

Defining Effective Strategic Trade Controls at the National Level

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Abstract

This paper sets out what measures states must implement to meet their supply-side non-proliferation obligations and commitments. The paper begins by considering what could be meant by the terms strategic export control, strategic trade control, and strategic trade management in relation to dual-use goods— terms that are often used interchangeably by the practitioner community. It also explores what trade control measures states must implement at the national level to fulfil these commitments. The paper concludes by considering what might be meant by the term “full implementation” of United Nations Security Council Resolution 1540 from a supply-side non-proliferation control perspective.

Keywords

Export control, strategic trade control, brokering controls, resolution 1540, effective implementation, border controls

Introduction

Non-proliferation is a goal shared by nearly every country. The high uptake of measures such as the Nuclear Non-Proliferation Treaty to which all but five states have joined (albeit with five states joining as nuclear weapons states) demonstrates this. It is not only governments that can become involved in proliferation, however, so in addition to entering into international commitments, states must also adopt and enforce laws to prevent individuals or companies from assisting proliferation. Despite export controls being mandatory for all states and the lengthy history of inter-governmental arrangements to coordinate implementation of export controls at the international level, there is no standard or universally recognised list of what measures a state must implement in order to implement an *effective* export control system. Given the call for full implementation of United Nations Security Council Resolution (UNSCR) 1540 by 2021, it is crucial to understand what is required of states to put in place an effective national system.

The purpose of this article is to remedy this situation by presenting a framework which identifies what measures could constitute ‘effective.’ Recognizing that this may vary from country to country, the article

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next considers under what circumstances measures could be considered ‘appropriate.’ The paper concludes by considering how to measure or gauge implementation of each measure at the national level.

The paper proceeds as follows. First, the paper considers the various terms that, prior to now, have been used almost interchangeably to describe strategic trade controls on dual-use goods. Next, the paper sets about considering what commitments states have with regards to dual-use export controls. Then the paper considers what is required for these controls to be ‘appropriate’ in the national context. Finally, the paper considers what could be meant by “full implementation” of resolution 1540 and how this could be measured.

Strategic What?

In the years following the adoption of resolution 1540, the terminology and expectations for export controls have continued to evolve. The terms ‘strategic export controls’, ‘strategic trade controls’ (STC) and ‘strategic trade management’ (STM) have become increasingly used in parlance on export controls. In part this may have stemmed from a deliberate effort by practitioners to change the perception that export controls are used primarily to stifle technological growth and competition in other countries, and that they should rather be thought of as a broader system of managing cross-border trade in materials and technology of strategic significance. It is thus notable that countries such as Malaysia, the UAE and the Philippines have adopted “strategic trade control” acts as the basis for their national systems.

All three phrases can be grouped under the broader description of “supply-side non-proliferation controls.” However, of interest to this paper is what each of these terms means in practice. Authoritative definitions of the terms strategic export control, strategic trade control and strategic trade management have not yet been set. Some working definitions are beginning to emerge in the practitioner community, however, that provide useful conceptual distinctions. The main commonality between these definitions is the term ‘strategic,’ which can be understood by this community to refer to control of single-use and dual-use items (or their means of production) intended for or with utility in military or WMD-related programmes.² In this context, and in relation to dual-use goods, this paper offers the following definitions:

Strategic Export Controls: which involve laws and related enforcement action to control the movement of goods with a strategic importance out of the territory. This is perhaps the more traditional term for measures intended to control the spread of strategic technologies, with export control laws being in place since at least the second World War. The controls historically related solely to the export of physical goods but they have been expanded to encompass ‘intangibles’ (also known as ‘intangible technology’ or ‘intangible technology transfers (ITT)’).

Strategic Trade Controls: which include all the elements of Strategic Export Controls plus border, transit and trans-shipment controls (and potentially import controls and extraterritorial measures). The STC formulation not only includes control lists and licensing, but also incorporates roles for the customs and intelligence services, as well as broader industry outreach efforts by governments. A strategic trade control system aims to help manage the transfer of sensitive materials, technology or equipment that might be used in weapons systems.

An STC system therefore includes the full suite of activities intended to regulate the flow of strategic goods: control lists, licensing requirements, customs efforts, information sharing (both internal and external to a state), enforcement activities, and efforts seeking to prevent the illegal flow of controlled goods.

² Single use items are those that could only be used for the intended end use (i.e. items specifically designed for a nuclear end use). Dual-use items are those with both a sensitive and a commercial end use.

Strategic Trade Management: which includes all elements of strategic trade controls, provides an institutional framework that allows countries to pursue both non-proliferation and economic objectives. The strategic trade management lens attempts to focus less on the controls that some countries view as hampering economic growth.

These terms in relation to dual-use goods are summarised in table 1 below.

Table 1: Definitional elements of strategic trade controls

	Export Controls	Strategic Trade Controls	Strategic Trade Management	Strategic Trade Services
Export	X	X	X	
Import			X	
Transit/trans-shipment		X	X	X
Extraterritorial		X	X	
Trade promotion			X	
Finance				X
Insurance				X
Shipping				X
Industry Outreach/Engagement	X	X	X	X

Export Control Regimes

To comply with international non-proliferation commitments, there are various measures that states must have in place comprising at least strategic export controls, if not also strategic trade controls. Examining the Nuclear Non-proliferation Treaty (NPT), adhered to by nearly all states, highlights this. Article III.1 of the NPT, for example, requires adhering states not to:

*transfer to any recipient whatsoever nuclear weapons or other nuclear explosive devices or control over such weapons or explosive devices directly, or indirectly; and not in any way to assist, encourage, or induce any non-nuclear-weapon State to manufacture or otherwise acquire nuclear weapons or other nuclear explosive devices, or control over such weapons or explosive devices.*³

Article III.2 goes on:⁴

Each State Party to the Treaty undertakes not to provide: (a) source or special fissionable material, or (b) equipment or material especially designed or prepared for the processing, use or production of special fissionable material, to any non-nuclear-weapon State for peaceful purposes, unless the source or special fissionable material shall be subject to the safeguards required by this Article.

The possibility that an entity of the state or a non-state actor could export what is listed in article III.2 cannot be discounted, thus necessitating the implementation of strategic export controls.

³Treaty on the Non-Proliferation of Nuclear Weapons, March 5, 1970, Article IX, article 1.

⁴Treaty on the Non-Proliferation of Nuclear Weapons, March 5, 1970, Article IX, article 2.

In the case of the NPT, certain member states opted to create a forum in 1971, the Zangger Committee, through which to agree on a common understanding of these clauses.⁵ In addition to the commitments of the main international non-proliferation treaties, many states since the 1970s have sought to coordinate national export control policies among themselves via what have become known as ‘export control regimes.’ There are five main regimes for dual-use goods, each of which serves a different purpose as shown in table 2 below.

Table 2: Multilateral export control regimes for dual-use goods

Export Control Regime	Primary Purpose	Founded
Zangger Committee	Seeks to interpret article III.2 of the NPT.	1971
Nuclear Suppliers Group (NSG)	Seeks the non-proliferation of nuclear weapons through controls on sensitive nuclear-related materials.	1974
Australia Group (AG)	Seeks to stop spread of chemical and biological weapons through controls on certain chemicals, biological agents, and dual-use chemical and biological manufacturing facilities and equipment.	1985
Missile Technology Control Regime (MTCR)	Seeks to control the spread of unmanned delivery systems capable of delivering weapons of mass destruction.	1987
Wassenaar Arrangement	Seeks to control transfers of conventional arms and dual-use goods and technologies.	1995

Each of these regimes typically includes a list of items that states must control and a set of collectively agreed upon guidelines that delineate when exports can or cannot take place.

Since the establishment of these regimes, their missions have evolved in response to the changing nature of specific proliferation challenges. After Iraq’s use of chemical weapons in the 1980s and revelations in 2002 about Iran’s clandestine nuclear programme, several of the regimes required states to adopt catch-all provisions, for example, that make unlisted items subject to control when the exporters know, have been informed, or suspect that the export is destined for a WMD end use. Such controls are difficult for industry to implement without good dialogue with the state, particularly with enforcement and intelligence functions. Additionally, the regimes primarily focus on export controls rather than on strategic trade controls or management as per the previous definitions.

The Nuclear Suppliers Group was established in the 1970s following the Indian Peaceful Nuclear Explosion. It originally consisted only of a single set of guidelines for “trigger list goods” requiring safeguards as a condition of transfer - that were subsequently published by the IAEA as INFCIRC 254 part 1. In the 1990s, the NSG agreed on the need for full-scope safeguards as a condition of supply (as opposed simply to the exported item being subject to safeguards). In the 1990s, the NSG also adopted a list of dual-use items which was subsequently published as INFCIRC 254 part 2. The NSG currently has 48 members and has expanded at around a rate of one per year since its creation, although expansion has generally happened in waves since the group did not meet in the period from 1978 to 1991.

⁵Note: the Zangger committee is now in partial abeyance and its trigger list has been aligned to that of the NSG.

The MTCR was established in 1987 as a response to growing concerns regarding the spread of delivery systems capable of carrying WMD. The group now aims to prevent through common export control guidelines the proliferation of several types of delivery systems, including missiles, complete rocket systems, unmanned air vehicles, and related technology. Partner countries also exchange information on licensing issues. The MTCR currently has 34 members.

The Wassenaar Arrangement began in 1996 as a forum for multilateral cooperation on control lists for conventional arms and dual-use goods and technologies. The Wassenaar Arrangement currently has 41 members.

The Australia Group was formed in 1985 with 15 members as a response to United Nations findings that some chemical precursors of chemical weapons agents used during the Iran-Iraq War were procured through legitimate trade. The AG currently has 42 members.

The guidelines of each of these regimes are voluntary. Nonetheless, each member state has agreed to implement a range of measures at the national level in order to fulfil their commitments to the regimes with some variance between them. However, none of the regimes have produced a definitive list of what measures states should implement, and there is certainly no common understanding between the regimes.

United Nations Security Council Resolution 1540

Beyond the export control regimes, it is perhaps UNSCR 1540 that has come the farthest in defining a common list of what measures states must take in relation to dual-use strategic trade controls. Resolution 1540 was adopted after revelations about the Abdul Qadeer Khan proliferation ring, and in the context of the post-9/11 security environment, with the purpose of preventing non-state actor involvement in proliferation. The resolution requires all states—even states not party to the NPT—to take a range of measures, and ‘decides’ that states shall ... “establish, develop, review and maintain appropriate effective national export and trans-shipment controls.”⁶ The Security Council’s 1540 Committee, which works to support implementation of the resolution, has produced a matrix which suggests that all states must implement up to 200 specific measures to effectively implement the requirements of the resolution (where for most entries there is a need for both legislation and enforcement).⁷

The 1540 matrices do go beyond the requirements of strategic export controls, however, and are generally tailored to the requirements of the resolution. For example, the resolution covers not only export controls but, in theory at least, also domestic transfers of WMD-relevant materials. The resolution also requires states to adopt and enforce brokering, transit and trans-shipment controls. As such, according to the aforementioned definitions, the resolution requires strategic trade controls rather than just strategic export controls.

In practice, the trade control aspects of 1540 can be boiled down to around 25-30 measures that must be implemented to counter all types of WMD proliferation as well as to manage trade ‘related materials.’⁸ These are shown in table 3 below, which is based primarily upon the headings in the 1540 matrix template that deals with operational paragraphs 3, 6 and 10.

It is important to note that the resolution expressly recognises that states will vary in how they implement these measures. This is enumerated not only in the expressed recognition that it is for each state to

⁶ United Nations Security Council 1540, S/RES/1540, New York, April 2004.

⁷ “The 1540 Matrix,” 1540 Committee, UN Security Council, New York. <http://www.un.org/en/sc/1540/national-implementation/matrix.shtml>.

⁸ Ibid.

decide how to meet the requirements of the resolution, but also in the language used in each operational paragraph. The majority of the paragraphs state whether implementation of the measure can be appropriate and should be effective.

When these phrases are presented together, it can be understood that the resolution gives states discretion on how much of something is required, provided it is effective in the national context. The resolution does not specify how many border guards are required under OP1, for example, but it does imply that enough border guards will be employed to ensure that border controls are effective.

Interestingly, as can be seen from table 3, not every operational paragraph includes both phrases. States must conduct appropriate industry engagement, for example, but at least according to the resolution, it does not have to be effective – thus implying that states can do as little industry engagement as they wish while meeting the requirements of the resolution.

Table 3: Elements of 1540 implementation according to the 1540 matrices

OP3 ref	OP 3 (c) and (d) and related matters from OP 6 and OP 10	Specified in resolution?	Appropriate	Effective
1	Border control	3c	y	y
2	Technical support of border control measures	No		
3	Control of brokering, trading in, negotiating, otherwise assisting in sale of goods and technology	3c	y	y
4	Enforcement agencies/authorities	3c	y	y
5	Export control legislation in place	3d	y	possibly ⁿ
6	Licensing provisions	No		
7	Individual licensing	No		
8	General licensing	No		
9	Exceptions from licensing	No		
10	Licensing of deemed export/visa	No		
11	National licensing authority	No		
12	Interagency review for licenses	No		
13	Control lists	6*		
14	Updating of lists	potentially 6*		
15	Inclusion of technologies	potentially 6*		
16	Inclusion of means of delivery	potentially 6*		
17	End-user controls	3d	y	y
18	Catch all clause	No		
19	Intangible transfers	Potentially ('technology')		
20	Transit control	3d	y	y
21	Trans-shipment control	3d	y	y
22	Re-export control	3d	y	y
23	Control of providing funds	3d	y	y
24	Control of providing transport services	3d	y	y
25	Control of importation	No		
26	Extraterritorial applicability	No		
27	Other	N/A		

	Penalties	3d	y	possibly ⁿ
	industry engagement	8d*	y	No
	Use and sharing of intelligence	No	No	No
*the resolution uses non-binding language. ('calls upon' rather than 'decides')				
ⁿ the resolution says appropriate effective laws including appropriate				

Another issue with resolution 1540 is that the matrices have been designed including elements of strategic trade management. For example, one heading in the matrices is 'general licensing,' which is an advanced form of licensing that helps with trade facilitation in lower risk transactions to lower risk destinations. There is no reason that states need to offer such licence types to meet the requirements of resolution 1540, although it is seen as good practice to minimise the impact of export controls on legitimate trade. The 1540 Committee also publishes 'effective practices' for the implementation of non-proliferation controls, some of which go beyond the strict requirements of the resolution.⁹ This may suggest that the 1540 mechanism is becoming a central forum for coordinating the implementation of strategic trade controls in general.

Appropriate Controls

When considering what measures a state should take in order to prevent involvement in proliferation, this paper argues that the key question should be: how could that state become involved in WMD proliferation? Several answers were identified:

- **State – state transfer:** an agent of the state could wilfully and knowingly transfer WMD to another state. While rare, such cases are not unknown. The transfer of a nuclear reactor from North Korea to Syria is one example.
- **Illegal transfer (deliberate, inadvertent):** There are substantial numbers of illicit transfers (or attempted transfers) each year, for example hundreds of cases of goods destined to Iran since the 1990s¹⁰. Many more cases likely take place without becoming public knowledge.
- **Facilitated transfer (brokering):** The scale of brokering in WMD or related materials is unclear. It is rare to find prosecutions for brokering offences, but this could be due to the difficulty in bringing cases to court rather than their overall absence.
- **Transit and trans-shipment:** The commoditisation of transit and trans-shipment services yields possibilities for intentional or inadvertent involvement in proliferation. There have been several prosecutions for transit and trans-shipment in the United States.¹¹

It should be noted that other enabling services (i.e. finance or insurance) could also be relevant to such transfers.

Evidently, the types of measures that the state would take to counter each of these risks will differ, as shown in table 4 below.

⁹ "Experience Shared, Lessons Learned, and Effective Practices." 1540 Committee. <http://www.un.org/en/sc/1540/experiences.shtml>.

¹⁰ "The Proliferation Case Studies Series." Project Alpha. <https://www.acsss.info/proliferation/case-studies/>.

¹¹ U.S. Department of Justice, "Summary of Major U.S. Export Enforcement, Economic Espionage, Trade Secret and Embargo Related Criminal Cases," March 2014, available at: <http://www.justice.gov/sites/default/files/nsd/legacy/2014/07/23/export-case-fact-sheet-201403.pdf>.

Table 4: Measures required of states for proliferation to be avoided

	State has...				
Measures to restrict...	State has WMD	State manufactures or holds 'related materials'	State is trans-shipment hub	State hosts strategic trade service providers	Other States
State to state transfers of WMD	✓	✗	✓	✗	✓
Illicit transfers of related materials	✓	✓	✓	✓	✓
Facilitating transfers				✓	✓
Transit and trans-shipment			✓		✓
Enabling shipment				✓	✓

States that have WMD

WMD states are morally and legally obliged by a variety of instruments to ensure that the risks associated with their retention of WMD are minimised. This includes ensuring that adequate measures are in place to prevent unauthorised access or transfer of the weapons and the technology and know-how for their production. The legal and enforcement mechanisms provided by strategic trade controls can assist with meeting this requirement, although it should be recognised that the transfer of WMD to another state is not an export licensing.

One example that shows the potential value of strategic export controls in this context relates to Pakistan in the 1990s.¹² AQ Khan, the metallurgist responsible for development of Pakistan's enrichment program, authorised the transfer to Iran of designs for the Pakistani P1 and P2 centrifuge as well as a number of physical components, including bellows. Particles of highly enriched uranium were subsequently found on these bellows in Iran, leading some to believe that Iran was secretly enriching uranium to weapons grade. After the IAEA learned that the bellows were of Pakistani origin, the Pakistani government denied knowledge of the transfer and blamed AQ Khan. The true involvement of the Pakistani government is difficult to assess. However, what is clear is that if Pakistan had adequately implemented strategic trade controls, the alleged action of AQ Khan in acting without permission (i.e. acting as a non-state actor as defined by resolution 1540) would have been prohibited.

At any one time, there tend to be relatively few states that hold WMD. The majority of states that fall into this category also fall into the next category.

State manufactures or holds 'related materials'

While it can be argued that all states are likely to hold some WMD-related materials, recent research on nuclear dual-use goods (summarised in table 5 below) has shown that the manufacturing base for strategic technologies is often more limited than would perhaps be anticipated – certainly, the preponderance of

¹² Albright, David. *Peddling Peril: How the Secret Nuclear Trade Arms America's Enemies*. (New York: Free Press, 2010.)

manufacturers are headquartered in states that are members of the export control regimes. This creates a dilemma: should all states apply strategic export controls equally, or should there be a graduated spectrum based upon a country's scale and type of technological holdings? The inclusion of the word 'appropriate' in 1540's operational paragraphs lends itself to a graduated approach.

As a first step in understanding what amount of controls is appropriate is to understand what countries manufacture 'related materials.' A second step would be to understand which countries hold stocks of related materials, where this differs from the first.

Table 5: Breakdown of producers of NSG dual-use goods by membership¹³

	Producers in NSG Member States	Chile	Hong Kong	India	Iran	Liechtenstein	Malaysia	Pakistan	Taiwan	UAE
Autoclaves	19									
Bellows Sealed Valves	47			11	1					
Beryllium	22									
Calcium	22	1		2						
Capacitors	20		1	6	1					
Carbon Fibre	13								1	
Controlled Atmosphere Furnaces	20			1						
Flash X-Rays	4			1						
Flow Forming Machines	8			2						
Heavy Water	4			6	1			1		
High Speed Cameras	14									
High Strength Aluminium	11			1	1					
High Strength Materials	6									
Isostatic Presses	28			1					1	
Manipulators	14			2				1		
Marringing Steel	22			3				1		
Mass Spectrometers	46			2	1					

¹³Reproduced from "Commercial Producers of NSG Controlled Dual-Use Goods," Project Alpha, King's College London, August 26 2015. <https://www.acsss.info/visualisations/commercial-producers-of-nsg-controlled-dual-use-goods>.

Neutron Detectors	43									
Pressure Guages	12									
Pressure Vessels	30			1						
Radiation shielding windows	31			1			1			1
Trigger spark gaps	9			1	1					
Vacuum pumps	20			1		1				
Zirconium	21			7	1			1		

As can be seen from table 5, there are relatively few countries that are major producers of nuclear-relevant goods that are outside of the Nuclear Suppliers Group, with the exception of India, Pakistan and Iran. This is an argument in support of the concept of including India and Pakistan and possibly Iran in the export control regimes, although it should be noted that India and Pakistan already state that they adhere to the NSG's requirements.

State is a diversion point

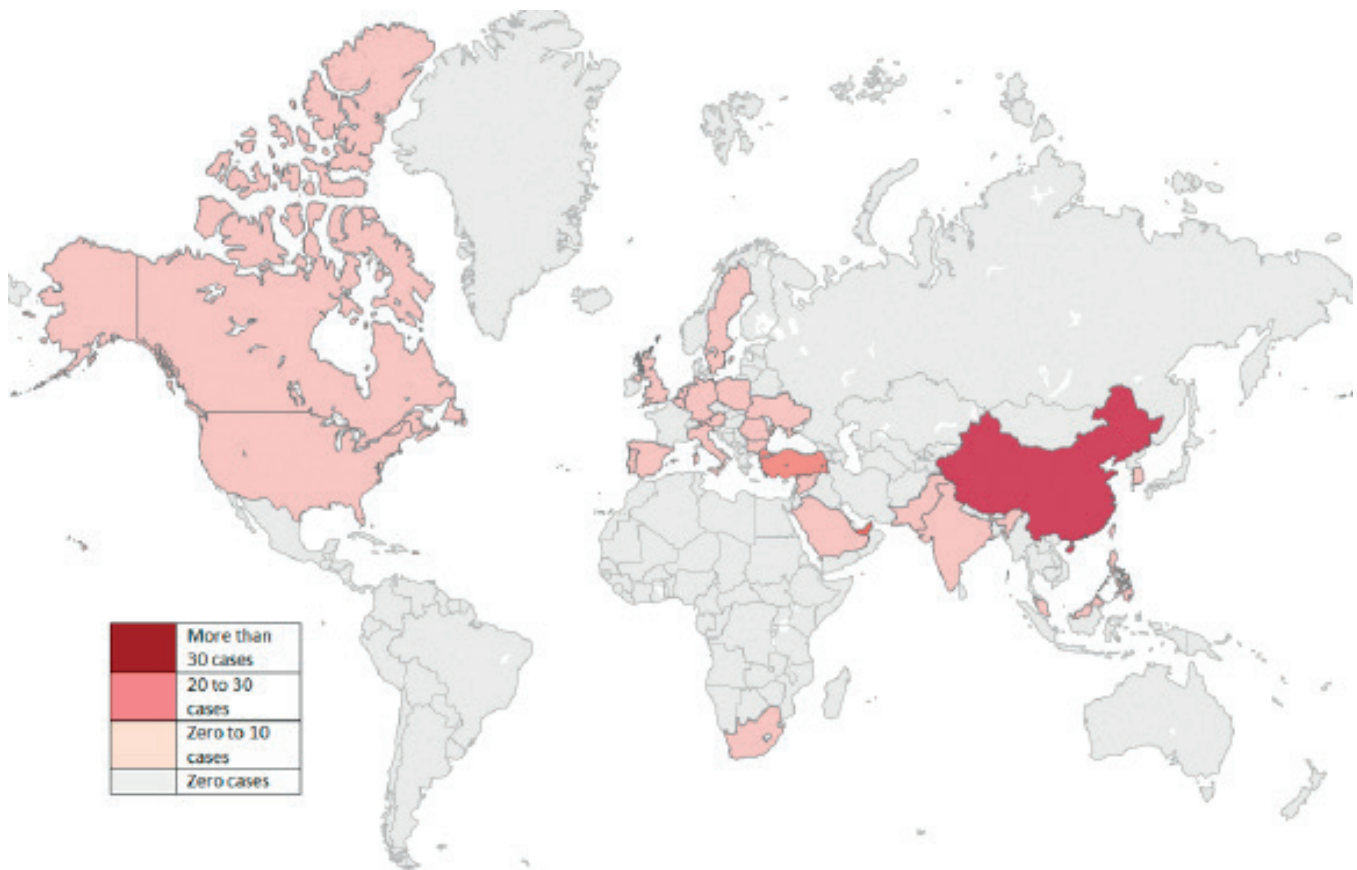
States that have substantial throughput of cargoes such as Singapore, Hong Kong, the United Arab Emirates, and Malaysia face a difficult challenge. These states generally have only limited information about what is contained in a shipment. Nonetheless, the state is expected to take appropriate and effective measures to prevent its territory being used to trans-ship WMD and related materials.

Transit: a scenario in which the goods are loaded on a vessel or carrier that calls in a state other than the origin or destination state but where the goods are not offloaded.

Trans-shipment: a scenario in which the goods are offloaded from the vessel or carrier and reloaded onto another vessel or carrier.

Trans-shipment typically involves the offloading of containers from one vessel and loading them onto the next. Such trans-shipment happens at major hub ports as a way of optimising the use of vessels to move cargo. This can mean that third countries not directly involved in the production, sale, or acquisition of a good can have an opportunity to interact with cargoes that would otherwise not enter the jurisdiction. It is notable that these definitions of transit and trans-shipment are more specific than how the phrases are often used in the practitioner community, where the terms may be used interchangeably. Practitioners often also use the phrase trans-shipment, where in fact the activity that they are describing could better be described as re-export, which is defined below. Instead, when describing such cases it is perhaps helpful to have a group term to describe scenarios (and countries) in which goods are diverted. The term "diversion country" is used herein. Chart 1 below shows the "diversion country" involved in some 300 cases in which goods were sought by Iran's nuclear program.

Chart 1: Diversion country chart¹⁴



Transit and trans-shipment pose challenges for states for two primary reasons. The first is that the information available to the state is often limited. Typically, for transit, states will have little more than the manifest. For trans-shipment, where the goods enter then leave the territory, additional information may be available. States are also subject to intense time pressure to process cargo transit and trans-shipments. In practice, states rely on two mechanisms to manage the risks of transit and trans-shipment. The first relates to the use of ‘risk profiling.’ The second relates to the use of intelligence information.

A related term to trans-shipment in particular is that of re-export, which is defined as: A scenario in which the goods are imported to one country and then separately exported to another country. Re-export poses additional challenges for authorities as it involves an export from one country to an entity in a second country then another export from the second country to a third country. The goods could be resold in the second country or exported by the importer. Whatever the specifics of the case, the first exporter can, in effect, lose control of the goods when they exit the first country’s territory. One mitigation to this involves end use verification. The United States routinely conducts end use verification on certain exported goods, and all states could be required to conduct end user verification for nuclear-related items exported through the procurement channel to Iran’s nuclear program. End use verification can take place before the export (pre-shipment verification) or after the export takes place (post-shipment verification). Pre-shipment verification can provide confidence that the end user is a credible commercial operator (i.e. that it is not a front company) and that the end use is consistent with their business activities. Post-shipment verification can provide confidence that the goods have not been diverted and allow for follow-up action if they have. The options for follow-up action if goods have been diverted are typically limited as the entity is located outside of the jurisdiction that originally exported the goods, but learning that the goods have been diverted can inform assessments about the future trade with the importer.

¹⁴ Reproduced from Stewart, I., Gillard, N. “Iran’s Illicit Procurement: Past, Present and Future,” *Project Alpha*, King’s College London, July 24, 2015.

State is a service sector hub

Service sector providers often congregate in certain service hubs, with the former and current overseas dependences of the most developed nations often falling into this category. These states have obligations to implement and enforce measures to ensure that their service sectors do not become involved in proliferation. In practice, this has come to mean implementation of the guidelines of the Financial Action Task Force.

Finance

Proliferation-finance is a topic that has received increased attention in recent years partly as a result of the leveraging of the financial sector to apply pressure on Iran. There is more work to be done to understand how proliferation finance works in practice and what can be done to prevent it from happening. Nonetheless, full implementation of existing requirements, such as anti-money laundering, designated entity screening and asset freezing is essential to prevent overt or covert use of the financial system for proliferation.

The Financial Action Task Force, which has issued guidelines for states on compliance with non-proliferation finance measures, has identified ‘high risk and uncooperative’ jurisdictions (Iran, DPRK, Algeria, and Myanmar) and countries subject to monitoring (Afghanistan, Angola, Bosnia and Herzegovina, Ecuador, Guyana, Lao PDR, Panama, Papua New Guinea, Sudan, Syria, Uganda and Yemen). Iraq is also listed as a country not making sufficient progress.¹⁵ It is notable that this list does not include any of the major financial hubs. Nonetheless, more work is required to build capacity to implement proliferation finance controls.

State is none of the above (other States):

This category includes states which do not have WMD, do not manufacture or hold substantial stocks of dual-use technologies, are not substantial transit or trans-shipment hubs, and are not substantial service centres. However, these states could still be used as transit points. It may be unrealistic to expect that these states will create a substantial strategic trade infrastructure. However, these states should nonetheless adopt laws and have in place enforcement mechanisms should concerns come to light (in particular, through intelligence provided by other states). Examples of countries in this category include many states in Africa, the Caribbean and South America.

Full Implementation of Resolution 1540

In his remarks to commemorate the 10th anniversary of the Security Council, the then President of the Security Council called for full implementation of the resolution by the year 2021 – 17 years after the resolution was first adopted.¹⁶ This raises two questions that are explored in turn. The first is how to measure implementation of resolution 1540. The second is how to establish whether full implementation has been achieved given that the resolution also recognises that implementation should be appropriate and effective.

Measuring Implementation of Resolution 1540

A variety of approaches have been taken in order to try to understand how effectively resolution 1540 is being implemented. The first of these is the requirement for states to report on implementation of the resolution to the 1540 Committee. This requirement was embedded in the resolution when it was adopted

¹⁵ Financial Action Task Force. <http://www.fatf-gafi.org/topics/high-riskandnon-cooperativejurisdictions/>.

¹⁶ “Statement by the President of the Security Council,” S/PRST/2014/7, United Nations Security Council, New York, May 7, 2014.

in 2004 and much is now made of the high reporting rate (with some 163 states having submitted reports on the implementation of the resolution to the 1540 Committee). The challenge is that the quality of these reports varies considerably. South Sudan submitted a report in August 2014, for example, that says little more than that it was a new country that will strive to implement the resolution's requirements.¹⁷ A potential drawback of such reporting standards is that the Committee has no particular insight into which areas of implementation may be more difficult to achieve for a state, or what the state considers its own appropriate and effective measures to be.

As a result of the variable quality of the reports being submitted, the Security Council opted to form a group of experts, one of whose primary task is to monitor implementation of the resolution.¹⁸ This is achieved through the matrix process mentioned earlier in which the nine experts symmetrically review the legislation and enforcement of the resolution's 200+ requirements. The 1540 committee will soon release the first updated matrices since 2010, providing an opportunity to re-evaluate holistic implementation of the resolution's requirements.

This said, it should be recognised that there are limitations of the matrix approach: The sheer scale of this task evidently makes this a challenging pursuit.¹⁹ However, there are also methodological challenges with the matrices that limit the utility of the results. For example, how effectively can a desk-based study conducted from New York assess the enforcement of border controls in a country like Vietnam (or other), especially when language barriers might also exist?

It can also be argued that the matrices can provide insight only into 'indicators' of effectiveness rather than measures of effectiveness. Evidently, for the goals of 1540 to be realised, states must have in place systems that stand up to more than desk-based studies: they must be able to respond to the dynamic actions of proliferators. No system that the authors are aware of has been devised to consider how the implementation of strategic trade controls would actually respond to the discrete actions of proliferators.²⁰

Full, Effective and Appropriate Implementation

Beyond the question of how to measure the level of implementation of resolution 1540 is the question of what is required for effective and appropriate implementation. There is no clear answer to this question. Nonetheless, the framework presented in this paper provides a starting point to consider this question. In short, it is argued that states should have in place the types of control required to respond to the nature of the proliferation risk that they face.

In practice, this would mean that all states should have in place the legal and bureaucratic ability to respond to specific intelligence about shipments of concern. However, beyond this, states should have in place controls based upon the types of material and activity that takes place on their territory.

In this context, it is notable that the manufacturing base for proliferation-sensitive goods appears still to be largely concentrated in a relatively small number of states – the NPT-recognised Nuclear Weapon States plus Germany and India. These states should clearly have in place robust strategic trade controls. In states that are hubs for the provision of services, trade service controls should also be prioritised.

This is not to argue that those states that are not currently substantial producers or service providers do

¹⁷ "Letter dated 6 August 2013 from the Permanent Representative of South Sudan to the United Nations addressed to the Chair of the Committee," S/AC.44/2013/14, August 6, 2013. <http://www.un.org/Docs/journal/En/20130816e.pdf>.

¹⁸ United Nations Security Council 1819, S/RES/1810, New York, April 2008.

¹⁹ Indeed, the Group of Experts fell substantially behind in updating the matrices, which were not updated in the period 2010 – 2015.

²⁰ Some work has been undertaken that could provide the foundation for a study into the effectiveness of 1540 implementation in countering illicit trade. King's College London has compiled a database of more than 150 illicit trades destined for Iran nuclear program, for example, and has extensively studied many of these specific cases. Alpha has also mapped the global manufacturing base for certain key nuclear-related items, as was set out above.

not need to have in place controls. There is clearly a risk that goods could be re-exported from these states as part of one overall transaction or as part of a later resale. It is here that cooperation is required between states: consideration should be given to whether exporting governments could inform importing governments about transactions so that the importing government could undertake relatively targeted industry engagement, for example. Additionally, more cooperation in sharing information usable in interdictions and enforcement activities is required.

Overcoming Barriers to Implementation

It has been argued that the obligation of states is to implement appropriate and effective controls. However, it has also been suggested (and will perhaps be confirmed by examination of the soon-to-be-released updated 1540 matrices) that many states lag behind in the implementation of controls.

Therefore, in order to improve implementation, there are barriers that must be overcome. First is political will. Across the various categories of country, there is a considerable variation in the level of priority associated with non-proliferation controls. In many countries, implementation of non-proliferation controls could be improved if there was an increased level of political will, with a corresponding increase in executive function devoted to instituting those controls. The second set of issues relate to information sharing, both between states and between various responsible stakeholders within a state. The third relates to implementation on a practical level. Even with capacity-building initiatives, there may not be sufficient resources to allocate to implementing appropriate and effective non-proliferation controls, especially if there are more immediate security concerns a state might face. A positive shift politically could mitigate some practical barriers in this regard.

Conclusions

States are required to implement supply-side non-proliferation controls in order to prevent proliferation. The exact scope of what is required was poorly defined prior to this article, however. While the language and meaning of specific terms will likely never become universally agreed upon or fixed, it is intended that the definitions presented herein act as a baseline for the trade control community in reaching widely-accepted definitions.