informal process with a consensus mandate, inter-regime dialogue meetings have the advantage of potentially yielding more concrete and formal outcomes than dialogue and coordination on a bilateral basis or in small like-minded or regional groups of states. However, such meetings still face considerable challenges that impose limitations on the effectiveness and outcomes of technical inter-regime discussions. Key challenges are (a) differences in regime membership and the impact of geopolitics; and (b) procedural constraints and inherent differences between the regimes, in terms of focus and mandate.

Differences in regime membership and the impact of geopolitics

Among regime delegates there appears to be agreement that the different membership compositions of the regimes and their highly confidential nature are the main obstacles to reaching more frequent and more wide-ranging consensus on inter-regime cooperation at both technical expert and political levels. States are often unwilling to share information with non-members of a regime and are particularly reluctant to be transparent with adversarial or competing states.

Each regime is facing challenging constellations of relevant supplier states, both members and non-members, that are involved in active conflicts or in geopolitical or strategic competition. One example of an apparently difficult situation that is unlikely to change in the near future is the growing tensions between Russia and several other regime member states, which worsened after an incident that took place in Salisbury, United Kingdom, in 2018: an assassination attempt involving the use of a chemical warfare agent of the Novichok family resulted in the death of a British citizen (who was not the intended target) and was attributed to Russia.⁸⁵ The incident caused significant tension between the UK and Russia, in particular, and led the AG to consider the listing of Novichoks precursors.⁸⁶ As another example, in 2015 Italy leveraged its ability to prevent consensus on the admittance of India into the MTCR to get the Indian Government to come to an amicable solution over a maritime incident dating from 2012 that had resulted in two Italian marines being charged with murder by Indian courts.⁸⁷ Similarly, cooperation on the coverage of military drones between the WA and the MTCR has been stifled by controversies over large-scale exports of such systems by China despite their proclaimed adherence to the MTCR guidelines.⁸⁸ The work of the WA is also being negatively affected by the tensions between Russia and Ukraine after the annexation of Crimea and the onset of the conflict in eastern Ukraine, preventing progress on many issues—including contentious inter-regime dialogue initiatives—where the two states have opposing interests. Membership constellations and geopolitical issues thus disrupt the ability of the regimes to engage in inclusive inter-regime dialogue.

Procedural constraints and inherent differences between the regimes

Constraints on inter-regime dialogue and coordination can also be of an operational nature. For example, some regime members have expressed reservations about formalizing inter-regime processes because of the significant time and resources that

⁸⁵ AG, 'Statement by the Chair of the 2018 Australia Group Plenary', Paris, 8 June 2018; and Maletta et al. (note 34), p. 523.

⁸⁶ AG, 'Statement by the Chair of the 2019 Australia Group Plenary' (note 85).

⁸⁷ Bauer, S. and Maletta, G., 'Dual-use and arms trade controls', *SIPRI Yearbook 2017: Armament, Disarmament and International Security* (Oxford University Press: Oxford, 2017), pp. 603–604; Stewart, I. J., 'Export controls at the crossroads', *Bulletin of the Atomic Scientists*, Analysis, 15 Oct. 2015; Kington, T. and Raghuvanshi, V., 'Italy blocks Indian application to MTCR', *DefenseNews*, 17 Oct. 2015.

⁸⁸ Bromley, M., Duchâtel, M. and Holtom, P., *China's Exports of Small Arms and Light Weapons*, SIPRI Policy Paper no. 38 (SIPRI: Stockholm, Oct. 2013), p. 22.

they require—currently they take far longer and use more resources than informal consultations on bilateral or group levels. A coordinated inter-regime dialogue first requires the regime members to negotiate a mandate and agree on regime positions on key issues. A meeting then needs to be organized and hosted by a regime chair, other member or secretariat on a voluntary basis. After the meeting, the outcomes must be discussed and fed into the policy and technical consultation process in each respective regime. Only based on the result of these discussions in each regime can potential common steps be taken, in terms of concrete regime actions. This can prolong list change processes even further. Notably, the regime chairs rotate annually in all regimes but the AG, and the chairs of the different expert groups and information exchange meetings rotate at varying intervals or on an hoc basis in each regime. While the delegations to the regimes are usually relatively consistent over time and the chairs of the subsidiary bodies often serve for multiple years, the regime chairs are usually from a higher political level, enabling a stronger political profile of the issue area in the chairing state. However, they are often only involved for a period of one year, which may not be sufficient to follow through with reform efforts or complicated discussions that require longer consultations and substantive work. The process is more manageable in some cases than in others; for example, where discussions focus on an exchange of technical knowledge, interpretation of controls and existing national control practice, rather than on issues where there are clear political divides with geopolitical implications. Nevertheless, considerable political capital, as well as time and effort, can be lost if one regime fails to equip its delegation with the necessary mandate to allow it to enter into a meaningful interaction with another regime's delegation beyond giving a scripted presentation.⁸⁹

The fact that there are different criteria that are being considered in each regime when deciding on and designing controls has also led some members to dismiss the value of inter-regime coordination on specific control-list items or emerging technologies.⁹⁰ These inherent differences can be difficult to reconcile when seeking mutual understanding on risk assessments and the necessity of controls, and pose limits for harmonization of regime controls at the international level. However, as noted previously, states usually implement the regimes' control lists in unified lists for dual-use goods and military items, which means that they still need to determine how to reconcile diverging regime controls at the national level.

Good practices in inter-regime dialogue and coordination

Effectively implemented dialogue and coordination activities offer a valuable tool for the export control regimes to strengthen coordination and address cross-regime challenges. This is particularly the case for dialogues on emerging technologies that would potentially be covered by multiple regimes. An assessment of some recent inter-regime dialogue and coordination activities allows for the identification of a number of good practices and lessons learned for future inter-regime activities that could help to address cross-regime challenges. Despite the difficulties encountered in inter-regime activities in the past, most dialogue and coordination efforts have been viewed positively by regime members. Although the dialogue between the NSG and the WA on the issue of control parameters for machine tools showed some limitations of the inter-regime dialogue approach, it also demonstrated how engagement in such a process can place a focus on a complicated issue. Notably, while these efforts did not

⁸⁹ Five current and former national regime delegates, Interviews with the author, 26 June 2019, 17 July 2019 and 24 Sep. 2019.

⁹⁰ Anthony, I. et al., 'Multilateral weapon-related export control measures', *SIPRI Yearbook 1995: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 1995), pp. 632–33.

necessarily produce tangible results, such as list changes, some regime delegates have noted that there were benefits, including improving the baseline of technical understanding, establishing a mutual understanding of concerns about practicalities and clarifying the options that could be further discussed and pursued.⁹¹

Some regimes have explicitly or implicitly signalled their willingness to expand inter-regime engagement efforts by acknowledging their value in policy statements and have taken steps to develop a process for arranging informal inter-regime meetings of experts. The WA recently acknowledged that it is pursuing ‘informal technical dialogues at experts level’ with the MTCR and the NSG to address current and potential control-list overlaps, as well as other control-list issues that concern both the WA and other regimes.⁹² In 2017 the NSG updated its internal guidance on enhancing outreach activities, including outreach to the other export control regimes.⁹³ The MTCR Technical Experts Meeting (TEM) has recently developed a more formalized process for arranging inter-regime informal meetings of experts to facilitate future meetings.⁹⁴

Regime delegates have also reflected positively on the fact that policy-level exchanges among smaller groups of member states can help to prepare and pave the way for more comprehensive engagements at inter-regime level.⁹⁵ Depending on the issue at hand, exchanges among small groups of technical experts can also be preferable for advancing specific processes in the regimes, where the time and resource investment of a more inclusive inter-regime format is not deemed appropriate. The level of engagement of the relevant chairs of the regimes or their subsidiary bodies, as well as the secretariats, is often key in promoting a particular issue onto the agenda to receive the necessary attention and engagement for a more comprehensive inter-regime dialogue and coordination approach. As such, there is a close connection between the specific dynamics—often at an interpersonal level—of these exchanges and the relative success of their initiatives.

The experience of the dialogue and coordination between the MTCR and the WA on the issue of additive manufacturing is a particularly good example of coordination and engagement at the technical expert level between the two regimes. Regime technical experts have held a series of meetings focusing on technological developments, associated risks and potential approaches to controls on this emerging technology. This dialogue is taking place against a backdrop of a wide variety of proposals for new controls both within and across the regimes, indicating a range of different positions among regime members. There is also considerable hype over the capabilities of the technology, with large investments in related industries in many member states creating a considerable amount of pressure on the regime members to react in a measured way.⁹⁶ While this coordination has so far not resulted in the introduction of specific control-list items related to additive manufacturing in any of the regimes, it has nevertheless contributed to preventing the introduction of conflicting or overlapping controls in the different regimes. Several member states have expressed their appreciation for the role of inter-regime dialogue and coordination in identifying and communicating the concerns that exist regarding specific proposed approaches to export controls on additive manufacturing; many believe this to be an important component in the development of an appropriate non-proliferation and export control response in this area.⁹⁷

⁹¹ Government senior adviser on export control technical policy, Correspondence with the author, 25 Sep. 2019.

⁹² Griffiths (note 20).

⁹³ NSG, ‘NSG timeline’, [n.d.]; and NSG, ‘Public statement: plenary meeting of the Nuclear Suppliers Group’, Bern, 23 June 2017.

⁹⁴ National regime delegate, Correspondence with the author, 25 Sep. 2019.

⁹⁵ National regime delegates, Interviews with the author, 17 July 2019.

⁹⁶ Brockmann and Kelley (note 58), pp. 28–31.

⁹⁷ National regime delegates, Interviews and correspondence with the author, 17 July 2019, 18 July 2019 and 25 Sep. 2019.

5. Conclusions and recommendations

Inter-regime dialogue and coordination meetings will probably remain the exception, rather than a common occurrence, owing to political sensitivities and other challenges outlined above. For those efforts to be effective, it is key that the regimes and the participating states prepare and facilitate such activities with these challenges in mind. Considering the substantial investment of political capital, resources and time needed for inter-regime dialogue efforts, as well as the current lack of certainty surrounding them, the regimes could explore the introduction of a standing mechanism or standardized process that would allow for expedited inter-regime coordination. This would also help to avoid the situation identified above where dialogue parties enter into discussions with incompatible mandates, meaning that the investment in coordination is wasted.

In addition to regime-level meetings, the members of the regimes should continue actively engaging in bilateral and regional coordination among particularly interested and invested states to create the conditions for dialogue to take place in a way that is most likely to yield results. Regime members could further increase the number of, and funding for, track 1.5 consultations with a technical focus, to foster discussions on technologies where regime interaction would still be too controversial or face certain limitations. Such consultations should involve regime members and technical and policy experts from academia, research institutes, industry and think tanks.

Specific recommendations for the implementation of inter-regime dialogue and coordination activities are outlined below. These should be considered in the light of the process recently developed by the MTCR TEM, with a view to creating similar mechanisms in the other regimes. The regimes should pursue inter-regime dialogue and coordination efforts targeted at emerging technologies with cross-regime relevance, such as additive manufacturing, robotics and artificial intelligence. Based on the analysis above, regime discussions in these areas are currently most in need of and most suitable for pursuing such efforts. The regimes should also consider ways to stimulate cross-pollination and coordination on the provision of guidance materials on export control implementation with cross-regime relevance. In both areas, the avoidance of duplication and the streamlining of coordination processes could improve the quality of the regimes' functions while also helping to reduce costs and increase inclusivity.

Recommendations for inter-regime dialogue and coordination

Lessons learned from previous inter-regime dialogue efforts demonstrate several areas that require particular attention in preparing and conducting inter-regime dialogue and coordination activities. Ideally, setting up inter-regime dialogue and coordination activities should follow a clear formula that can be easily reproduced for inter-regime activities on different topics. Such a process model could include provisions on the following conditions that should be fulfilled in order for inter-regime dialogue and coordination efforts to most likely be successful:

- *Preparation.* The regimes need to clarify who is responsible for preparing and setting up the meeting. The appropriate chairs of the regime's subsidiary bodies or the secretariat, depending on the institutional set-up of the regime, are well placed to facilitate preparations.
- *Choice of topic.* It is important to identify a topic that can be discussed from a technical or operational perspective, without touching too heavily

on politically sensitive areas. The considerable investment of time and political capital necessary for inter-regime consultations emphasizes the importance of being selective with topics for such meetings.

- *Parameters of the discussion.* Regime delegates indicate that it is indispensable to agree beforehand on the parameters of the discussion and the scope of what is to be shared and substantively discussed, in order to guide the discussion and keep it focused on specific outcomes.
- *Realistic, limited goals.* The regimes should set a realistic goal that is clear to both the regimes and the participating states and that is accepted and perceived as beneficial by all members. Creating clear expectations and a positive connotation of the engagement, and highlighting pay-offs for the participants, can improve their willingness to share and engage.
- *Clear and compatible mandates.* Providing a clear mandate for the participants in the discussion is necessary to enable a substantive exchange that furthers the process towards the goals identified. The mandates of each participating regime's delegation also need to be compatible and should thus be coordinated and compared beforehand. This is to prevent the undesirable situation of one delegation being unable to actively engage on a specific topic due to limitations in its mandate.
- *Advance consultation and preparation of the delegation.* To implement the above recommendations regarding topics, parameters, goals and mandates, the delegations should consult beforehand and clarify their responses to expected difficulties and how discussions can be structured and conducted to be most beneficial.

About the author

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