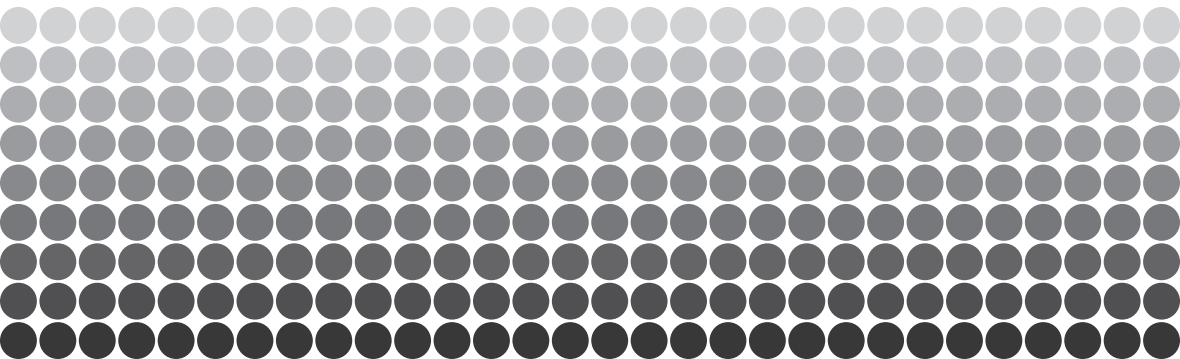


SIPRI YEARBOOK 2014

Armaments, Disarmament and International Security

Transfers of long-range guided missiles

PIETER D. WEZEMAN



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II. Transfers of long-range guided missiles

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A significant number of countries have, or are seeking to acquire, guided missiles that can be launched at sufficient distance to allow the attacking personnel—and the high-value platforms from which it launches the missiles (e.g. aircraft, land based launchers or ships)—to evade defensive fire. Regardless of the specific design of the missile—whether they are rocket propelled and wingless ballistic missiles or cruise missiles equipped with air-breathing engines—these missiles are generally capable of attacking targets with a high degree of accuracy and are difficult to defend against. The military significance of such long-range missiles has been underlined by their use by, for example, the United States and the United Kingdom in Iraq in 2003 and by the USA, UK, France, Italy and the United Arab Emirates (UAE) in Libya in 2011.¹

There is no universal agreement on what constitutes long-range guided missiles. This section highlights missile proliferation by discussing transfers of missiles with conventional warheads with ranges over 200 kilometres with some form of guidance. While this is an arbitrary range threshold, it is used to illustrate how the widespread demand for long-range guided missiles with conventional warheads is partly satisfied by international transfers. In the period 2004–13, 16 countries received or ordered guided missiles with ranges over 200 km from abroad and 8 exported them (see table 5.5).² Although unmanned combat aerial vehicles (UCAVs) share with missiles the advantage of avoiding the need to put personnel and high-value launch platforms within reach of an adversary, only a few UCAV transfers had occurred by the end of 2013 and they are not covered here.³ The following examples describing developments on the Korean peninsula, in the Middle East and in South Asia illustrate trends in international transfers of long-range guided missiles, including motives regarding and concerns about missile proliferation and the behaviour of suppliers.

¹ Hewson, R., 'Accuracy above all else', *RUSI Defence Systems*, summer 2011, p. 60; Barrie, D., 'Europe odds-on to supply new UAE fighters', International Institute for Strategic Studies (IISS), IISS Voices, 10 Dec. 2013, <<http://www.iiss.org/en/iiss%20voices/blogsections/2012-6d11/december-2012-a370/europe-uae-fighters-163c>>; and Kopp, C., 'Iraqi freedom: guided munitions', *Australian Aviation*, June 2003.

² Guided missiles and bombs with ranges below 200 km are also in widespread demand. See SIPRI Arms Transfers Database, <<http://www.sipri.org/databases/armstransfers/>>.

³ The only identified transfers of UCAV fully equipped for combat missions involves the export of about 11 Predator UCAVs from the USA to the UK between 2007 and 2013. On the governance of autonomous weapons such as UCAVs see chapter 9, section II, in this volume.

Table 5.5. Transfers of guided missiles with conventional warheads and land-attack capabilities with ranges from 200 kilometres, 2004–13

Recipient	Supplier	No. ordered	Designation	Description	Approximate range (km)	First year of order	Year(s) of deliveries
Australia	USA	(260)	AGM-158A JASSM	Air-launched cruise missile	370	2006	2011–13
Bahrain	USA	(30)	MGM-140B ATACMS	Land-launched ballistic missile	270	2011	(2013)
China	Russia	(150)	3M-54 Klub	Sea-launched cruise missile	300	(2002)	(2005–2009)
Finland	USA	(70)	AGM-158A JASSM	Air-launched cruise missile	370	2012	–
Germany	Israel	..	Harop	Land-launched cruise missile	1 000	(2013)	–
Greece	France	(56)	Storm Shadow/SCALP	Air-launched cruise missile	>250	2001	(2007)
India	Israel	(50)	Harop	Land-launched cruise missile	1 000	2009	(2013)
	Russia	(178)	3M-54 Klub	Sea-launched cruise missile	300	(1998)	(2001–2009)
	Russia	(866)	PJ-10 BrahMos	Land-, sea-, air-launched cruise missile	270	1998	2006–13
Italy	UK	200	Storm Shadow/SCALP	Air-launched cruise missile	>250	1999	2004–2008
South Korea	USA	(47)	AGM-84H SLAM-ER	Air-launched cruise missile	280	2003	2006–2008
	Germany	(177)	Taurus KEPD-350MR	Air-launched cruise missile	>250	2013	–
Pakistan	China	(50)	CM-400AKG	Air-launched cruise missile	240	(2010)	2012–13
Saudi Arabia	UK	(350)	Storm Shadow/SCALP	Air-launched cruise missile	>250	2009	2011–13
	USA	(650)	AGM-84H SLAM-ER	Air-launched cruise missile	280	(2013)	–
Spain	Germany	43	Taurus KEPD-350	Air-launched cruise missile	>500	2005	2007–10
Syria	North Korea	(100)	Scud Mod-D	Land-launched ballistic missile	800	(1996)	(2000–2009)
Turkey	USA	48	AGM-84H SLAM-ER	Air-launched cruise missile	>280	2006	2012–13
UAE	France	(600)	Storm Shadow/SCALP	Air-launched cruise missile	>250	1998	2003–2008
	USA	(100)	MGM-140B ATACMS	Land-launched ballistic missile	270	2011	(2013)
	USA	(300)	AGM-84H SLAM-ER	Air-launched cruise missile	>280	(2013)	–
UK	USA	(68)	BGM-109 Tomahawk	Submarine-launched cruise missile	1 700	2004	2007–13

() = uncertain data or SIPRI estimate; .. = data not available; – = none yet delivered; UAE = United Arab Emirates.

Source: SIPRI Arms Transfers Database, <<http://www.sipri.org/databases/armstransfers/>>.

The Korean peninsula

Based on technology imported in the 1970s and 1980s, the Democratic People's Republic of Korea (DRRK, or North Korea) has been building a ballistic missile arsenal of unknown size. Most of North Korea's other weapons are outdated and the country does not have access to new equipment due to the United Nations arms embargo on the country.⁴ Missiles are therefore central to North Korea's conventional arsenal and as potential delivery systems for nuclear weapons.⁵

In response to the growth of North Korea's missile arsenal, the Republic of Korea (South Korea) announced in 2012 that it was building what it called a 'kill chain'—a combination of weapons and sensors intended to detect and destroy North Korea's missiles and nuclear weapons before they are launched. The kill chain is intended to operate together with a missile defence system to be used in the event of the kill chain's failure.⁶ Sea-, ground- and air-launched missiles play a central role in the kill chain. Since the 1970s the USA (which supplies significant military support to South Korea) had been pressuring South Korea to limit the range of its missiles, fearing that the introduction of longer-range missiles could destabilize the situation on the peninsula. However, in 2012 South Korea—in agreement with the USA—announced that it planned to deploy ballistic missiles with a range of 800 km and a payload of 500 kilogrammes within five years. At that time it already deployed the Hyunmo-2 ballistic missile, with a range of 300 km and a 500-kg payload. South Korea had never restricted its deployment of cruise missiles and had by 2012 already developed and deployed sea- and ground-launched Hyunmo-3A and Hyunmo-3B cruise missiles with ranges of 500 km and 1000 km, respectively.⁷

While the USA accepted orders from South Korea for F-35 combat aircraft and Global Hawk long-range reconnaissance unmanned aerial vehicles (UAVs, or drones) in 2013, it reportedly refused the sale of AGM-158 JASSM cruise missiles with a range of 370 km for use with South Korea's US-supplied F-15K combat aircraft.⁸ Instead, in 2013 South Korea selected the German–Swedish Taurus KEPD-350 cruise missile, which has

⁴ On the UN arms embargo see chapter 10, section II, in this volume; and the SIPRI Arms Embargoes Database, <<http://www.sipri.org/databases/embargoes>>.

⁵ For an overview of North Korean missile developments see Fitzpatrick, M., 'North Korean proliferation challenges: the role of the European Union', EU Non-proliferation Papers no. 18, EU Non-proliferation Consortium, June 2012, <<http://www.nonproliferation.eu/activities/activities.php>>. On its military nuclear capabilities see chapter 6, section IX, in this volume.

⁶ Kim, K., 'Seoul expanding missile defense in response to NK nuke test', *The Hankyoreh*, 14 Feb. 2013; and Choi, J., 'The politics of the "kill chain"', *The Hankyoreh*, 22 Oct. 2013.

⁷ Pinkston, D., 'The new South Korean missile guidelines and future prospects for regional stability', Strong & Prosperous blog, International Crisis Group, 25 Oct. 2012, <<http://www.crisisgroupblogs.org/strongandprosperous/2012/10/25/>>.

⁸ 'S. Korea to buy European missiles', Agence France-Presse, 19 June 2013.

a range of at least 250 km. Neither Germany nor Sweden had previously sold missiles with a range over 200 km to a state outside Europe.

Iran, Saudi Arabia and the United Arab Emirates

Iran produces ballistic missiles with ranges of up to approximately 2000 km based on missile technology that it imported from China and North Korea in the 1980s and 1990s and by using components and materials imported in violation of UN sanctions.⁹ The UN arms embargo means that, as in the case of North Korea, Iran cannot import modern long-range strike weapons such as combat aircraft. Its indigenously produced missiles therefore play a central role in its military arsenal.¹⁰

Partly in response to a perceived threat from Iran, two other major states in the Gulf region—Saudi Arabia and the UAE—have imported several types of long-range guided missile. Reports suggest that Saudi Arabia has received Chinese support to maintain 2500-km range Dong Feng-3 (DF-3) ballistic missiles (which it had acquired in 1988 from China) and that it acquired new and more accurate DF-21 or other ballistic missiles from China around 2007, although neither claim has been confirmed.¹¹ In 1998 the UAE ordered Black Shaheen air-launched cruise missiles of at least 250-km range from France, and in 2009 Saudi Arabia ordered similar Storm Shadow cruise missiles from the UK. In both cases, the USA had refused to supply similar missiles, even though it had supplied both countries with other advanced weapons. The USA's refusals were related to its objective of preserving Israel's qualitative military edge over Arab states and to the concern that such sales could undermine the spirit of the Missile Technology Control Regime (MTCR), which aims to prevent the proliferation of missiles capable of delivering weapons of mass destruction (WMD).¹² However, by 2013 the US position had shifted considerably, and it allowed the supply of AGM-84H air-launched cruise missiles with ranges of about 280 km to both Saudi Arabia and the UAE. The deals were officially explained as improving Saudi Arabia's and the UAE's capabilities

⁹ International Institute for Strategic Studies (IISS), *Iran's Ballistic Missile Capabilities: A Net Assessment* (IISS: London, May 2010); and United Nations, Security Council, Final report of the Panel of Experts established pursuant to Resolution 1929 (2010), 3 June 2013, annex to S/2013/331, 5 June 2013, p. 23.

¹⁰ Delory, S., 'The dynamics of missile proliferation in the Middle East and North Africa', Background paper, EU Non-Proliferation Consortium, July 2011, p. 15.

¹¹ O'Connor, S., 'Secrets of the sand', *Jane's Intelligence Review*, Aug. 2013, pp. 10–13; and Stein, J., 'The CIA was Saudi Arabia's personal shopper', *Newsweek*, Jan. 2014.

¹² Gormley, D. M., *Missile Contagion: Cruise Missile Proliferation and the Threat to International Security* (Praeger Security International: Westport, CT, 2008), pp. 56–57. For a brief description and other details of the MTCR see annex B, section III, in this volume. On recent developments in the MTCR and other export control regimes see chapter 10, section III, in this volume.

to meet regional threats.¹³ They are widely interpreted as part of US efforts to reassure its allies in the Gulf region of its enduring commitments to their security and to strengthen their military forces in the light of a perceived threat from Iran.¹⁴

India and Pakistan

Both India and Pakistan have procured a variety of long-range ballistic and cruise missiles for use with conventional and nuclear warheads.¹⁵ The tension between the two countries is one of the main determinants of their acquisitions.¹⁶

Both countries have relied on their own arms industries to develop and produce ballistic and cruise missiles, with varying degrees of foreign input. Pakistan is believed to have acquired ballistic missile technology from China and North Korea in the 1980s and 1990s.¹⁷ It has been suspected that Pakistani cruise missiles were developed with Chinese, Ukrainian or South African technological inputs.¹⁸ However, it is not clear how dependent Pakistan's current missile production is on foreign technology.

India's largest import of missile technology in the past decade involved a joint venture with Russia for the production of the 270-km range BrahMos precision supersonic cruise missile in land-, sea- and air-launched versions. The longest-range missile imported by India is the Israeli-produced Harop. Labelled as 'loitering ammunition' by its producer, the Harop is in essence a slow-flying missile with a range of 1000 km that can loiter over a large area to search for a target to attack. In response to further Indian procurement plans, European and Israeli companies have offered air-launched cruise missiles to fulfil India's stated or expected requirements.¹⁹ India's Nirbhay cruise missile, first tested in 2012, reportedly uses an engine imported from Russia.²⁰

¹³ Defense Security Cooperation Agency (DSCA), 'Saudi Arabia—various munitions and support', News release, 15 Oct. 2013; and Defense Security Cooperation Agency (DSCA), 'United Arab Emirates (UAE)—various munitions and support', News release, 15 Oct. 2013.

¹⁴ Mehta, A. and Mustafa, A., 'Gulf nations eye strike capability', *Defense News*, 18 Nov. 2013.

¹⁵ On the nuclear-capable missiles of India and Pakistan see chapter 6, sections VI and VII, in this volume.

¹⁶ Holtom, P. et al. 'International arms transfers', *SIPRI Yearbook 2011*, pp. 278–85.

¹⁷ James Martin Center for Nonproliferation Studies, 'Country profile: Pakistan', Nuclear Threat Initiative, Feb. 2013, <<http://www.nti.org/country-profiles/pakistan/>>.

¹⁸ Gormley (note 12), pp. 73–74; and Hewson, R., 'Cruise missile technology proliferation takes off', *Jane's Intelligence Review*, Oct. 2005, pp. 41–42.

¹⁹ 'MBDA reiterates its relationship with India', *India Strategic*, Mar. 2012; and Minnick, W., 'Israeli exhibit among largest at show', *Defense News*, 2 Dec. 2009.

²⁰ Jha, S., 'Becoming a power that counts', *Geopolitics*, Mar. 2013, p. 51; and 'Sub Rosa subsonic', *Aviation Week & Space Technology*, 2 July 2012, p. 24.

Conclusions

The proliferation of long-range guided missiles gives rise to several concerns. In each of the above cases the import of weapons that can attack targets deep inside an adversary's territory with significantly decreased or no risks to the operating personnel and with presumed high levels of accuracy could lower the threshold for using force. This has the potential to disrupt regional conventional and nuclear weapon balances, fuel arms races, lead to military escalation, drive interstate crises and increase the likelihood of war.²¹ Some supplier states view the deployment of long-range missiles by other states as a potential threat. In particular, the USA views missile proliferation as a 'significant' and 'asymmetric' threat to itself and its allies.²² Thirty-four states have joined the MTCR and agreed to restrict missile exports to prevent their use as delivery systems for WMD.²³ UN sanctions on transfers of missile technology to Iran and North Korea have the same objective.

Despite these concerns, transfers of long-range guided missiles, or their key technologies, occur regularly, including to regions with high levels of interstate tensions and to countries that possess nuclear arms. Even the USA, which has been particularly outspoken about its concerns regarding missile proliferation, has relaxed its restrictions on the export of missiles over the past decade. The introduction of UCAVs will add a new dimension to this problem.

²¹ See e.g. Scheffran, J., 'Missiles in conflict: the issue of missiles in all its complexity', *Disarmament Forum*, no. 1 (2007), p. 19.

²² US Air Force, National Air and Space Intelligence Center (NASIC), *Ballistic & Cruise Missile Threat*, NASIC-1031-0985-13 (NASIC: Wright-Patterson AFB, OH, 2013), pp. 3–4.

²³ Missile Technology Control Regime, 'Guidelines for sensitive missile-relevant transfers', <<http://www.mtcr.info/english/guidetext.html>>.