III. Arms control, non-proliferation and use of missiles

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Missiles are both a potent conventional weapon system and the prime delivery system for nuclear weapons. Largely as a result of their potential to deliver nuclear, biological and chemical weapons, various arms control and non-proliferation instruments have banned certain classes of missiles, imposed numerical limits or reductions, or created transparency and confidence-building measures (TCBMs). However, conventionally armed missiles are largely viewed as a legitimate means of warfare and there is no agreement that generally bans their development, transfer or use.

Developments in the arms control, non-proliferation and use of missiles in 2023 were shaped by the Russia–Ukraine war and the continuing crisis of arms control. The war in Ukraine saw the continued massive use of conventionally armed ballistic missiles and cruise missiles and also uncrewed aerial vehicles (UAVs) that have been used either in conjunction with or to supplement missiles in a one-way attack role.[1] This conflict has contributed to increased demand for missiles to replenish states' stockpiles and for the acquisition of new types of missile, UAV and missile defence system.

The Israel–Hamas war that erupted in response to Hamas's attack on 7 October 2023 saw the massive use of rockets by Hamas and the deployment of Israel's layered air and missile defence system. Israel has also used missiles in its bombardment of targets in Gaza.[2] With the threat of possible entry into the conflict by Hezbollah and the Houthi campaign of missile attacks on shipping in the Red Sea, a renewed focus has also been placed on proliferation of missiles to non-state actors. At the same time, the geopolitical situation—particularly the relations of the United States with China and with Russia—has not been conducive to the creation of any new instruments on the arms control and non-proliferation of missiles.

This section first discusses the use of missiles—including ballistic missiles and cruise missiles but excluding artillery rockets and anti-tank or anti-aircraft rockets—in the Russia–Ukraine war and the implications for missile arms control and non-proliferation. It then describes developments in the 2002 Hague Code of Conduct against Ballistic Missile Proliferation (HCOC) before drawing some conclusions on the prospects for regulating future missile proliferation and use.

[1] On the Russia–Ukraine war see also section II of this chapter; and chapter 1 and chapter 2, section I, in this volume.

[2] Kreitenberg, Z., 'Missile defense in the Israel–Hamas war', Lawfare, 8 Dec. 2023; and Allison, B., 'Hezbollah's precision threat to Israel', Lawfare, 31 Oct. 2023. On the Israel–Hamas war see also section II of this chapter; and chapter 1 and chapter 2, section I, in this volume.

Missile use in the Russia–Ukraine war

The Russian Federation's full-scale invasion of Ukraine that began on 24 February 2022 has seen the extensive use of a wide range of missile systems and uncrewed aerial vehicles by Russia and, to a lesser extent, Ukraine. The experiences from the conflict have demonstrated the utility and limitations of different precision-strike systems—while these include combat aircraft and artillery, loitering munitions and one-way-attack UAVs, the focus here is on ballistic missiles and cruise missiles. The war has also highlighted the effectiveness of air and missile defence systems in defeating many of these systems.

Since the beginning of the invasion, Russia's use of missiles has changed several times. For example, Russia's targeting has changed. Having initially used missiles, aircraft, UAVs and long-range artillery to suppress Ukraine's air defences and attack other military targets, Russia soon shifted its targeting to civilian infrastructure and government, only sporadically targeting airfields and other military infrastructure.[3] Throughout 2023, Russian missile attacks killed many civilians and hit hospitals, civilian residences and infrastructure, and other targets protected under international humanitarian law (see section II).[4] Russia's advanced long-range cruise and ballistic missiles appear to have been largely accurate at striking targeted locations, but Ukrainian forces, particularly artillery and air and defence units, have made effective use of 'shoot-and-scoot' tactics—that is, leaving their positions quickly after executing a firing mission or being spotted by enemy reconnaissance.[5] These seem to have rendered many Russian strikes ineffective, with Ukrainian military assets having vacated the targeted location before being hit.[6]

The type and number of missile systems used by Russia has also changed. Surprisingly, Russia began using a considerable number of its high-end dual-capable missiles—including the aeroballistic 9A-7760 Kinzhal missile—and older, often inaccurate dual-capable systems for tactical strikes.[7] This

[3] Bronk, J. with Reynolds, N. and Watling, J., *The Russian Air War and Ukrainian Requirements for Air Defence* (Royal United Services Institute: London, 7 Nov. 2022), p. 28.

[4] Janowski, K., 'Civilian deaths in Ukraine war top 10,000, UN says', UN Ukraine, Press release, 21 Nov. 2023; and Armed Conflict Location & Event Data Project (ACLED), 'Ukraine conflict monitor', accessed 9 Jan. 2024; and World Health Organization, 'WHO records more than 1000 attacks on health care in Ukraine over the past 15 months of full-scale war', Media release, 30 May 2023.

[5] Axe, D., 'In Avdiivka, Ukrainian Caesar Howitzers shoot and scoot to foil Russian assaults', Forbes, 30 Oct. 2023.

[6] Bronk et al. (note 3), p. 28; and Myre, G., 'To protect against Russian airstrikes, Ukraine's defenders "shoot and scoot"', National Public Radio, 6 July 2023.

[7] Alberque, W., 'What has the war on Ukraine revealed about Russia's non-strategic missiles?', International Institute for Strategic Studies (IISS), 6 Mar. 2023; 'Russian Su-34 uses Kinzhal hypersonic missile in special op—official', TASS, 4 Sep. 2023; 'Russia repurposes S-300 surface-to-air missiles for ground attacks against the city of Kharkiv', Army Recognition, 5 Jan. 2024; and Gregory, A., 'Ukraine provides evidence of dummy warheads fired by Russia using nuclear-capable missile', *The Independent*, 2 Dec. 2022.

appeared to indicate that Russia's stockpile of missiles with more appropriate capabilities has been depleted. It also indicated Russia's willingness to both absorb the costs of using high-end systems and its disregard for the impact of the use of inaccurate older systems on civilians in populated area (see also section II).[8]

The extensive use of missiles has forced Russia to increase domestic production and imports of missile systems, UAVs and components to supply its forces and replenish stockpiles.[9] To substitute for and complement the missiles used to attack Ukraine, Russia continued to import Shahed-136 one-way-attack UAVs in large numbers from Iran and also began ramping up domestic production of these UAVs with Iranian assistance.[10] In addition, the Democratic People's Republic of Korea (DPRK, or North Korea) has supplied short-range ballistic missiles among the military equipment shipped to Russia, which Russia began to use in December 2023.[11]

The effectiveness of Russia's missile war

Overall, the military effectiveness of Russia's missile war has been questioned by many Western analysts. They have cited the limited number of missiles initially deployed and used (compared to the high number of military targets during a full-scale invasion), the low reliability of Russian missile systems, and the successes of Ukrainian air and missile defences.[12]

To evade or saturate Ukrainian missile defences, Russia has used several long-range missiles equipped with countermeasures or has fired salvos of

[8] Williams, I., *Putin's Missile War: Russia's Strike Campaign in Ukraine* (Center for Security and International Studies: Washington, DC, May 2023), pp. 9–11, 33.

[9] Sputnik International, 'Russia to increase production of Kinzhal hypersonic missiles', 19 Sep. 2023. On Russian arms production see also chapter 5, section IV, in this volume.

[10] Kirby, J., US National Security Council coordinator for strategic communications, On-the-record press gaggle, White House, 20 Oct. 2022; Mason, J. and Holland, S., 'Russia received hundreds of Iranian drones to attack Ukraine, US says', Reuters, 10 June 2023; and Bennet, D. and Ilyushina, M., 'Inside the Russian effort to build 6,000 attack drones with Iran's help', *Washington Post*, 17 Aug. 2023; Albright, D. and Burkhardt, S., 'Visible progress at Russia's Shahed drone production site: Satellite imagery update and call for action', Institute for Science and International Security, 13 Nov. 2023. On Iranian supplies to Russia see also chapter 6, section I, in this volume.

[11] Kim, E., 'S. Korean military says N. Korea might have provided Russia with short-range ballistic missiles', Yonhap News, 2 Nov. 2023; Lendon, B., 'Russia is using North Korean missiles in Ukraine, US says. That's bad news for Asia', CNN, 5 Jan. 2024; and Jean-Pierre, K., White House press secretary, and Kirby, J., US National Security Council coordinator for strategic communications, Press briefing, White House, 4 Jan. 2024. On North Korean supplies to Russia see also chapter 6, section I, chapter 7, section VIII, and chapter 12, section II, in this volume.

[12] Williams (note 8), pp. 16–24; and Schneider, M. B., 'Lessons from Russian missile performance in Ukraine', *Proceedings of the US Naval Institute*, vol. 148, no. 10 (Oct. 2022); and Rostker, S., 'The right and wrong lessons to learn from missile defense in Ukraine', Center for Arms Control and Non-Proliferation, 19 Oct. 2023.

older Kh-55/555 cruise missiles (see table 10.2).[13] Ukraine's missile and air defence capabilities have been slowly but steadily replenished and strengthened with Western systems.[14] The conflict has thus also become a proving ground for these systems' performance against Russian missiles and UAVs. According to data released by the Air Force Command of the Ukrainian Armed Forces, its air defences have achieved high rates of interceptions—at times downing nearly 80 per cent of air- and ground-launched ballistic missile attacks nationwide and 100 per cent of ballistic missiles attacking areas where Patriot missile defence systems were stationed.[15] It should be noted that some of the strikes counted as interceptions may also be attributable to failures to launch, detonate or navigate to the target, particularly by older Russian systems.[16] Ukrainian-operated Patriot missile defence systems provided by the United States (and later Germany) even successfully intercepted Russia's prestigious Kinzhal missile on several occasions.[17]

Western supply of missiles to Ukraine

During 2023 Western states began equipping Ukraine with air-launched cruise missiles, ground-launched ballistic missiles and long-range attack UAVs. In May the United Kingdom began supplying an unspecified number of Storm Shadow air-launched land-attack cruise missiles to Ukraine.[18] France followed suit by announcing in July that it would deliver the French variant of the same missile—the SCALP-EG—to Ukraine.[19] The USA authorized transfers to Ukraine of ATACMS tactical ballistic missiles in September 2023.

These Western-supplied systems enabled Ukraine to strike Russian targets much deeper inside the occupied territories. The US-supplied ATACMS, for example, was used in October for strikes against Russian-controlled airfields in eastern Ukraine.[20]

[13] Ismay, J., 'Russia deploys a mystery munition in Ukraine', *New York Times*, 14 Mar. 2022; Williams (note 8), p. 23; British Ministry of Defence (@DefenceHQ), 'Latest Defence Intelligence update on the situation in Ukraine—26 November 2022', Twitter, 26 Nov. 2022; and Harward, C. et al., 'Russian offensive campaign assessment', Institute for the Study of War, 29 Dec. 2023.

[14] On arms transfers to Ukraine see chapter 6, section I, in this volume.

[15] Williams, I., 'Russia isn't going to run out of missiles', Center for Security and International Studies (CSIS), 28 June 2023.

[16] Stewart, P., 'Exclusive: US assesses up to 60% failure rate for some Russian missiles, officials say', Reuters, 25 Mar. 2023.

[17] Mitchell, P., 'Hypersonic hype? Russia's Kinzhal missiles and the lessons for air defense', US Military Academy, Modern War Institute, 23 May 2023; and Goldstein, L. and Waechter, N., 'China evaluates Russia's use of hypersonic 'Daggers' in the Ukraine war', The Diplomat, 11 Jan. 2024.

[18] Wright, T., 'UK to supply Storm Shadow missile to Ukraine', International Institute for Strategic Studies (IISS), 16 May 2023.

[19] Irish, J., 'France to supply Ukraine with long-range cruise missiles', Reuters, 11 July 2023.

[20] Gwadera, Z. and Wright, T., 'Ukraine targets Russian airfields with US-supplied ATACMS missile', International Institute for Strategic Studies (IISS), 26 Oct. 2023.

Table 10.2. Missile systems used by Russian and Ukrainian forces, 2022–23

Missile[a]	NATO/US designation	Type	Range (km)
Russia			
Ballistic missiles			
9M723 Iskander-M	SS-26 Stone	SRBM	500
9A-7760 Kinzhal	AS-24 Killjoy	ALBM	1 500–2 000
OTR-21 Tochka	SS-21 Scarab	SRBM	70–120
Hwasong-11	KN23 or KN24[b]	SRBM	380–900[b]
S-300 (ground-attack role)	SA-10 Grumble	SAM	..
Cruise missiles			
Kh-22 Burya	AS-4 Kitchen	ALCM	80–330
Kh-32	AS-4A Kitchen mod 2	ALCM	600–1 000
3M14 Kalibr	SS-N-30A Sagaris	LACM (sea-launched)	1 500–2 500
P-800 Oniks	SS-N-26 Strobile	ASCM (land-attack role)	>400
9M728 Iskander	SSC-7 Southpaw	GLCM	500
9M729	SSC-8 Screwdriver	GLCM	2 350
Kh-55/555	AS-15 Kent	ALCM	2 500
Kh-101	AS-23A Kodiak	ALCM	2 500–2 800
Ukraine			
Ballistic missiles			
ATACMS Block 1	..	SRBM	165
Tochka-U	SS-21 Scarab B	SRBM	70–120
Cruise missiles			
Storm Shadow/SCALP-EG	..	SRCM	140–550

ALBM = air-launched ballistic missile; ALCM = air-launched cruise missile; ASCM = anti-ship cruise missile; GLCM = ground-launched cruise missile; LACM = land-attack cruise missile; SAM = surface-to-air missile; SRBM = short-range ballistic missile; SRCM = short-range cruise missile.

[a] Missile designations refer to families of missile systems, unless a specific variant is identified, as in most cases it is difficult to ascertain which variants were used by the conflict parties.

[b] At the time of writing, it remains unclear which variant within the Hwasong-11 family—the KN23 or the KN24—was provided by North Korea and used by Russia in Dec. 2023. The range provided is based on the figure published by the US government. For further detail on these missiles see chapter 7, section VIII, in this volume.

Sources: Alberque, W., 'What has the war on Ukraine revealed about Russia's non-strategic missiles?', International Institute for Strategic Studies (IISS), 6 Mar. 2023; Williams, I., *Putin's Missile War: Russia's Strike Campaign in Ukraine* (Center for Security and International Studies: Washington, DC, May 2023), pp. 25–32; Center for Security and International Studies (CSIS), Missile Defence Project, 'Missiles of Russia', 10 Aug. 2021; and Jean-Pierre, K., White House press secretary, and Kirby, J., US National Security Council coordinator for strategic communications, Press briefing, White House, 4 Jan. 2024.

Implications of the Russia–Ukraine war for missile arms control and non-proliferation

Since at least the 1990s, several major powers have given missile systems an increasingly significant role in conventional warfare. As described above, Russia—a key player in the missile arms control and non-proliferation regime—has made extensive use of missiles, including against civilian targets, in the war in Ukraine. The resulting increases of missile production

and imports of missiles, components and UAVs are further contributing to an already negative trend. All this has damaged prospects for future missile arms control and non-proliferation.

Of the two main bilateral Russian–US arms control instruments designed to restrict missiles with certain range and nuclear payload capabilities, one has ended and the other suffered a major setback in 2023. The first of these—the 1987 Treaty on the Elimination of Intermediate-range and Shorter-range Missiles (INF Treaty)—was the last arms control treaty imposing a ban on the deployment of a specific class of missiles (ground-launched ballistic and cruise missiles with a range of 500–5500 kilometres). It lapsed in 2019.[21] The second—the 2010 New Strategic Arms Reduction Treaty (New START)—imposes an upper limit on numbers of Russian and US intercontinental ballistic missiles (for nuclear weapon delivery) and their launchers.[22] However, no further reductions are foreseen under New START and its future is highly uncertain given that in January 2023 the USA did not certify Russia's compliance with all the terms of the treaty and in February Russia announced its suspension of the treaty's implementation.[23]

Verification of previous arms control agreements has been partly based on mutual inspection. However, the use in the Russia–Ukraine war of dual-capable missiles and of de-mated missiles that were previously intended to have a nuclear weapon-delivery role along with the rapid movement of Russian missile units across regions calls into question the utility of some of the distinctions used in those agreements. Russia has long intentionally used the ambiguity and the resulting deterrent effect (also known as entanglement) of dual-capable missile systems. Missile systems capable of carrying either a conventional or a nuclear payload make it harder for a targeted state to distinguish whether a nuclear attack is imminent and this can have a particularly destabilizing or escalatory impact in a conflict between nuclear powers.[24] Yet, the widespread use of dual-capable systems and even de-mated nuclear-delivery systems makes defining the scope of future inspection regimes ever more difficult. The rapid movement of Russian missile forces between theatres (e.g. from Russia's far east to its west) also means that regional distinctions—such as those discussed in the negotiations leading up to the INF Treaty and in Russia's offer of a moratorium on deployment in Europe of its 9M729 missile—are largely ineffective.[25]

[21] For a summary and other details of the INF Treaty see annex A, section III, in this volume. On its demise see Topychkanov, P. and Davis, I., 'US–Russian nuclear arms control and disarmament', *SIPRI Yearbook 2020*, pp. 399–405.

[22] For a summary and other details of New START see annex A, section III, in this volume.

[23] On developments related to New START in 2023 see chapter 8, section I, in this volume.

[24] Acton, J. M., 'Escalation through entanglement: How the vulnerability of command-and-control systems raises the risk of inadvertent nuclear war', *International Security*, vol. 43, no. 1 (summer 2018), pp. 97–98.

[25] Alberque (note 7); and US Department of State, 'INF Treaty: Narrative', [n.d.].

Missile proliferation trends as evidenced by supplies to Russia and Ukraine seem to suggest both a continuing political struggle within some major missile-producing states over the appropriateness of supplying missiles (particularly those with a longer range) for a state's self-defence and a reluctance to transfer missile systems to conflict zones.[26] While Western states initially exercised some restraint in transferring missiles to Ukraine—only supplying small numbers of short-range missiles—this increasingly dissipated as the war dragged on.[27] Yet, although these states increasingly see missiles as functional to Ukraine's self-defence, they are still only suppling them in relatively small quantities.[28]

Transfers of missiles and UAVs from Iran and North Korea to Russia may have a profound impact on efforts to prevent missile proliferation. Russia's serious violation of the comprehensive arms embargo on North Korea could potentially both embolden North Korea to market its products more widely and reduce the deterrent effect on other states interested in purchasing North Korean weapons.[29] The United Nations restrictions and embargo on Iran's missile programme were lifted on 18 October 2023.[30] Iran has a history of transferring missiles and technology to non-state groups and its ability to do so in the future could be increased by a deepening of its arms trade and military technology cooperation with Russia.[31] There are also indications that Russia may have begun engaging in closer cooperation on missiles and space-launch technology with, among others, Iran and North Korea, in return for their delivery of weapons and ammunition, including UAVs and missiles.[32]

One of the consequences of the absence of mutual arms control restraints in this area has been the emphasis placed by Russia's opponents on using export controls and trade controls to seek to constrain its ability to replenish its missile stockpile (and other military materiel). In an attempt to prevent Russia's continued use of foreign components and technology in the production particularly of its modern missiles and other military systems, many of the states supporting Ukraine have imposed sanctions triggering

[26] E.g. Larson, C., 'Why Germany is rattled about sending its Taurus missile to Ukraine', Politico, 12 Oct. 2023.

[27] Hockstader, L., 'How the West's waffling undermines Ukraine's war effort', *Washington Post*, 10 Jan. 2024.

[28] Hardie, J. and Bowman, B., 'On ATACMS for Ukraine, don't settle for a job half done', Breaking Defense, 9 Nov. 2023.

[29] On the arms embargo on North Korea see chapter 12, section II, in this volume.

[30] On the arms embargo on Iran see chapter 8, section III, and chapter 12, section II, in this volume.

[31] On Iranian support to the Houthis missile capabilities see Hinz, F., 'Houthi anti-ship missile systems: Getting better all the time', Military Balance Blog, International Institute for Strategic Studies (IISS), 8 Jan. 2024

[32] Reuters, 'US sees more indication of Russia, Iran defense cooperation', 16 May 2023; and International Institute for Strategic Studies (IISS), 'The surge of activity in relations between North Korea and Russia', *Strategic Comments*, vol. 29, no. 30 (Oct. 2023).

trade restrictions on military and dual-use goods.[33] This has slowed Russia's ability to replenish its stockpiles through domestic production.[34] However, evidence that Russia is shifting to other—particularly Chinese—suppliers and circumventing sanctions by using re-exports though neighbouring states and buying up stocks—particularly of electronics—from wholesalers has also demonstrated the limitations of these instruments.[35]

The Hague Code of Conduct against Ballistic Missile Proliferation

Most of the main remaining conventional arms control instruments for missiles are transparency and confidence-building measures, in the form of bilateral prelaunch notification agreements between nuclear-armed states (see table 10.3). The exception is the 2002 Hague Code of Conduct against Ballistic Missile Proliferation (HCOC), which is open for subscription by all states. All four prelaunch notification agreements remained operational in 2023, but the work of the HCOC continued to be hampered by the reverberations of the war in Ukraine and the deepening geopolitical fault lines. The USA is reportedly considering 'a proposal to exchange missile launch notifications with China' following a meeting between US President Joe Biden and Chinese President Xi Jinping, but prospects remain unclear.[36]

The HCOC is a multilateral TCBM covering ballistic missile and space-launch vehicle programmes and related policies and activities. It originated from discussions within the framework of the Missile Technology Control Regime (MTCR) in 2002 but was created as an independent politically binding instrument contributing to missile arms control and non-proliferation.[37] In August 2023 São Tomé and Príncipe became the 144th state to subscribe to the HCOC.[38] Notably, Russia continues to subscribe to the HCOC and participates at its regular meetings.

When subscribing to the code, states make a political commitment to several transparency measures, including providing non-public annual declarations on their national ballistic missile and space-launch vehicle programmes

[33] Conflict Armament Research, 'Component commonalities in advanced Russian weapon systems', Ukraine Field Dispatch, Sep. 2022. On these trade restrictions see chapter 12, section II, in this volume.

[34] Bilousova, O. et al., International Working Group on Russian Sanctions, *Strengthening Sanctions to Stop Western Technology from Helping Russia's Military Industrial Complex*, Working Group Paper no. 12 (Stanford University: Stanford, CA, 3 July 2023).

[35] Alberque (note 7); and Bilousova, O., Shapoval, N. and Vlasiuk, V., International Working Group on Russian Sanctions, *Strengthening Sanctions on Foreign Components in Russian Military Drones*, Working Group Paper no. 13 (Stanford University: Stanford, CA, 23 Aug. 2023).

[36] Nakamura, R., 'US considers missile launch notification framework with China', Nikkei Asia, 11 Dec. 2023.

[37] Brockmann, K., *Controlling Ballistic Missile Proliferation: Assessing Complementarity between the HCoC, MTCR and UNSCR 1540*, HCOC Research Paper no. 7 (Fondation pour la Recherche Stratégique: Paris, June 2020). On developments in the MTCR see chapter 12, section III, in this volume; for a brief description and list of partner states see annex B, section III, in this volume.

[38] For a full list of HCOC subscribing states see annex B, section III, in this volume.

Table 10.3. Overview of missile and space launcher prelaunch notification agreements

Agreement	Year established or renewed	Participants	Scope	Type of notifications
Russia–USA Ballistic Missile Launch Notification Agreement	1988 Additional memorandum of understanding signed in 2000	Russia, USA	Ballistic missiles	Prelaunch
Hague Code of Conduct against Ballistic Missile Proliferation	2002	144 participating states	Ballistic missiles and space launchers	Prelaunch and annual aggregates
India–Pakistan Agreement on Pre-notification of Flight Testing of Ballistic Missiles	2005 Renewed in 2011	India, Pakistan	Ballistic missiles	Prelaunch
China–Russia Agreement on Mutual Notification of Launches of Ballistic Missiles and Space-launch Vehicles	2009 Renewed in 2020	China, Russia	Ballistic missiles and space launchers	Pre- and post-launch

Sources: Soviet–US Agreement on Notifications of Launches of Intercontinental Ballistic Missiles and Submarine-launched Ballistic Missiles, signed and entered into force 31 May 1988; Hague Code of Conduct against Ballistic Missile Proliferation (HCOC), adopted 25 Nov. 2002; India–Pakistan Agreement on Pre-notification of Flight Testing of Ballistic Missiles, signed and entered into force 3 Oct. 2005; and China–Russia Agreement on Mutual Notification of Launches of Ballistic Missiles and Space-launch Vehicles, signed 3 Oct. 2009, entered into force 15 Dec. 2010, renewed 15 Dec. 2020 (in Russian).

and policies. Declarations are shared through a restricted website managed by Austria in its role as the HCOC Immediate Central Contact (Executive Secretariat).[39] The subscribing states also exchange prelaunch notifications of launches and test flights of ballistic missiles and space-launch vehicles through the same website.[40] However, the HCOC lacks a mechanism for verification of subscribing states' declarations and notifications.

The HCOC held its 22nd annual regular meeting in Vienna on 15–16 June 2023, with Ireland in the chair. Despite many subscribing states reaffirming their strong commitment to the HCOC, they were unable to agree on a public statement.[41] At least one—believed to be Russia—even prevented the issuing of a chair's summary or statement, repeating the disappointing outcome of the previous meeting.[42]

[39] Hague Code of Conduct, 'Description of HCoC', Oct. 2020.

[40] Hague Code of Conduct, 'How to join HCoC', Nov. 2018.

[41] The most recent agreed public statement was released in July 2021. Hague Code of Conduct, 'Press releases about HCoC', Nov. 2020.

[42] Fondation pour la Recherche Stratégique (FRS), 'Looking back on the Nigerian chairmanship of the HCOC', *Supporting the Hague Code of Conduct Newsletter*, no. 1 (July 2023), p. 2.

Table 10.4. Share of states subscribing to the Hague Code of Conduct against Ballistic Missile Proliferation, by region

Region	No. of states in region	No. of subscribing states	Share of region (%)
Africa	53	42	*79*
Americas	35	23	*66*
Asia and Oceania	44	28	*64*
Europe	48	48	*100*
Middle East	15	3	*20*
Total	**195**	**144**	***74***

Note: States in each region refer to United Nations member states along with the Cook Islands and the Holy See (which have both subscribed to the code).

Source: Hague Code of Conduct, 'Subscribing states', Aug. 2023. For a full list of subscribing states, see annex B, section III, in this volume.

The main concerns of subscribing states continue to be the universalization of the HCOC, the full implementation of and compliance with its provisions, and whether those provisions are working in the way intended. A focus on missile non-proliferation and disarmament education and support of youth and next-generation researchers and practitioners was reflected in a briefing to the annual meeting from the UN Office for Disarmament Affairs (UNODA).[43] There is no indication that discussions on the possible inclusion of cruise missiles in the scope of the HCOC have advanced or reached consensus.[44] No progress on questions related to interpretation of the HCOC's provisions, including on specific issues concerning the issuing of prelaunch notifications raised in previous years, were announced.[45]

An Africa regional seminar on the HCOC took place in Abuja on 22–23 June 2023 with over 100 participants, including from at least 12 African states.[46] The regional seminar and the subscription by São Tomé and Príncipe reflect the recent success of the HCOC in garnering support in Africa: 79 per cent of African states now subscribe to the code, including five of the six most recent subscriptions (see table 10.4).[47]

[43] Fondation pour la Recherche Stratégique (note 42), p. 1; and Fondation pour la Recherche Stratégique (FRS), 'Youth Group—1st workshop: Ballistic missile proliferation', Supporting the Hague Code of Conduct, 25–27 Oct. 2023.

[44] On the earlier discussions see Delory, S., Maitre, E. and Masson, J., *Opening HCoC to Cruise Missiles: A Proposal to Overcome Political Hurdles*, HCoC Research Paper no. 5 (Fondation pour la Recherche Stratégique: Paris, Feb. 2019).

[45] Brockmann, K. and Héau, L., 'The Hague Code of Conduct against Ballistic Missile Proliferation', *SIPRI Yearbook 2023*, pp. 480–81.

[46] Fondation pour la Recherche Stratégique (FRS), 'Dealing with missile proliferation: Security and arms control perspectives', Supporting the Hague Code of Conduct, 22–23 June 2023.

[47] Fondation pour la Recherche Stratégique (FRS), 'The HCOC and African states', *Supporting the Hague Code of Conduct Newsletter*, no. 2 (Nov. 2023)

Conclusions

Developments in 2023 painted a bleak picture for arms control and non-proliferation of missiles. The impact of the Russia–Ukraine war on missile stockpiles in both countries and in supplier states has been profound. Not only has it increased demand for missiles and UAVs, but the lessons learned from the use of missiles in Ukraine could drive further procurement both in quantity and in quality. In particular, the apparent strong performance of Ukraine's air and missile defence systems could lead to procurement of more advanced missiles, UAVs and precision-guided munitions with a higher likelihood of evading and defeating those defences. The use of missiles and UAVs in the Israel–Hamas war since October 2023 seems likely to compound these trends.

The apparent expansion of Russia's arms trade and cooperation with Iran and North Korea on missile and space-launch vehicle technology could enable both further vertical proliferation—through the provision of technology and know-how—and horizontal proliferation—by emboldening these two states to supply their missiles and missile technology to other states. Russia has clearly shifted away from its previous role as a partner in multilateral missile arms control and non-proliferation. Without Russian participation, the prospects for future agreements on missile arms control remain slim.

The HCOC as the only multilateral TCBM on missiles is affected by the persisting international stalemate resulting from both the conflict in Ukraine and wider geopolitical trends. The number of states subscribing to the HCOC continues to grow, slowly and gradually, but there is no sign of any progress towards strengthening the implementation of the code's TCBMs, increasing transparency (both with the public and between states) in the way it functions, or widening or at least clarifying its scope. Efforts to explore a possible bilateral prelaunch notification agreement between China and the United States give a small glimmer of hope, but possible future success clearly hinges on improved China–US relations and the global geopolitical situation in the next few years.