



COUNTER-IED

CAPABILITY MATURITY MODEL & SELF-ASSESSMENT TOOL

BOB SEDDON & ALFREDO MALARET BALDO

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NOTE

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LIST OF ACRONYMS AND ABBREVIATIONS

ACTO	(ammunition) attractive to criminal or terrorist organizations
C-IED CM	Counter-IED Capability Maturity (Level)
C-IED CMM	Counter-IED Capability Maturity Model
COMINT	communications intelligence
CMM	capability maturity model
ECM	electronic countermeasures
ELINT	electronic intelligence
EOD	explosive ordnance disposal
EU	European Union
HUMINT	human intelligence
IED	improvised explosive device
IEDD	improvised explosive device disposal (or defeat)
IM	information management
INTERPOL	International Criminal Police Organization
OSINT	open source intelligence
RCIED	radio-controlled improvised explosive device
RCV	remote-controlled vehicle
SIGINT	signals intelligence
SIM	subscriber identity module
UNIDIR	United Nations Institute for Disarmament Research
UXO	unexploded ordnance
WCO	World Customs Organization

TERMS AND DEFINITIONS

This document does not provide a comprehensive glossary of terms and definitions. A complete list of terms and definitions can be found in the United Nations Improvised Explosive Device Lexicon, produced by the United Nations Mine Action Service and available [here](https://unmas.org/en/improvised-explosive-device-lexicon):

<https://unmas.org/en/improvised-explosive-device-lexicon>

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EXECUTIVE SUMMARY

Improvised explosive devices (IEDs) pose a major threat to societies around the globe. As noted by the United Nations General Assembly in 2018: *“The devastation caused by the increasing use of improvised explosive devices by illegal armed groups, terrorists and other unauthorized recipients ... has affected a large number of countries and has resulted in thousands of casualties, both civilian and military”*.¹ Against this background, the United Nations General Assembly, mandated the United Nations Institute for Disarmament Research (UNIDIR) to develop *“a voluntary self-assessment tool to assist States in identifying gaps and challenges in their national regulation and preparedness regarding improvised explosive devices”*.²

The purpose of this document is to assist States in the development of coherent national responses to the threat posed by IEDs. It could also help donors assess the likely scale of contributions and the priority of work in enhancing national counter-IED capabilities. This document is structured in three broad parts: The first (sections 1-4) provides a brief introduction and sets the context of the problem. The second (section 5) provides the rationale for applying a capability maturity model and describes the Counter-IED Capability Maturity Model (C-IED CMM). The third (section 6) describes the UNIDIR Self-Assessment Tool, which is based on the C-IED CMM.

The term “counter-IED” is used in its broadest possible context and includes all activities a State may undertake to prevent and mitigate the use of IEDs. Components of counter-IED capability are divided into two categories: upstream components, which are focused on those activities aimed at deterring or preventing IED events from taking place, and downstream components, which are associated with responding to a particular IED event or mitigating an IED event should it occur. **The general premise of the model is that the greater the maturity and effectiveness of upstream measures, the fewer downstream measures are required to counter the use of IEDs.**

Readers requiring an overview of the methodology for assessing State preparedness for dealing with IEDs should scan sections 1 to 5 of this report to familiarize themselves with the five levels of maturity defined within the C-IED CMM. Readers involved in the detailed assessment of counter-IED preparedness should immerse themselves in section 6, which describes how the C-IED CMM should be applied and how the Self-Assessment Tool should be used. A simple data visualization application, accessible via a hyperlink provided in section 6, has been developed to aid users in the collation of assessment data and the display of results. The output from the Self-Assessment Tool is a set of indicative capability maturity levels for the upstream and downstream components of counter-IED capability.

¹ General Assembly, Countering the Threat Posed by Improvised Explosive Devices, UN document A/RES/73/67, 5 December 2018.

² General Assembly, Countering the Threat Posed by Improvised Explosive Devices, UN Document A/RES/71/72, 5 December 2016, para. 20



1 INTRODUCTION

Improvised explosive devices (IEDs) pose a major threat to societies around the globe. As noted by the United Nations General Assembly in 2018:

*The devastation caused by the increasing use of improvised explosive devices by illegal armed groups, terrorists and other unauthorized recipients ... has affected a large number of countries and has resulted in thousands of casualties, both civilian and military.*³

The threat posed by the IED in many parts of the world is considerable and increasing, with complex dynamics, summarized by the following excerpt:

*The IED is the weapon of choice for the overlapping consortium of networks operating along the entire threat continuum — criminal, insurgent, and terrorist alike. Threat networks use IEDs because they are cheap, readily available, easy to construct, lethal, and effective. The IED is a weapon used strategically to cause casualties, create the perception of insecurity, and influence national will. This threat is complex and transnational in nature, representing layers of interdependent, inter-connected global threat networks, and support systems.*⁴

The IED is an indiscriminate weapon, and its effects are felt most acutely by civilians. For example, the use of victim-operated IEDs can render large areas uninhabitable and have similar long-term effects to the use of anti-personnel and anti-tank landmines.

In 2016, the United Nations Institute for Disarmament Research (UNIDIR) was mandated by the United Nations General Assembly to develop “a voluntary self-assessment tool to assist States in identifying gaps and challenges in their national regulation and preparedness regarding improvised explosive devices”.⁵

In response to this request, UNIDIR developed this Counter-IED Capability Maturity Model and Self-Assessment Tool. To ensure the production of a Tool that is fit-for-purpose, UNIDIR solicited comments and inputs from a wide variety of stakeholders throughout the development process. The main mechanisms for feedback and consultation have been the extensive circulation of draft versions, two informal expert review meetings, and pilot testing in varying capacity contexts.

³ General Assembly, Countering the Threat Posed by Improvised Explosive Devices, UN document A/RES/73/67, 5 December 2018.

⁴ Joint Improvised Explosive Device Defeat Organization, JIEDDO Counter-Improvised Explosive Device Strategic Plan, 2012-2016, 1 January 2012.

⁵ General Assembly, Countering the Threat Posed by Improvised Explosive Devices, UN Document A/RES/71/72, 5 December 2016, para. 20



2 PURPOSE, SCOPE, AUDIENCE, USE, AND CONSULTATIONS

2.1 PURPOSE AND SCOPE

This document is designed to assist States in the development of coherent national responses to the threat posed by IEDs. This is not solely the province of the technical experts involved in rendering safe IEDs, **the document is therefore aimed at all who have an interest in developing or enhancing counter-IED capabilities**. It could also help donors assess the likely scale of contributions and the priority of work in enhancing national counter-IED capabilities.

This document is structured in three broad parts: the first (sections 1-4) provides a brief introduction and sets the context of the problem. The second (section 5) provides the rationale for applying a capability maturity model (CMM) and describes the C-IED CMM. The third (section 6) describes the Self-Assessment Tool, which is based on the C-IED CMM.

2.2 AUDIENCE

This document is intended for use by:

- » **Senior government officials and policymakers** to influence those who have control over the allocation of resources and those who may be involved in the development of national legislation, policies and capabilities for countering IEDs.
- » **Government officers and members of the police and military units** who are involved in developing capabilities and responding to the use of IEDs.
- » **Donors and the staff of international and non-governmental organizations** and other entities involved in the delivery of national capacity development projects relating to counter-IED. The Counter-IED Capability Maturity Model and Self-Assessment Tool provide a means by which a State's national preparedness may be assessed and inform how international assistance may be applied to best effect.

2.3 HOW TO USE THIS DOCUMENT

Those requiring an overview of the methodology for assessing State preparedness for dealing with IEDs should read sections 1 to 5 of this report to familiarize themselves with the five levels of maturity defined within the C-IED CMM. Those involved in the detailed assessment of counter-IED preparedness should immerse themselves in section 6, which describes how the C-IED CMM should be applied and how the Self-Assessment Tool should be used. Section 6 also contains a hyperlink for a Data Visualization Tool.

This Self-Assessment Tool is a framework for States to self-identify gaps and challenges in their national preparedness. In practice, this means that this tool is designed for States to gauge themselves the maturity of their own counter-IED capabilities. Use of this tool provides States with an overview of their current counter-IED capability maturity level; thus, indicating areas where attention is required to enhance national capabilities. Should assistance be required in utilizing this tool, UNIDIR could, upon request, provide technical guidance. Utilizing the Self-Assessment Tool is voluntary and any data that may be generated when utilizing the tool is the sole property of the State, unless otherwise agreed between parties that may be involved in undertaking joint assessments.

2.4 CONSULTATIONS

With a view to develop a fit-for-purpose Counter-IED Capability Maturity Model and Self-Assessment Tool, UNIDIR engaged in a series of steps to solicit and incorporate feedback from a variety of stakeholders involved in countering the proliferation of IEDs. These consultations involved an initial expert meeting, in August 2019, hosted by the Permanent Representation of France to the Conference on Disarmament in Geneva, to aid in the conceptualization of the tool. Subsequently, UNIDIR circulated an initial draft to solicit written feedback and hosted a second expert review meeting, in November 2019, for an in-depth review of the initial draft. After incorporating inputs from the first round of written feedback and the second expert review meeting, UNIDIR re-circulated the updated draft to a wider network of stakeholders for continued advise and comments.

An advance version of this document was made available, upon request, to all High Contracting Parties to Amended Protocol II to the Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects (CCW). High Contracting Parties were encouraged to provide feedback and comments in writing and/or test the tool in practice, as considered appropriate.

In total, this document was distributed to more than 70 stakeholders, many of whom provided valuable support and key inputs. To conclude the consultative process, UNIDIR carried out two pilot testing activities, in varying capacity contexts and in different languages, to ensure this tool matched up to the realities of countering the threat posed by IEDs.

3 IED AND COUNTER-IED CONTEXT

3.1 DEFINITIONS

3.1.1 IED Definition

An IED is defined as:

A device placed or fabricated in an improvised manner incorporating destructive, lethal, noxious, pyrotechnic or incendiary chemicals and designed to destroy, incapacitate, harass or distract. It may incorporate military stores, but is normally devised from non-military components.⁶

For the purposes of this report and the Self-Assessment Tool, the following types of weapon system are considered “out of scope”:

- » Devices containing chemical, biological, radiological or nuclear materials
- » Conventional weapons
- » Conventional ammunition (though high explosive shells, bombs and missile warheads may be incorporated into IED main charges)
- » Mines (anti-personnel and anti-vehicle/tank, though un-fuzed anti-tank mines may be incorporated into IED main charges)⁷

3.1.2 Types of IED

IEDs may be classified by function:

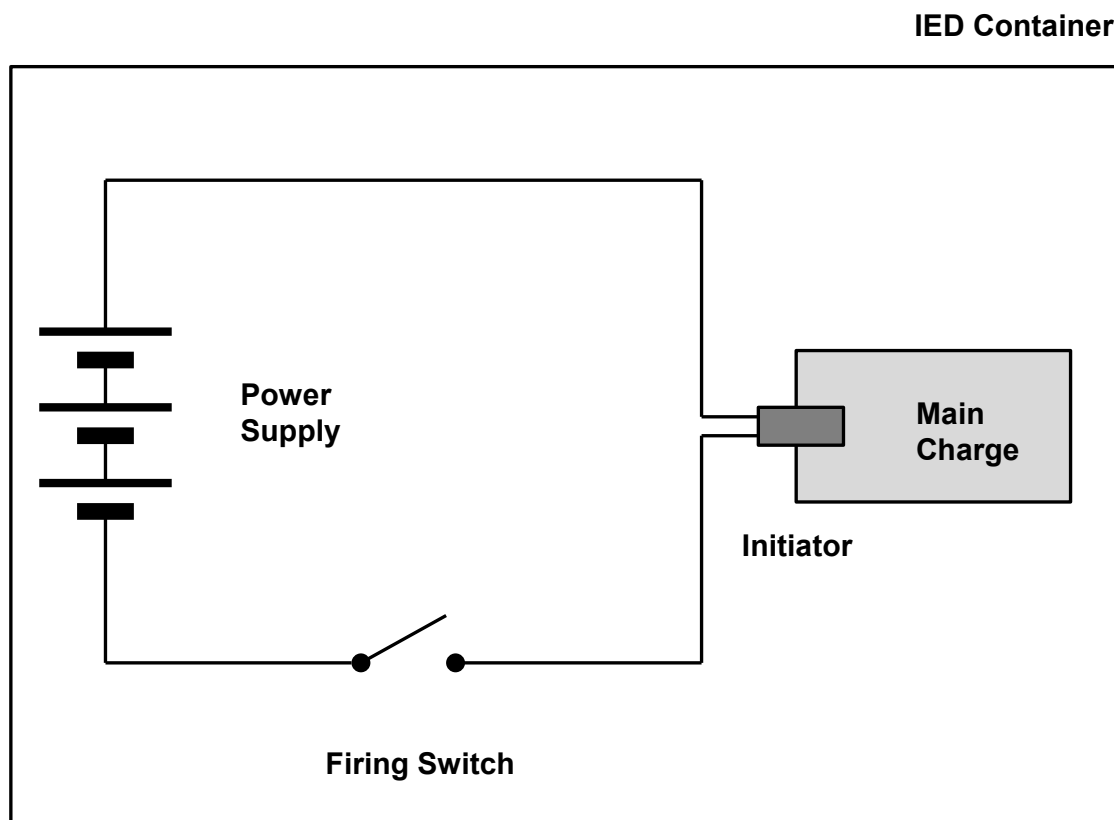
- » **Command IED.** An IED where the precise time of initiation of the device is controlled by the perpetrator. A wide variety of command initiation methods are available, including radio control, command wire, command pull and projectile control.
- » **Time-operated IED.** An IED designed to function after a predetermined delay. Time delays may be achieved through mechanical, chemical, electrical or pyrotechnic means.
- » **Victim-operated IED.** An IED activated by the actions of an unsuspecting individual. It requires the intended target to carry out some form of action that will cause the IED to function. A wide variety of victim-operated methods are used, including pressure plate, tripwire, light initiation, movement, collapsing circuit and anti-lift.
- » **Projected IED.** An IED launched from some form of improvised baseplate with the intention of defeating perimeter security measures.

⁶ United Nations Mine Action Service, Improvised Explosive Device Lexicon, 2016, https://unmas.org/sites/default/files/unmas_ied_lexicon_0.pdf.

⁷ Some groups that commit acts of terrorism mass-produce anti-personnel and anti-vehicle victim-operated IEDs to a similar pattern. While these weapons have some characteristics that allow them to be classified fully as mines, their improvised nature means that they are also classified as IEDs, as defined in the United Nations Improvised Explosive Device Lexicon.

- » **Suicide IED.** An IED initiated by the attacker at the time of their choosing in which they intentionally kill themselves as part of the attack, or possibly to deny capture.⁸

3.2 COMPONENTS OF AN IED



The five principal components of an IED are shown in Figure 1.

Figure 1. Components of an IED.

Figure 1 shows a typical IED configured for electrical initiation. Some IEDs use non-electrical means of initiation, such as clockwork timers, chemical action or cocked strikers to release energy to initiate an explosive charge.

In considering the development of effective strategies for the denial of IED components, consideration must be given to the dual-use nature of many IED components and precursors. Regulation and control of the following components may be effective in reducing the proliferation of IEDs:

- » **Initiator.** All IEDs require some form of initiator, and it is usually in the form of a manufactured (commercial or military) or home-made detonator.⁹ The initiator is a critical component of all IEDs, and effective State control of these items is a prerequisite to managing IED proliferation.
- » **Main charge.** The main explosive charge of an IED may consist of one or more of the following types of explosive:
 - Bulk commercial explosives (e.g. dynamites, gelignites and ammonium nitrate-based explosives used in the extractive industries)

⁸ United Nations Mine Action Service, *Improvised Explosive Device Lexicon*, 2016, https://unmas.org/sites/default/files/unmas_ied_lexicon_0.pdf.

⁹ Also known as a "blasting cap".

- Military bulk explosives (e.g. plastic explosives, TNT demolition charges)
- Military ordnance containing high explosives (e.g. artillery shells, aircraft bombs, missile warheads)¹⁰
- Home-made explosive compounds (e.g. organic peroxides such as Triacetone Triperoxide and Hexamethylene Triperoxide Diamine)
- Home-made explosive mixtures (e.g. fuel–oxidizer explosive compositions based on nitrates, chlorates or perchlorates)
- » **Electronic switches.** The firing and arming switches of IEDs may be based on ubiquitous electronic components that are impossible to regulate. It may, however, be possible to regulate and control the more sophisticated electronic systems associated with radio-controlled IEDs (RCIEDs) (e.g. transmitters and receivers, dual-tone modulated frequency switches, complete industrial radio-frequency-based switching systems).

3.3 COUNTER-IED CONTEXT

The IED is not a new weapon; it has been used over many decades. What is new is the general recognition that the IED is an effective asymmetric weapon that may be used to attack a stronger, conventionally armed opponent. In recent years, the term “counter-IED” has been defined by some as:

*The collective efforts to defeat the IED system by attacking the networks, defeating the device, and preparing a force.*¹¹

For the C-IED CMM and the Self-Assessment Tool, **the term “counter-IED” is used in its broadest possible context and includes all activities a State may undertake to prevent and mitigate the use of IEDs.**¹² Components of counter-IED capability are divided into two broad categories: upstream components, which are focused on those activities aimed at deterring or preventing IED events from taking place, and downstream components, which are associated with responding to a particular IED event or mitigating an IED event should it occur.

3.4 WHAT IS A CAPABILITY MATURITY MODEL?

CMMs were first developed by the US Department of Defense to assess the capability of contractors to deliver complex software-based programmes.¹³ A CMM may be considered as a set of structured levels that describe how well the behaviours, practices and processes of an organization can reliably and sustainably produce required outcomes. One of the key benefits to be accrued from employing a CMM is that it provides a benchmark, or a

¹⁰ Military munitions that fall into the category of “ammunition attractive to criminal and terrorist organizations” are particularly vulnerable to illicit diversion and inclusion in IEDs. In recent years, groups that commit acts of terrorism have sought to make extensive use of any military munition containing substantial quantities of high explosive; aircraft bombs, artillery shells, missile warheads and anti-tank mines have been particularly sought-after items for inclusion in IED main charges.

¹¹ NATO, Allied Joint Doctrine for Countering-Improvised Explosive Devices, AJP-3.15(C), February 2018, p. 1-5. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/686715/doctrine_nato_countering_ied_ajp_3_15.pdf

¹² As noted in United Nations General Assembly resolution A/RES/71/72, 2016, a “whole of government approach” is essential for comprehensive action to prevent and mitigate the use of IEDs. The C-IED CMM and the Self-Assessment Tool also encourage a whole of government approach to fully address the cross-cutting nature of the IED threat.

¹³ W.S. Humphrey, “Characterizing the Software Process: A Maturity Framework”, IEEE Software, vol. 5, no. 2, 1988, pp. 73–79.

set of references, for the basis of comparison. A CMM may also indicate capability gaps and areas where process improvement may be required.

CMMs provide a means by which people, processes and technology may be qualitatively assessed, and most are based on a five-level maturity model; a typical example is shown in **Figure 2**. A key characteristic of all maturity models is that as the organization's capability increases, the maturity level also increases.

The key changes between each level in the five-level maturity model are as follows:

- » **Initial (1)**. The process is characterized as ad hoc and, occasionally, even chaotic. Few processes are defined, and success depends on individual effort.
- » **Repeatable (2)**. Basic management processes are established, and the necessary process discipline is in place to repeat earlier successes on projects with similar applications.
- » **Defined (3)**. The process is documented, standardized and integrated into the organization's overall business processes.
- » **Managed (4)**. Detailed measures of process and product quality are collected, and the products and processes are quantitatively understood and controlled.
- » **Optimizing (5)**. Continuous process improvement is enabled by quantitative feedback from the process and from piloting innovative ideas and technologies.

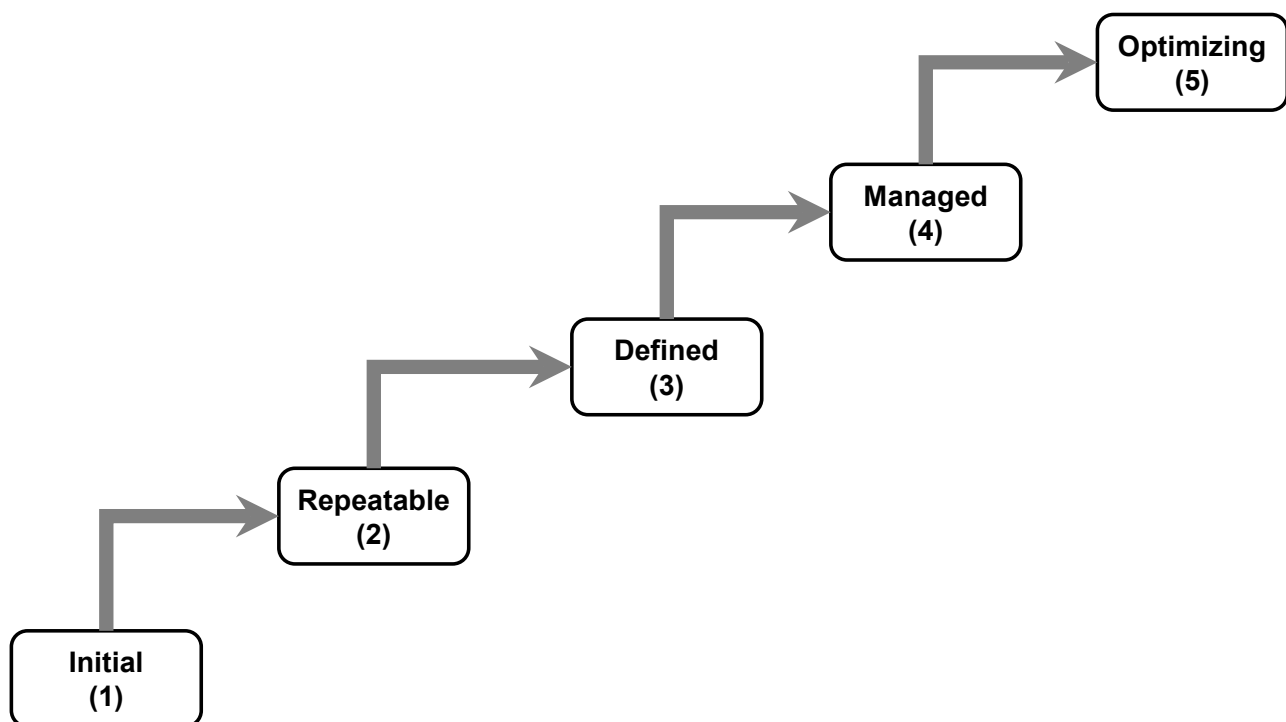


Figure 2. A Five-Level Capability Maturity Model.¹⁴

¹⁴ M.C. Paulk et al., Capability Maturity Model for Software, Version 1.1, Software Engineering Institute, CMU/SEI-93-TR-24, 1993.

3.5 WHY USE A CAPABILITY MATURITY MODEL?

CMMs have been widely adopted across many areas as they address the difficulty of achieving consistent improvement in complex domains.

The key advantages of using CMMs are that they:

- » Provide a common and consistent mechanism for comparing organizations
- » Can indicate critical capability gaps and areas that need to be addressed to enable organizational improvement
- » Provide a common language and frame of reference for assessing maturity and progress
- » Allow the experience and lessons learned by others to be applied, thus reducing the time required to introduce improvements



4 COUNTER-IED CAPABILITY MATURITY MODEL

4.1 CHARACTERISTICS OF THE COUNTER-IED CAPABILITY MATURITY MODEL

The C-IED CMM draws on the same basic principles employed in other widely used CMMs. The C-IED CMM has been developed to support UNIDIR’s Self-Assessment Tool, and the output from the tool is an indication of the current counter-IED capability maturity level. **The development of counter-IED capability is not a purely linear process, and the model represented here is a simplification to provide broad metrics for evaluation and comparison.**

The C-IED CMM has been designed to be intuitive and simple to apply and provides a qualitative rather than quantitative assessment of the current counter-IED capability maturity level. It is not intended to act as a route map toward enhancing national counter-IED capabilities but to indicate areas where attention is required to enhance national capabilities. The principal features of the C-IED CMM are:

- » As C-IED capability maturity levels increase, national counter-IED capabilities are also enhanced.
- » Increasing C-IED capability maturity levels requires the application of effort and, critically, takes time.

The time required to increase counter-IED capability maturity is important as it may be possible for groups that commit acts of terrorism to acquire and employ IEDs in a significantly shorter time frame than that required by the State to respond effectively. This is the cycle of IED and counter-IED institutionalization, which can be demonstrated graphically for a number of countries that have faced the wrath of the IED. The C-IED CMM therefore has applicability for States that do not currently face a significant IED threat and may be considering what contingency arrangements are required to acquire suitable counter-IED capabilities should an IED threat emerge in the future.

4.2 COUNTER-IED CAPABILITY MATURITY LEVELS

Proposed counter-IED capability maturity levels are shown in **Figure 3**. (These are referred to as the “**C-IED CM**” levels throughout the model and the Self-Assessment Tool.)

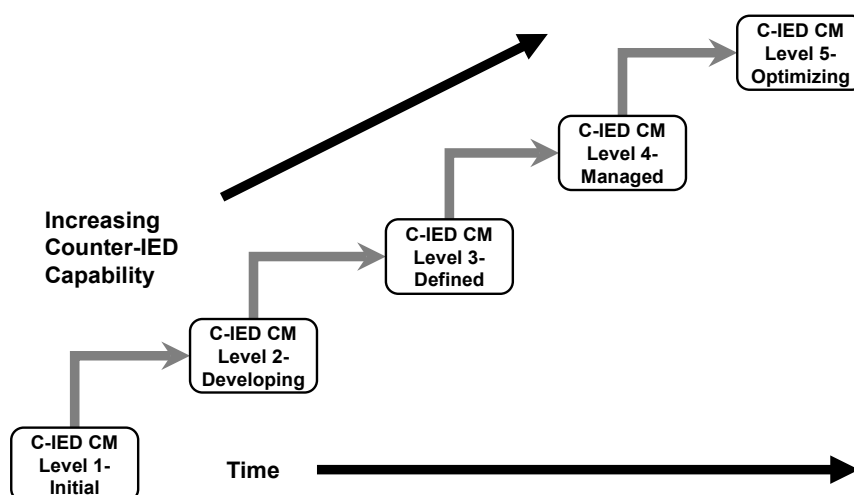


Figure 3. Counter-IED Capability Maturity Model Proposed Levels.

- » **C-IED CM Level 1 – Initial.** The approach to countering IEDs is not well defined, and the process of countering IEDs is conducted by low-level units responding with little or no equipment or training and not in accordance with a nationally defined policy. Generally, States at C-IED CM Level 1 can fall into three categories: those that do not face a significant IED threat, those that do not know they have an IED threat owing to a lack of understanding, and those that have only recently started to witness the impact of IEDs on their population. States assessed to be at C-IED CM Level 1 that are facing significant IED threats generally require substantial external support and assistance, the most urgent generally being in the areas of personnel development, training, equipment capability, and policy and strategy development.
- » **C-IED CM Level 2 – Developing.** The State understands that it has an issue with the use of IEDs, and the basic legislative and regulatory framework is in place to establish the judicial basis for countering IEDs. At the operational and tactical levels,¹⁵ entities involved in countering and responding to IEDs may still possess significant capability gaps, and the technical and procedural means to exploit recovered IEDs are not generally present. At C-IED CM Level 2, States generally still require significant external support and assistance but have some understanding of their own capability gaps. For external entities, it is important to emphasize the need for a holistic national counter-IED strategy and to not rely on unrealistic technical solutions. It may be necessary to deliver life-saving technical solutions to reduce the level of attrition as capacity develops, but donors should not see this as the end of the commitment.
- » **C-IED CM Level 3 – Defined.** The State has probably faced a substantial IED threat for some time and has been engaged in a protracted campaign against groups that commit acts of terrorism and that have employed IEDs. It is likely that the State's security apparatus has sustained significant casualties, learning hard lessons on how to counter IEDs. At C-IED CM Level 3, there are generally competent and effective entities involved in countering IEDs, and they operate within a fairly well-defined national policy framework. Entities involved in responding to IED incidents may articulate the need to acquire more complex counter-IED capabilities, such as protected vehicles, electronic countermeasures (ECMs), equipment to counter the use of RCIEDs, and other sophisticated equipment to locate and render safe IEDs. It is also likely at this level that the police will seek better capabilities to preserve, recover and analyse forensic evidence, though they are unlikely to have the capability to analyse and use the more complex forensic processes. The State's approach is probably still focused on national, as opposed to regional, measures to counter IEDs. States at this maturity level generally have a substantial appetite for international assistance and a good understanding of what new capabilities and assistance are required. For donors, the most productive assistance measures are those based on building stand-alone and enduring national capabilities with a defined exit strategy.
- » **C-IED CM Level 4 – Managed.** At C-IED CM Level 4, the State has generally a very good understanding of the nature of the current IED threats it is facing and has well-proven measures to deal with IEDs. Comprehensive policies and technical operating procedures exist to allow for all relevant evidence from IED scenes to be collected and analysed. The State is also capable of mounting proactive, intelligence-led operations against groups that may wish to employ IEDs. There may also exist a degree of cross-border, regional or international cooperation

¹⁵ In the context of an IED threat this could also be viewed at the district or governorate levels, rather than the purely military definitions of the operational and tactical levels of conflict.

to address transnational IED threats and to assist in the interception of supply chains.

- » **C-IED CM Level 5 – Optimizing.** At C-IED CM Level 5, the State has a fully functioning apparatus that can deal with the complete range of IED threats. International cooperation is most often based on the exchange of mutually beneficial IED intelligence. At this maturity level, the State can both counter current threats and predict and respond to emerging threats, and it is an intelligent customer when acquiring new counter-IED capabilities.



5 UNIDIR'S COUNTER-IED CAPABILITY MATURITY SELF-ASSESSMENT TOOL

5.1 APPROACHES TO ADDRESSING IED PROLIFERATION

A thorough understanding of the IED system¹⁶ is a prerequisite to developing and evaluating the effectiveness of IED counter-proliferation measures. One possible approach is to consider IED events as a part of a wider system: for an IED attack to be undertaken, a number of linked activities also need to take place. A generic approach for describing the State response to an IED event is shown in **Figure 4**.

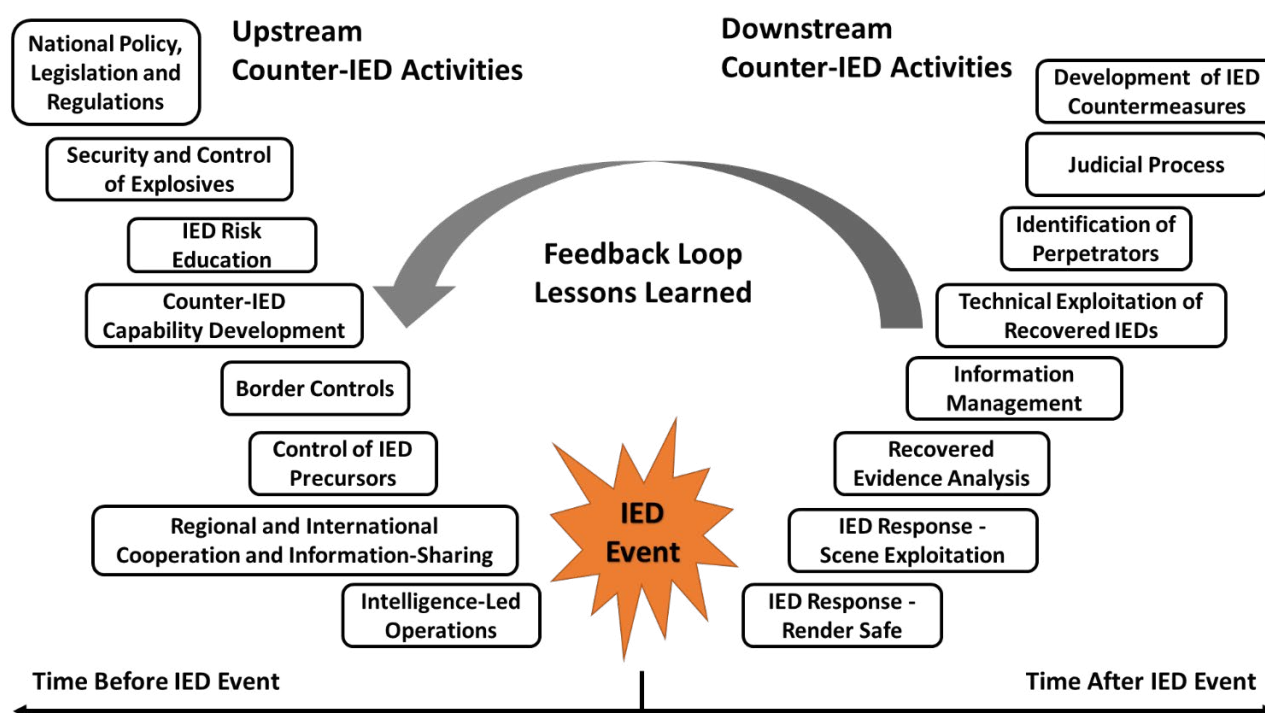


Figure 4. Upstream and Downstream Components of Counter-IED Capability.

5.2 UPSTREAM IED COUNTER-PROLIFERATION MEASURES

5.2.1 National Policy, Legislation and Regulations

Security is the universal and fundamental desire of most people. It includes both personal safety (for self, family and livelihood) and freedom from fear, together with State stability and good governance. Arguably, it is the key government responsibility and must be part of a government's accountability for economic and social development and the well-being of its citizens, especially the poor and vulnerable. The IED is a weapon that creates personal safety issues, instils fear, destabilizes, impacts sustainable development goals, impedes commerce, obstructs humanitarian response and thrives under poor governance.

The glue that holds together most successful national approaches to counter-IED is an overarching policy that defines a "whole of government approach" to preventing and mitigating the effects of IEDs used. An effective counter-IED strategy most often

¹⁶ The term "IED system" is used in its broadest context. Groups that commit acts of terrorism employing IEDs have their own specific characteristics and nuances. Transnational terrorist groups such as Da'esh/ISIL have very different approaches to the use of IEDs from criminals using IEDs to protect or sustain the production and distribution of narcotics.

requires a coordinated, cross-government approach, and this should ideally be led by a suitably resourced and empowered single government ministry or department.

Effective security sector governance and compliance with the rule of law are fundamental to all successful counter-IED activities. It is essential that suitable national legislation prohibits all activities associated with the development, acquisition of components, manufacture and use of IEDs. This upstream component of counter-IED capability is the natural mirror of the downstream component “judicial process”. National legislation and regulations should also cover the lawful use of explosives (and explosive precursors), and these regulations should include:

- » The lawful acquisition, control, transport, storage and end use of explosives by civilian entities (e.g. industries associated with mining, quarrying, exploration and extraction of oil and gas, and civil engineering and demolition)
- » The acquisition, storage and use of ammunition and explosives by the armed forces and the law enforcement community
- » The storage and transport of explosives

The most effective regulatory regimes are those that are introduced with the cooperation and support of both commerce and government. In States where considerable quantities of commercial explosives are used in the extractive industries, it is important that adequate consideration is given to security and control from the point of manufacture or import to the point of end use. It is also essential that appropriate legislation and regulations are supported by an effective enforcement or assurance regime.

5.2.2 Security and Control of Explosives

Diversion of lawfully held explosives has been a significant source of explosives used by many criminals and groups that commit acts of terrorism. The State should ensure that all legitimate stockpiles of manufactured explosive are denied as a source of explosives for IEDs, and the following should be considered:

- » Effective security and control of State ammunition and explosive stockpiles¹⁷
- » Effective security and control of explosives held by authorized civilian entities
- » Guarding or removal of unexploded ordnance (UXO) on military ranges and former conflict zones, and mines in legacy minefields¹⁸

5.2.3 IED Risk Education

Risk education is one of the five pillars of mine action, and it relates to all activities aimed at reducing the risk of injury from mines and other UXO by raising awareness and promoting behavioural change through public information campaigns, education and training, and liaison with communities.

The significant growth in casualties as a result of the use of IEDs underpins the need for effective IED risk education. Furthermore, the indiscriminate and increasing use of

¹⁷ This subject falls under the generic heading of physical security and stockpile management. For further practical information see UNIDIR, *Utilizing the International Ammunition Technical Guidelines in Conflict-Affected and Low-Capacity Environments*, 2019.

¹⁸ In Somalia, military explosives such as TNT have been harvested from UXO and then incorporated either as the main charge in victim-operated IEDs and RCIEDs or as a booster in a vehicle-borne IED employing a very large home-made main explosive charge.

both victim-operated IEDs and suicide IEDs has led to a significant increase in civilian casualties over time.

IED risk education should also be undertaken by State security elements that are not directly involved in the clearance of IEDs or the exploitation of IED scenes. Other first responders, such as the civil police, fire and rescue services, and medical services, may also be the target of IEDs. These services should be provided with appropriate education and training so that they can identify, avoid and report suspected IEDs.

5.2.4 Counter-IED Capability Development

National counter-IED measures cover the full panoply of capabilities required for the State to effectively counter the use of IEDs, including:

- » An understanding of the security environment and legal framework in which all those with the ability to implement a counter-IED strategy operate
- » Development of a national counter-IED strategy that defines how the IED will be defeated within the context of existing or proposed government structures¹⁹
- » Provision of suitably trained and equipped military or police IED disposal or IED defeat (IEDD)²⁰ teams to render safe recovered IEDs and to ensure that scenes where IEDs have functioned are safe for forensic exploitation by law enforcement agencies
- » Provision of suitable IED awareness and training to the police and military forces who may be required to operate in an IED threat environment
- » Development of appropriate national capabilities, or bilateral agreements with international partners, to deal with the forensic exploitation and analysis of IED incidents and recovered IED material
- » Effective control of borders and the monitoring of the import of IED-related precursors
- » IED awareness for the civilian population
- » Horizon scanning and the development of timely responses to predicted future IED threats

5.2.5 Border Controls

Effective border controls have a critical role to play in countering the proliferation of IEDs. These borders may be littoral²¹ as well as inter-State.²² Global Shield²³ is a good example of a successful international programme. The objectives²⁴ of the Global Shield programme are to:

19 Often, a whole of government approach is advocated for the development of an effective national counter-IED strategy. What is required, as a minimum, is a degree of cooperation between the Ministries or Departments of Interior, Defence, Justice, Customs, and the State intelligence agencies in order that national resources may be mobilized and used in an effective and coordinated fashion.

20 "IED disposal" and "IED defeat" are both commonly used terms and may be considered interchangeable.

21 Littoral in this context refers to a maritime border

22 Yemen is an example of a State that has a maritime IED threat as well as an IED threat on land.

23 Global Shield is a joint initiative between the World Customs Organization (WCO), INTERPOL and the United Nations Office on Drugs and Crime. It was initiated in November 2010 and is supported as an ongoing programme by the WCO.

24 WCO, "Improvised Explosive Devices (IEDs) Programme Global Shield", www.wcoomd.org/en/topics/enforcement-and-compliance/activities-and-programmes/security-programme/programme-global-shield.aspx.

- » Promote cooperation among customs and police administrations in combating the illicit diversion of materials used to manufacture IEDs
- » Raise global awareness of the increased threat posed by precursor chemicals and other dual-use materials that can be used to manufacture IEDs
- » Engage with private industry players to establish best practice programmes to avoid the illicit diversion of precursor chemicals and other dual-use materials that can be used to manufacture IEDs (this is also relevant for the internal control of IED precursors)
- » Train customs officers in the detection and handling of IED materials
- » Train trainers in all parts of the world in order for them to be able to deliver national or regional trainings
- » Identify and seize illicit shipments of IED materials and communicate these seizures to other programme participants and partner organizations through a secure communication platform
- » Initiate investigations and other enforcement activities regarding illicit shipments (backtracking investigations)
- » Identify and share best practices to combat the illicit diversion and trafficking of IED materials
- » Monitor and track legitimate shipments of IED materials to identify the patterns, diversity and extent of illicit international trade
- » Through risk-based targeting, facilitate legitimate trade in precursor chemicals and other dual-use materials that can be used to manufacture IEDs

Support for the Global Shield initiative has been further noted by the United Nations General Assembly, which recognizes the initiative's important role in preventing the smuggling and illicit diversion of precursor chemicals that could be used to manufacture IEDs.²⁵

In low-capacity and conflict-affected environments, many of the materials employed in the manufacture of IEDs are imported.²⁶ In these circumstances, effective border controls and proactive transnational tracking and monitoring of IED precursors may pay dividends in identifying those involved in the illicit supply of IED components and explosive precursors.

5.2.6 Control of IED Precursors

Explosive precursors are chemical substances that can be used for legitimate purposes but may also be misused in the manufacture of home-made explosives. One of the issues facing all States is the dual-use nature of most of the precursors used in the manufacture of IEDs. In States where effective controls on military and civil explosives exist, groups intent on using IEDs will seek to manufacture home-made explosives. Home-made

²⁵ General Assembly, Countering the Threat Posed by Improvised Explosive Devices, UN document A/RES/72/36, 4 December 2017. Based on: General Assembly, General and Complete Disarmament: Report of the First Committee, UN document A/72/409, 13 November 2017.

²⁶ Many States lack the domestic industrial infrastructure; hence, the imposition of effective controls at borders can inhibit the ability of groups that commit acts of terrorism to acquire the most common precursors used in the manufacture of IEDs.

explosives fall into two broad categories: explosive compounds, which are synthesized, and explosive compositions, which consist of a mechanical mixture of a fuel and an oxidizer. Effective controls on explosive precursors can significantly reduce the ease with which home-made explosive compounds and mixtures can be manufactured.

International controls on explosive precursors vary from State to State. The approach adopted by the European Union (EU), is to categorize certain chemicals. That is, “restricted explosives precursors”, are not generally available to members of the public and their acquisition is subject to control and, possibly, licensing. For “reportable explosives precursors”, the emphasis is placed on online and offline sellers, as well as online marketplaces, to report suspicious transactions. EU restricted explosive precursors, as listed in its new regulation, are shown in

EU restricted explosive precursors, as listed in its new regulation, are shown in **Table 1**, and EU reportable precursors are shown in **Table 2**.

TABLE 1. EU RESTRICTED EXPLOSIVE PRECURSORS²⁷		
Precursor Chemical	Limit Value	Upper Limit Value for the Purpose of Licensing
EU Restricted Explosive Precursors		
Nitric acid	3% w/w	10% w/w
Hydrogen peroxide	12% w/w	35% w/w
Sulphuric acid	15% w/w	40% w/w
Nitromethane	16% w/w	40% w/w
Ammonium nitrate	16% w/w of nitrogen in relation to ammonium nitrate	
Potassium chlorate	40% w/w	
Potassium perchlorate	40% w/w	
Sodium chlorate	40% w/w	
Sodium perchlorate	40% w/w	

TABLE 2. EU REPORTABLE EXPLOSIVE PRECURSORS
Precursor Chemical
EU Reportable Explosive Precursors
Hexamine
Acetone
Potassium nitrate
Sodium nitrate
Calcium nitrate
Calcium ammonium nitrate
Magnesium powders
Magnesium nitrate hexahydrate
Aluminium powders

5.2.7 Regional and International Cooperation and Information Sharing

Given the length and porosity of many international borders, a purely national approach to the control of explosive precursors and IED components is unlikely to be successful. International cooperation in the area of law enforcement is particularly important in addressing the transnational nature of IED supply chains and threats. INTERPOL's Project Watchmaker is one such initiative.²⁷

Project Watchmaker has developed a regional-based model in line with the current IED threats, which is derived from actual incident data. At the heart of the Project Watchmaker initiative is a database that includes information on known and suspected persons involved in the acquisition, manufacture or use of IEDs. This database allows the International Criminal Police Organization (INTERPOL) to assist law enforcement agencies in detecting the transnational movement and operation of IED makers and facilitators. INTERPOL uses a series of colour-coded notices to communicate IED-related information to its members.

Other relevant international initiatives include the 11 Regional Intelligence Liaison Offices of the World Customs Organization (WCO), which facilitate the exchange of intelligence across all six WCO regions. The WCO uses the Customs Enforcement Network, which was conceived to assist the customs enforcement community in gathering data and information for intelligence purposes.²⁸

5.2.8 Intelligence-Led Operations

Intelligence-led counter-IED operations form an essential part of a State's response to the use of IEDs by criminals and groups that commit acts of terrorism. A plethora of useful information may be gained from the forensic exploitation of recovered components from IED incidents. Carefully planned and executed pre-emptive operations may disrupt IED networks and prevent those involved in the procurement of IED precursors and the manufacture and supply of IEDs from prosecuting successful IED-based operations. Intelligence-led operations could take many forms and may include the following:

- » Identification and closure of IED precursor supply chains, perhaps in cooperation with international partners
- » Identification and prosecution of those involved in the use of IEDs
- » Counter-radicalization initiatives aimed at reducing recruitment into organizations that use IEDs
- » Measures to reduce the availability of technical knowledge relating to the construction and tactical use of IEDs²⁹

The effective analysis and technical exploitation of IEDs is fundamental to developing future IED countermeasures and to determining whether changes in own force tactics, techniques and procedures are needed to address current developments or those pre

²⁷ Project Watchmaker is a global, neutral platform that assists specialized agencies in its member countries to exchange intelligence to counter the threat of IED attacks. It also seeks to enhance capabilities in IED prevention, preparedness, response and recovery.

²⁸ WCO, "Customs Enforcement Network (CEN)", www.wcoomd.org/en/topics/enforcement-and-compliance/instruments-and-tools/cen-suite/cen.aspx.

²⁹ In practice, this is almost impossible to achieve, but legislation prohibiting the possession of IED-related technical knowledge, such as the manufacture of home-made explosives, has proved effective in the prosecution of IED makers.

dicted in the use of IEDs by criminal organizations or by groups that commit acts of terrorism.

5.3 DOWNSTREAM IED COUNTER-PROLIFERATION MEASURES

5.3.1 IED Response – Render Safe

The ability to neutralize IEDs and to deal safely with a find of IED components is a fundamental responsive capability needed by all States that face the threat of IEDs. In the early stages of an IED campaign, it is not unusual to see this role filled by military personnel who may have received training only in conventional munitions disposal.

IEDs vary significantly in their complexity and design, and there are no manufacturing standards for IED construction, although individual IED fabricators may have their own unique IED-making signatures. IED technology is disseminated widely via the movement of personnel between countries where the use of IEDs is prevalent, as well as the spread of information over the Internet. Design often lies within the imagination and technical ability of the bomb maker.

The immediate response to an IED is normally conducted by an explosive ordnance disposal (EOD) or an IEDD team. The principal purposes of this team are to:³⁰

- » Save life
- » Preserve property
- » Remove the threat
- » Record and recover IED components to facilitate the technical development of IED countermeasures and to aid in the identification of IED manufacturers and facilitators
- » Restore the situation to normality, or restore freedom of manoeuvre for military and security force units, as soon as possible
- » Deter groups from using IEDs by efficient and effective IEDD operations

An important capability related to IED render safe is that of IED search. This involves the location of IED-related materiel, such as main charges, firing switches, power supplies, detonators and containers.

One of the factors that should be considered in evaluating the maturity of a State's IED response capability is its ability to logistically sustain the specialist equipment required to conduct render safe activities. Often, especially in low-capacity and conflict-affected environments, insufficient attention is paid to the challenges involved with the issue, maintenance and procurement of spare parts and the general life cycle management of critical consumables. Highly specialized counter-IED equipment is often purchased from preferred manufacturers, with little attention given to the longer-term sustainability of the capability. This results in States having equipment that is difficult to maintain, and the resulting low serviceability rates mean that it is not available to support counter-IED operations at the levels required by the end users.

³⁰ United Nations Department of Peacekeeping Operations, "EOD Philosophy and Principles", in United Nations Peacekeeping Missions Military EOD Unit Manual, 2017, Section 1.4, p. 13.

5.3.2 IED Response – Scene Exploitation

Scene exploitation covers all activities conducted at an IED incident after the IED has been rendered safe. It encompasses those activities required to preserve the scene and facilitate the collection of forensic evidence. Forensic evidence is the physical evidence connected with an incident that may be used in the scientific investigation of criminal or civil offences. This evidence may subsequently be used in criminal proceedings in a court of law to gain convictions. It may also be used to link groups or individuals to IEDs and to assist in counter-IED targeting, as part of a broader national approach to counter-IED.

The collection of forensic evidence is a vital aspect of counter-IED operations. The quality of evidence that may be collected from incidents and scenes will be dictated by the training and level of forensic awareness of those conducting the process of IED render safe. The correct collection, presentation and submission of this evidence is also crucial for the future prosecution of perpetrators.

The exploitation of IED scenes, including those where the IED has functioned, is conducted to aid the following:

- » **Collect Evidence:** IED scenes yield physical evidence, including parts of the IED itself or the explosive residue from which an assessment of the type of explosive employed by the maker can be made.
- » **Determine the Cause of an Explosion:** identification of the type of explosive used can assist in the development of counter-IED targeting strategies; for example, did the IED consist of military or home-made explosive?
- » **Estimate the Type and Size of Explosive Charge:** an estimation of the size and type of IED main charge is very important in aiding the development of technical countermeasures, armour protection and other physical protective measures.
- » **Assess the Method of IED Functioning:** such assessments may yield information on how the IED was constructed and its method of functioning.³¹

5.3.3 Recovered Evidence Analysis

Thorough forensic analysis of recovered IED material is fundamental to determining how the IED was designed to function. **Manufactured explosive components, such as main charges and detonators, may be identified through the manufacturer's markings.** For electronic components, particularly on integrated circuits and microprocessors, identification and batch markings may indicate where and when the item was manufactured. The correct identification of IED components represents the first stage in the identification of the IED supply chain.

5.3.4 Information Management

Information management (IM) is the process of collecting, organizing, storing and providing information within an organization. There are marked similarities between IM and the intelligence cycle, which consists of direction, collection, processing, analysis and dissemination.

The following types of collated information underpin an effective approach to counter-IED:

³¹ Consideration also needs to be given to the means of delivery of the IED. The analysis of vehicles and unmanned aerial vehicles used in some IED incidents may yield considerable evidence and intelligence.

- » Reports and photographs from those involved in the rendering safe of IEDs
- » Forensic analysis reports on physical exhibits collected from IED incidents
- » Forensic evidence and police interview reports collected from those arrested and subsequently prosecuted for IED-related offences
- » All-source³² intelligence reports pertaining to IED incidents or people suspected of involvement in IED-related offences
- » Reports pertaining to the analysis of tactics, techniques and procedures by groups that commit acts of terrorism with IEDs

5.3.5 Technical Exploitation of Recovered IEDs

The technical exploitation of recovered IEDs is primarily concerned with understanding the intentions of those building and deploying the IED. Thorough technical exploitation of the IED may enable a State to:

- » Identify the source of supply of specific IED components
- » Link incidents through the technical evaluation of specific IED maker signatures and other characteristics
- » Inform the development of countermeasures
- » Inform the future training of IEDD teams and other members of the security forces

5.3.6 Identification of Perpetrators

People involved in the manufacture, supply and emplacement of IEDs may be identified through the application of sound police investigative principles that are based on a valid forensic exploitation of recovered IED components. Perpetrators may be identified from:

- » Biometric evidence (fingerprints and DNA) recovered from IED components
- » Links to the acquisition of specific batches of IED components (i.e. the perpetrators' links to transactions associated with the acquisition of IED materiel)
- » Physical links from visible and invisible forensic evidence collected at IED scenes (e.g. fibres, tool marks and abrasions, and explosive residues)
- » Recovered evidence, which may also be used to support the testimony of other witnesses; this is particularly important in some judicial systems

5.3.7 Judicial Process

All IED incidents are crime scenes, and it is essential that forensic evidence is collected and managed in due cognisance of the law. It is preferable that forensic evidence at IED scenes is collected by trained and authorized police forensic personnel, but in many situations this may not be possible, and other personnel may have to collect evidence on behalf of the judicial authorities. In all circumstances, the integrity of the forensic chain of custody should be maintained in order that material recovered may be used to support the prosecution of perpetrators. Most States require no special legislative or regulatory measures to deal with IEDs, as the application of the same procedures used

³² Including human intelligence, signals intelligence and open source intelligence.

for other serious crimes normally suffice. It is, however, usually necessary for specialist techniques and procedures to be developed for the preservation, collection and analysis of IED-related material.

5.3.8 Development of IED Countermeasures

The recovery of IED components is essential in aiding understanding of the destructive effects of IEDs against structures and vehicles. The recovery of components from RCIEDs is crucial in informing the development of ECM systems.



6 USING UNIDIR'S COUNTER-IED CAPABILITY MATURITY SELF-ASSESSMENT TOOL

6.1 INTRODUCTION TO USING THE COUNTER-IED SELF-ASSESSMENT TOOL

The Counter-IED Self-Assessment Tool is based on the C-IED CMM and is designed to provide a qualitative assessment of the current counter-IED maturity level. The Self-Assessment Tool evaluates a broad range of components of counter-IED capability, which are grouped into upstream and downstream counter-IED measures. **The general premise of the model is that the greater the maturity and effectiveness of the upstream measures, the fewer downstream measures are required to counter the use of IEDs.**

6.2 USING THE DATA VISUALIZATION TOOL

A Data Visualization Tool with simple data entry and visualization functions has been developed within a macros-enabled Microsoft Excel spreadsheet to facilitate assessment efforts. The spreadsheet uses a series of linked tabbed sheets for data entry, with one tab per component of counter-IED capability. Summary tabs are used to facilitate the display of consolidated results in both tabular and graphical format. This Data Visualisation Tool, convenient for conducting self-assessments, can be accessed following this hyperlink: [Data Visualization Access Link³³](#).

6.2.1 Entering Data into the Data Visualization Tool

To aid those conducting this software-based self-assessment, each of the identified components of counter-IED capability is considered in a separate spreadsheet tab. Upstream component of capability are coloured green; downstream are coloured tan. Each tab highlights issues for consideration, and guidance is provided on how the specific counter-IED capability maturity level should be assessed for that particular component. Each tab also contains free text boxes that allow the user to enter key findings and supporting data. At the top of each tab, the user can select a "radio button" of the assessed maturity level for that particular component of counter-IED capability (only one option may be selected). An example of one of the tabbed data entry screens used by the data visualization tool is shown in **Figure 5**.

³³ Visit www.unidir.org/CIEDDataVisualization



Upstream Counter-IED Measures - National Policy, Legislation and Regulations

Counter-IED Maturity Level

- Counter-IED Maturity Level 1 - Initial
- Counter-IED Maturity Level 2 - Developing
- Counter-IED Maturity Level 3 - Defined
- Counter-IED Maturity Level 4 - Managed
- Counter-IED Maturity Level 5 - Optimizing

Assessed Counter-IED Maturity Level: 1

Assessor Key Comments - National Policy, Legislation and Regulations:

Introduction

This component of counter-IED capability covers the highest levels of government policy and determines whether the State has an adequate policy, legislative and regulatory framework to address the use of IEDs.

Most States have relevant criminal legislation that may be applied to the criminal use of explosive devices for murder and attempted murder. It is important that appropriate legislation exists to cover the unlawful possession of IED precursors as well as the intent to use IEDs for criminal or terrorist acts.

Assessment Considerations

The following questions should be considered in assessing a State’s counter-IED capability maturity in terms of current national legislation and regulations:

1. Is there a national counter-IED policy or strategy? Does it encompass an effective whole of government approach to the IED problem?
2. To what extent is there extant legislation prohibiting the acquisition of IED components and the manufacture and use of IEDs?
3. Is there robust and comprehensive legislation governing the lawful acquisition, storage, transport and use of explosives and related items? Such legislation may cover:
 - Manufacture of explosives and related items
 - Stockpile control measures
 - The control, including acquisition, storage and use, of IED precursors
 - All lawful uses of explosive, such as civil engineering (construction and demolition), mining, quarrying, seismic survey, and oil and gas exploration and production
4. Are the State regulations governing the control, storage and use of explosives and ammunition sufficient to prevent the illicit diversion of material?
5. Do the security forces have in place suitable security arrangements to safeguard ammunition attractive to criminal and terrorist organizations (ACTO)?
6. Is there evidence over the past five years of ammunition being acquired from State stockpiles by groups that commit acts of terrorism? Is the trend increasing or decreasing?

Assessment Criteria

C-IED CM Level 1 – Initial is indicated by the following:

There is no specific legislation in place covering the unauthorized possession of explosives or the use of explosives for criminal purposes.
There are no effective legislative or regulatory controls in place to govern the civil use and acquisition of explosives.

C-IED CM Level 2 – Developing is indicated by the following:

There are some legislation and regulations in place, but they are not generally enforced.
There is an embryonic national counter-IED strategy, but there are concerns about support from some government departments.

C-IED CM Level 3 – Defined is indicated by the following:

There is a defined national counter-IED strategy, and there is a single ministry or department responsible for coordinating an effective whole of government approach to countering IEDs.
Legislation and regulations are present, and there is a resourced organization for assuring and enforcing compliance.
There is an effective judicial system operating within the State, and groups accused of IED-related offences are able to be prosecuted using relevant legislation.
Relevant regulations are in place relating to the control and use of IED precursors, particularly dual-use materials that may be used in the manufacture of home-made explosives.

C-IED CM Level 4 – Managed is indicated by the following:

The State has robust procedures for both enforcing and reviewing national legislation and regulations.
The State has a robust and effective licensing system that assesses the suitability of persons to gain lawful access to explosives.

C-IED CM Level 5 – Optimizing is indicated by the following:

The State is seen to adopt best international practice and participates in regional and international forums, develops new control measures, and shares and adopts best practice.

Figure 5. Data Visualization Tool – Data Entry.

6.2.2 Displaying Results in the Data Visualization Tool

Two separate summary tabs (one each for the upstream and downstream components of counter-IED capability), both coloured red, display the consolidated results. These summary sheets use a radar-type chart to provide a graphical representation of the upstream and downstream counter-IED maturity levels and a table to provide a summary of the individual capability maturity levels for each component of counter-IED capability. A mean calculated overall capability maturity score is also provided for upstream and downstream components. An example of the results produced by the data visualization tool is shown in **Figure 6**.

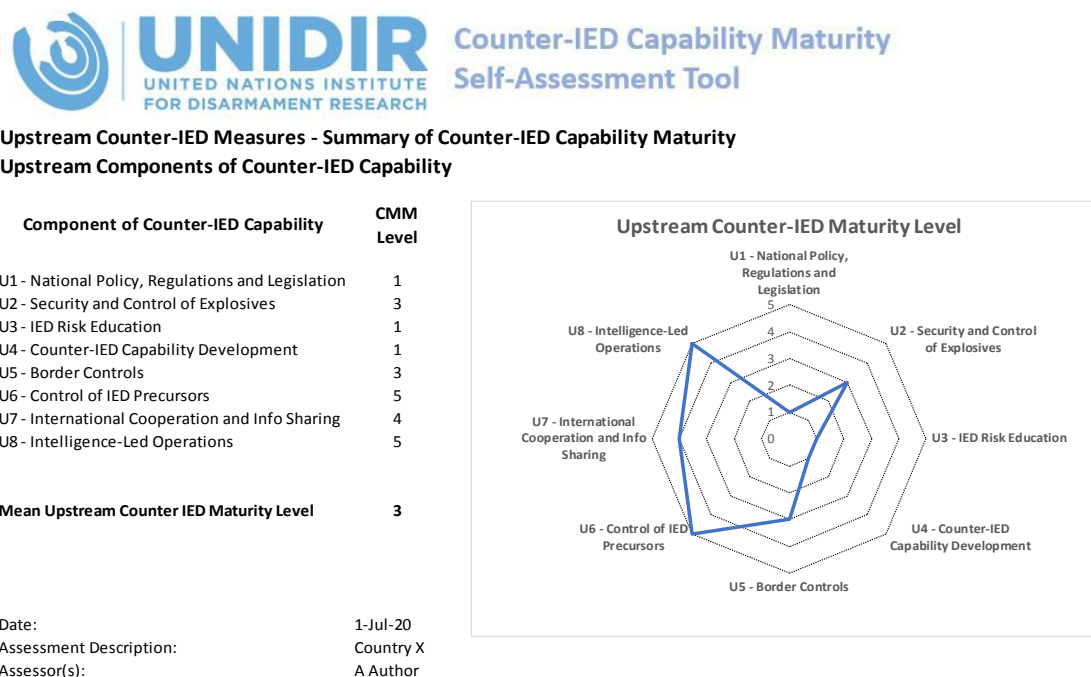


Figure 6. Data Visualization Tool – Display of Results.

6.3 ASSESSING UPSTREAM COUNTER-IED MATURITY

Table 3 shows the principal upstream components of the C-IED CMM.

TABLE 3. SUMMARY OF UPSTREAM COUNTER-IED ACTIVITIES		
Serial	Measure	Comment
1	National Policy, Legislation and Regulations	Pertaining to IEDs and control of explosives
2	Security and Control of Explosives	
3	IED Risk Education	
4	Counter-IED Capability Development	
5	Border Controls	Including measures to monitor and control the import of IED-related material
6	Control of IED Precursors	Predominantly dual-use material that can be used in the manufacture of home-made explosives and IED firing switches
7	Regional and International Cooperation and Information Sharing	Pertaining to countering IEDs and covering information-sharing
8	Intelligence-Led Operations	

6.3.1 Upstream Counter-IED Measures: National Policy, Legislation and Regulations

6.3.1.1 Introduction

This component of counter-IED capability covers the highest levels of government policy and determines whether the State has an adequate policy, legislative and regulatory framework to address the use of IEDs.

Most States have relevant criminal legislation that may be applied to the criminal use of explosive devices for murder and attempted murder. It is important that appropriate legislation exists to cover the unlawful possession of IED precursors as well as the intent to use IEDs for criminal or terrorist acts.

6.3.1.2 Assessment Considerations

The following questions should be considered in assessing a State's counter-IED capability maturity in terms of current national legislation and regulations:

- » Is there a national counter-IED policy or strategy? Does it encompass an effective whole of government approach to the IED problem?
- » To what extent is there extant legislation prohibiting the acquisition of IED components and the manufacture and use of IEDs?
- » Is there robust and comprehensive legislation governing the lawful acquisition, storage, transport and use of explosives and related items? Such legislation may cover:

- Manufacture of explosives and related items
- Stockpile control measures
- The control, including acquisition, storage and use, of IED precursors
- All lawful uses of explosive, such as civil engineering (construction and demolition), mining, quarrying, seismic survey, and oil and gas exploration and production
- » Are the State regulations governing the control, storage and use of explosives and ammunition sufficient to prevent the illicit diversion of material?
- » Do the security forces have in place suitable security arrangements to safeguard ammunition attractive to criminal and terrorist organizations (ACTO)?³⁴
- » Is there evidence over the past five years of ammunition being acquired from State stockpiles by groups that commit acts of terrorism? Is the trend increasing or decreasing?
- » Does the State have a licensing system that assesses the suitability of persons to lawfully acquire and use explosives?
- » To what extent does the State have regulations that cover the international movement or trans-shipment of explosives or identified IED precursors?
- » What attempts, if any, have been made to achieve regional harmonization of regulatory controls? (This is particularly important where neighbouring States may already be facing significant IED threats.)

6.3.1.2 Assessment Criteria

C-IED CM Level 1 – Initial is indicated by the following:

- » There is no specific legislation in place covering the unauthorized possession of explosives or the use of explosives for criminal purposes.
- » There are no effective legislative or regulatory controls in place to govern the civil use and acquisition of explosives.

C-IED CM Level 2 – Developing is indicated by the following:

- » There are some legislation and regulations in place, but they are not generally enforced.
- » There is an embryonic national counter-IED strategy, but there are concerns about support from some government departments.

³⁴ The UN Model Regulations, which cover the transport of dangerous goods, refer to “high consequence dangerous goods”, which are goods that have potential for misuse in a terrorist incident and that may, as a result, produce serious consequences, such as mass casualties or mass destruction. Most ammunition and explosive fall into this category. The term ACTO is drawn from the field of military ammunition management. Potentially, any item with a high explosive warhead could be of interest to groups that commit acts of terrorism and that are intent on manufacturing an IED.

C-IED CM Level 3 – Defined is indicated by the following:

- » There is a defined national counter-IED strategy, and there is a single ministry or department responsible for coordinating an effective whole of government approach to countering IEDs.
- » Legislation and regulations are present, and there is a resourced organization for assuring and enforcing compliance.
- » There is an effective judicial system operating within the State, and groups accused of IED-related offences are able to be prosecuted using relevant legislation.
- » Relevant regulations are in place relating to the control and use of IED precursors, particularly dual-use materials that may be used in the manufacture of home-made explosives.

C-IED CM Level 4 – Managed is indicated by the following:

- » The State has robust procedures for both enforcing and reviewing national legislation and regulations.
- » The State has a robust and effective licensing system that assesses the suitability of persons to gain lawful access to explosives.

C-IED CM Level 5 – Optimizing is indicated by the following:

- » The State is seen to adopt best international practice and participates in regional and international forums, develops new control measures, and shares and adopts best practice.

6.3.2 Upstream Counter-IED Measures: Security and Control of Explosives

6.3.2.1 Introduction

The unlawful diversion of civil and military explosives is a very common source of explosives for use in IEDs. Security measures generally relate to the physical security measures put in place to ensure that unauthorized personnel do not have access to explosives. Control measures are generally those procedural methods, such as licensing and vetting, taken to reduce the potential for groups that commit acts of terrorism to gain illicit access to explosives and divert them for use in IEDs.

This component of capability is concerned with the security and control of manufactured military and commercial explosives. The control of IED precursors, specifically materials that may be used to manufacture home-made explosives, is considered a separate component of counter-IED capability (see section 6.3.6).

In reviewing the effectiveness of security and control measures, it is necessary to consider every stage of the life cycle of explosives, from manufacture to final use or disposal, including manufacture, transport, storage, issue, use and disposal.

6.3.2.2 Assessment Considerations

In assessing the maturity level of this component of counter-IED capability, it is recommended that military and civil explosives are considered separately.

The following should be considered in assessing the security of explosives within a State:

- » Are effective controls in place to prevent the diversion of explosives from civil users? For example, are there documented cases of groups that commit acts of terrorism deliberately targeting civil explosive stores with a view to obtaining explosives for use in IEDs?
- » Are military explosives stored in secure and guarded facilities in accordance with the recommended security measures described in the International Ammunition Technical Guidelines?³⁵
- » Are effective controls in place for the control and security of ammunition and explosives used by members of international military units that may be present in the country?
- » Are those individuals with uncontrolled access to explosives suitably vetted?
- » Are civil and military explosives marked or tagged to aid detection or identification if they are subject to diversion?
- » Are there unguarded sources of military explosives available (e.g. uncleared mines or UXO on military ranges or in former conflict zones)?
- » Is there any evidence or intelligence to suggest that groups that commit acts of terrorism are acquiring explosives from commercial or military sources?³⁶ If so, is the trend increasing?
- » Is there evidence from recovered IEDs that illicit civil or military explosives are being employed by groups manufacturing IEDs?
- » Does the State employ UN Model Regulations, or similar, to cover the transport of explosives?³⁷
- » Is there a suitably resourced entity within the State responsible for assuring compliance with legislation and regulations?
- » How often does that entity inspect or review those acquiring, storing and using explosives?

6.3.2.3 Assessment Criteria

C-IED CM Level 1 – Initial is indicated by the following:

- » Security and control of either civil or military explosives is poor, and groups that commit acts of terrorism have ready access to explosives for use in IED main charges.

C-IED CM Level 2 – Developing is indicated by the following:

- » There are regulations in place defining the security requirements for civil and military explosives, but compliance is mixed and security regulations are not rigorously enforced.

³⁵ United Nations Office for Disarmament Affairs, Security Principles and Systems, International Ammunition Technical Guideline (IATG) 09.10, 2nd ed., 2015.

³⁶ Analysis of recovered IED components would provide some indication of the types of explosive being acquired for use in IEDs by groups that commit acts of terrorism.

³⁷ United Nations, "Security Provisions", in UN Model Regulations: Recommendations on the Transport of Dangerous Goods, vol. 1, 21st ed., 2019, Annex 1, ch. 1.4, pp. 41–48.

C-IED CM Level 3 – Defined is indicated by the following:

- » There are regulations in place defining the security requirements for civil and military explosives, and compliance is rigorously enforced by a suitably resourced entity.

C-IED CM Level 4 – Managed is indicated by the following:

- » The State takes proactive measures to ensure that illicit diversion of civil and military explosives cannot take place.
- » There is no evidence of illicit civil or military explosives being used in IEDs, and groups are forced to employ home-made explosives in IEDs.

C-IED CM Level 5 – Optimizing is indicated by the following:

- » The State engages in regional and international forums and exchanges information with partner nations to prevent the transnational spread of civil and military explosives for use in IEDs.

6.3.3 Upstream Counter-IED Measures: IED Risk Education

6.3.3.1 Introduction

The very significant increase in civilian casualties as a result of the use of IEDs demonstrates the fundamental requirement for States to inform and educate their civilian population and raise awareness of the hazard posed by the use of IEDs.

6.3.3.2 Assessment Considerations

The following should be considered in assessing the maturity of a State's approach to IED risk education:

- » Does the State carry out injury surveillance and collect data on casualties caused by IEDs? Is the trend increasing or decreasing? Do the types of injury being encountered by health-care professionals indicate the nature and types of IEDs being employed by groups that commit acts of terrorism?
- » To what extent does the State recognize that IEDs pose a threat to its civilian population?
- » To what extent does the State carry out public information campaigns, education and training, and liaison with communities on the IED threat?
- » Where States face a conventional mine threat and mine risk education is conducted, is IED risk awareness conducted as a separate but related activity?
- » Are the IED awareness messages updated as the threat posed by the use of IEDs changes?
- » To what extent do humanitarian actors (international organizations or non-governmental organizations) conduct IED risk awareness within the country or region?
- » Is there evidence that effective IED risk education is leading to the increased reporting of found IEDs?

- » How does the State develop and conduct IED awareness training for the members of its security forces who are not counter-IED specialists?

6.3.3.3 Assessment Criteria

C-IED CM Level 1 – Initial is indicated by the following:

- » The State has no strategy for informing its civilian population of the hazard posed by IEDs.
- » The dissemination of IED awareness information to the State’s own security forces is ad hoc and fragmented.

C-IED CM Level 2 – Developing is indicated by the following:

- » The State recognizes that IEDs pose a hazard to its civilian population.
- » The State has a rudimentary approach to informing its civilian population of the hazard posed by IEDs, but the message is generally fragmented and not centrally coordinated.
- » Mine risk education is conducted, but the specific nuances of the hazards posed by IEDs are not covered.

C-IED CM Level 3 – Defined is indicated by the following:

- » There is a nominated government entity responsible for the coordination of IED awareness within the State.
- » The State has a national strategy that addresses IED awareness and the hazard posed by IEDs.
- » There are well-defined and publicized methods by which civilians can report the presence of suspected IEDs.

C-IED CM Level 4 – Managed is indicated by the following:

- » The State has an effective system for conducting injury surveillance and is able to deduce the types of IED employed and the most appropriate means of mitigation by the civilian population.
- » The State has an effective and integrated approach to the dissemination of IED awareness information.
- » IED threat material and the associated mitigation messages are updated frequently as the specific threats posed by the use of IEDs change.

C-IED CM Level 5 – Optimizing is indicated by the following:

- » The State has a very well-coordinated and integrated approach to IED risk education, and all types of media and public awareness channels are used to present a coherent message to the civilian population of the hazards posed by IEDs.
- » The State entities responsible for IED risk awareness monitor how international and regional partners conduct IED risk awareness and adopt best practice where appropriate.

6.3.4 Upstream Counter-IED Measures: Counter-IED Capability Development

6.3.4.1 Introduction

An assessment of national counter-IED capability development maturity is potentially an extremely broad subject and is almost worthy of an assessment in its own right. One possible approach is to use the counter-IED lines of operation³⁸ (i.e. assess the State's ability to conduct the following):

- » Defeat the device
- » Engage the network
- » Prepare its population, teams and personnel to mitigate and respond to the threats posed by IEDs

6.3.4.2 Assessment Considerations

The following should be considered in assessing the maturity of a State's system for counter-IED capability development:

Defeat the Device

- » How effective is the inter-agency cooperation within the State in developing drills, tactics, techniques and procedures and other protection measures to mitigate the use of IEDs?
 - What is the nature of inter-agency cooperation?
 - Are there inter-agency cooperation protocols?
 - How often do inter-agency meetings take place? Are these arrangements ad hoc or formalized? Do meetings take place to an agreed agenda and are actions tracked?
- » Does the State have trained and equipped teams to mitigate the effects of IEDs? If so, how suitable is their equipment and training to deal with the prevailing IED threat?
- » Is there effective inter-agency cooperation between those entities responsible for responding to IED incidents (first responders), EOD/IEDD teams, and those responsible for the recovery and analysis of forensic evidence?
- » How effective is the State procurement system in acquiring the necessary specialist IEDD equipment and protected vehicles to enable its security forces to operate in a high-threat IED environment?
- » To what extent can the State develop its own equipment requirements and procure new equipment to respond to changes in the IED threat?
- » How does the State disseminate IED awareness material to its population? Are there measures in place to inform the civilian population of new threats and how to avoid becoming the inadvertent victims of IED attacks?

³⁸ NATO, Allied Joint Doctrine for Countering Improvised Explosive Devices, AJP-3.15, Edition C, Version 1, 2018.

- » Is the State able to respond expeditiously and clear suspected IEDs reported by members of the local population in IED-affected areas?
- » To what extent does the State have the support and confidence of the civilian population in the areas where IEDs are being employed?

Engage the Network

- » To what extent does the State have a clear understanding of the adversaries that are employing IEDs against it?
- » Does the State maintain a positive relationship with the local population in IED-affected areas? Are members of the civilian population encouraged to report the presence of IEDs?
- » Does the State have a strategy for identifying and exploiting the critical vulnerabilities in the organizations or individuals procuring, manufacturing or employing IEDs?
- » How does the State use the forensic and biometric intelligence gained from the exploitation of IEDs to identify those involved in the acquisition, manufacture and deployment of IEDs?
- » Is the State able to mount and prosecute pre-emptive operations aimed at preventing adversaries from employing IEDs?

Preparation of the Population, Teams and Personnel

- » Does the State have an effective approach to IED risk education for its population?
 - Does the State have a means by which the effectiveness of IED risk education is measured?
 - Does analysis of casualty data indicate that civilian casualties caused by IEDs are increasing?
- » How effective is the State in preparing and training its personnel and organizations involved in all aspects of counter-IED?
 - Does the State have facilities and suitably trained and equipped people to conduct the training of IEDD operators, IED searchers and IED forensic responders?
 - How many IEDD operators, IED searchers and IED forensic responders can the State call on to deal with IEDs?
 - How many IEDD operators, IED searchers and IED forensic responders does the State train each year?
- » How does the State disseminate changes in own force counter-IED tactics, techniques and procedures as a result of changes in the IED threat?
- » How does the State exchange, if it all, information on countering emerging IED threats with partner or neighbouring nations?

6.3.4.3 Assessment Criteria

C-IED CM Level 1 – Initial is indicated by the following:

- » There is little or no centralized coordinated effort to develop the capabilities required for countering the use of IEDs.

C-IED CM Level 2 – Developing is indicated by the following:

- » The State has rudimentary processes for acquiring new counter-IED capabilities, but these are generally ad hoc, and there is a significant reliance on support from international partners for equipment and training.

C-IED CM Level 3 – Defined is indicated by the following:

- » The State has generally well-founded counter-IED capability development processes on the “defeat the device” and “preparation of teams” lines of operation.

C-IED CM Level 4 – Managed is indicated by the following:

- » The State is an informed customer and can articulate counter-IED capability development requirements. It has an understanding of what types of equipment are viable given prevailing national capabilities in the areas of equipment and logistic support.
- » The State recognizes that there are few “silver bullets” in countering IEDs and that a coordinated approach, across all counter-IED lines of operation and covering multiple government entities, is required.

C-IED CM Level 5 – Optimizing is indicated by the following:

- » The State has robust mechanisms for developing counter-IED capability across all lines of operation, including “engage the network”.
- » The State is recognized by regional and international partners as having a sound counter-IED capability development process and exchanges information on a structured basis with regional and other international partners.

6.3.5 Upstream Counter-IED Measures: Border Controls

6.3.5.1 Introduction

Effective border controls have an important role to play in reducing the proliferation of IEDs. In many States there is no indigenous manufacturing capability for key IED dual technologies and components such that effective border controls can significantly inhibit the ability of groups to manufacture IEDs.

Open borders and free trade areas need not compromise the imposition of effective border controls, but they do require that legislation and regulations covering the security and control of explosives and IED precursors are addressed at the regional, rather than purely State, level.³⁹

³⁹ The regulatory measures on IED precursors enacted by the EU on materials used in the manufacture of home-made explosives are a good example of how regulations may be introduced at the regional level to provide effective control across a free trade area or region.

6.3.5.2 Assessment Considerations

The following should be considered in assessing the effectiveness of a State's border controls in reducing the proliferation of IEDs:

- » Is the State's approach to border security and customs control coordinated across all relevant government departments?
- » To what extent is it possible for people to enter the country, or free movement area, without passing through a recognized border control point?
- » What is the porosity of the State's borders, and does the State share a land or littoral border with a country where groups manufacturing IEDs are active?
 - How many cases of cross-border smuggling of illicit weapons and IED components have been detected by customs and border forces in the past?
 - Is the trend for smuggling of illicit materials increasing or decreasing?
 - Are other illicit materials, such as narcotics, smuggled across borders? Is there any evidence or intelligence to suggest that groups that commit acts of terrorism could exploit criminal supply chains for the passage of IED components?
- » How effective are the customs controls and the screening of freight and parcels entering the country?
 - How much freight and what quantity of parcels are handled on a periodic basis by customs and border forces?
 - What percentage of shipments are subject to physical inspection, and what percentage of inspections leads to the detection of illicit material of all types?
 - Is there evidence or intelligence to suggest that groups that commit acts of terrorism are exploiting the international freight or postal systems to acquire IED components?
- » How sound is the integrity and capability of the border security force? Is there evidence to suggest that criminals or groups that commit acts of terrorism have suborned customs or border officials to facilitate the import of illicit materials associated with the manufacture of IEDs?
- » To what extent does the State participate in regional and international forums? (This is especially important where neighbouring States may already be facing a significant IED threat.)
- » Does the State employ measures that permit the tracking of freight and parcels into the country, or through the country where transshipment from a port is taking place, in order to facilitate traceability?

6.3.5.3 Assessment Criteria

C-IED CM Level 1 – Initial is indicated by the following:

- » Border controls are absent or generally ineffective, and it is possible to import IED components and other precursors into the country at will.

C-IED CM Level 2 – Developing is indicated by the following:

- » The State has rudimentary controls in place at key border crossing points, airports and seaports, but it is possible for these controls to be circumvented with relative ease.

C-IED CM Level 3 – Defined is indicated by the following:

- » The State has a defined border control system that conducts comprehensive checking at border crossings, airports and seaports and carries out a degree of patrolling on land and maritime borders. It is however sometimes possible to move IED-related material surreptitiously across borders.
- » Customs and border protection officers are trained in IED awareness and have appropriate technical capabilities (e.g. radiographic systems and other detection and analysis systems) to identify IED precursors and other material requiring further investigation.
- » The State participates in the Global Shield initiative and other relevant programmes sponsored and supported by the WCO.

C-IED CM Level 4 – Managed is indicated by the following:

- » The effectiveness of State controls at border crossing points, airports and seaports renders it extremely difficult to move IED components through these locations.
- » Considerable resources are invested in border protection forces, and they are generally successful in interdicting illicit material crossing borders.
- » There are proven examples of where information- and intelligence-sharing with regional and international partners has led to the interception of IED precursors by customs or border security forces.

C-IED CM Level 5 – Optimizing is indicated by the following:

- » The State has very effective border controls and conducts comprehensive screening of personnel, freight and parcels entering the country.
- » There is little or no evidence to suggest that criminals or groups that commit acts of terrorism are obtaining materials abroad and importing them illicitly to manufacture IEDs.

6.3.6 Upstream Counter-IED Measures: Control of IED Precursors

6.3.6.1 Introduction

Controls on IED precursors play an important part in inhibiting the ability of groups to manufacture effective IEDs. These controls assume even greater importance when the State already has effective control measures in place on military and commercial explosives that mean that groups using IEDs are forced to manufacture home-made explosives.

The most effective controls on IED precursors take place when the State and commerce operate in concert toward a common goal: preventing criminals and groups that commit acts of terrorism from acquiring IED precursors for illicit purposes.

6.3.6.2 Assessment Considerations

The following factors should be considered in assessing the effectiveness of a State's control of IED precursors and related dual-use technology:

- » To what extent does the State recognize that certain materials may be misused in the manufacture of home-made explosives, and does the State license and regulate their acquisition?
- » Does the State have a recognized list of identified IED precursors?
- » How effective is the regulatory and licensing regime for the control of IED precursors that could be used in the manufacture of home-made explosives?
 - Has the State engaged manufacturers and the supply chain in highlighting the potential for IED precursors to be misused?
 - Has the State highlighted to manufacturers and suppliers the types of behaviour that should be regarded as suspicious and reported?
 - Does the State oblige manufacturers and suppliers to record the identity of those acquiring IED precursors?
 - Does the State monitor the distribution of high nitrogen content ammonium nitrate-based fertilizers, and are there arrangements in place to ensure that the potential for diversion from end users in the agricultural sector is reduced?
 - Are statistics on the misuse of IED precursors recorded? Is the trend for misuse increasing or decreasing?
 - Are the regulatory and licensing arrangements for the control of IED precursors aligned with and in accordance with best international practice?
- » Is there support from the commercial providers of potential IED precursor material to prevent diversion?
- » For extractive industries that manufacture explosives on site (i.e. site mixing of ammonium nitrate or nitromethane-based compositions):
 - Are appropriate arrangements in place to prevent and identify diversion?
 - Is the use of commercial explosives by civil users in accordance with best international practice?⁴⁰
- » Has there been evidence (from recovered IEDs) of groups that commit acts of terrorism employing home-made explosives in the main charge of IEDs? If so, what is the composition of the explosives, and what are the likely sources of the precursors used to manufacture the explosives?
- » Does the State understand the materials used in the manufacture of IEDs? Does the exploitation of recovered IED components involve the dissemination of relevant information to entities such as the border protection forces?

⁴⁰ For example, in the oil and gas sector, are users of explosives following the best practice guidelines promulgated by the American Petroleum Institute?

- » Does the State have regulatory measures in place to control the use of radio transmitters? Is it possible for subscribers to gain access anonymously to the cellular communications network, or are effective controls in place to govern the distribution of subscriber identity module (SIM) cards and international roaming on cellular networks?⁴¹

6.3.6.3 Assessment Criteria

C-IED CM Level 1 – Initial is indicated by the following:

- » There are no effective controls in place on IED precursors, and the State has little or no knowledge of the sources of supply used for IED components.

C-IED CM Level 2 – Developing is indicated by the following:

- » The State has a degree of understanding of the types of material being used in IEDs but has only a limited understanding of the supply chain.

C-IED CM Level 3 – Defined is indicated by the following:

- » The State has a good understanding of the types of precursor being used in IEDs and has taken steps to monitor or shut down the sources within its national jurisdiction.
- » The State has an effective licensing and regulatory regime associated with the control of IED precursors. The licensing regime is supported by an appropriate level of assurance.
- » The State is capable of analysing material from recovered IEDs and determining the types of material used in IED construction.

C-IED CM Level 4 – Managed is indicated by the following:

- » The State has a well-defined regulatory regime that controls access to the precursors most used in the manufacture of home-made explosives.
- » The State participates in INTERPOL's Project Watchmaker.

C-IED CM Level 5 – Optimizing is indicated by the following:

- » There is evidence to suggest that criminals and groups that commit acts of terrorism find it difficult to source the precursors used in the manufacture of the most common home-made explosives; the effectiveness of their IEDs is reduced as a result.
- » The State has extremely effective controls in place on IED precursors and exchanges information with regional and international partners.

⁴¹ These measures are potentially important in inhibiting the use of RCIEDs.

6.3.7 Upstream Counter-IED Measures: Regional and International Cooperation and Information Sharing

6.3.7.1 Introduction

In most parts of the world, groups that employ IEDs do not recognize international borders, and IEDs and precursor materials may be sourced in one country for use in another. It is thus essential that a transnational approach is taken if these threats are to be effectively managed and mitigated.

6.3.7.2 Assessment Considerations

The following factors should be considered in assessing the effectiveness of a State's regional and international cooperation:

- » Does the State recognize that it has a current IED problem or may face a future IED threat? If so, is the State prepared to share information and develop capabilities in concert with regional and international partners?
- » If the State is in receipt of international donor assistance, does it have a strategy for defining its own national priorities in terms of the acquisition of counter-IED capabilities?
- » To what extent does the State centralize and collate IED reports and related information and make them available to regional and international partners?
- » Does the State have a national IED or bomb data centre?
- » Does the State have the means to securely receive, store and process classified information relating to IED intelligence?
- » Does the State have memorandums of understanding with regional or international partners for the exchange of IED-related information?
- » To what extent does the State recognize that the proliferation of IEDs is a transnational problem and requires coordinated international efforts?
- » To what extent has the State, in conjunction with international partners, been successful in curbing the ability of armed groups to operate across international borders?

6.3.7.3 Assessment Criteria

C-IED CM Level 1 – Initial is indicated by the following:

- » The State does not share counter-IED-related information with regional or other international partners.
- » The State either faces no current IED threat or refuses to acknowledge IEDs are a problem.

C-IED CM Level 2 – Developing is indicated by the following:

- » The State shares information on an ad hoc basis with regional partners, but there are no defined mechanisms for the formal exchange of information and intelligence.
- » The State understands that it, or regional partners, may be facing an IED threat but

generally does not acknowledge that mitigating this threat requires coordinated and sustained international effort.

C-IED CM Level 3 – Defined is indicated by the following:

- » The State recognizes the importance of exchanging relevant counter-IED-related information with international partners.
- » The State has the means to receive, securely process and store IED-related intelligence.
- » The State supports the development of common curricula for the training of counter-IED specialists.
- » The State has a focus for the collation and dissemination of IED data (normally a bomb data centre).

C-IED CM Level 4 – Managed is indicated by the following:

- » The State has defined processes, which may include memorandums of understanding with regional and international partners, for the exchange of information and time-sensitive intelligence.
- » The State is a member of the Global Shield programme and participates in INTERPOL's Project Watchmaker.
- » The State shares customs-related intelligence and participates in the Global Shield and other relevant initiatives supported by the WCO.

C-IED CM Level 5 – Optimizing is indicated by the following:

- » The State exchanges relevant counter-IED-related information with international partners and is proactive in taking steps to identify and shut down the international supply chains of IED-related material.
- » The State offers opportunities for the training of counter-IED specialists from regional or international partners with lower levels of counter-IED capability.
- » The State has an IED or bomb data centre that acts as the focus for the dissemination of IED incident-related data to international partners.

6.3.8 Upstream Counter-IED Measures: Intelligence-Led Operations

6.3.8.1 Introduction

Probably the most effective upstream counter-IED measure is to use proactive intelligence to interdict individuals or groups before they can manufacture and deploy IEDs. Where possible, it is always preferable for suspects to be taken into custody by the State security forces in order that further information may be gleaned through lawful questioning. In some circumstances, the prevailing security situation may not be conducive to the use of pre-emptive arrest operations; military force, duly authorized by the State and employed in accordance with the laws of armed conflict, may then be necessary.

In some States, the use of intelligence to proactively degrade the effectiveness of IE networks is a line of operation known as "attack the network".⁴² A key factor in sustaining

⁴² The term "engage the network" is more appropriate for the broader definition of counter-IED employed within the C-IED CMM and the Self-Assessment Tool.

effective intelligence-led counter-IED operations is the production of actionable or releasable intelligence. The best intelligence collection and analysis system in the world is of no value if dissemination of timely and actionable intelligence does not take place.

6.3.8.2 Assessment Considerations

The following factors should be considered in assessing the effectiveness of a State in conducting intelligence-led counter-IED operations:

- » To what extent is the State able to direct, collect, analyse and disseminate IED-related intelligence?
 - Does the State have a recognized intelligence gathering organization?
 - Does the State's intelligence organization operate domestically and internationally?
- » Is there a national strategy that supports the use of intelligence-led operations to deny groups material for manufacturing IEDs and to prevent them from using IEDs?
- » How effective are the measures within the State in coordinating, analysing and disseminating data and intelligence products from multiple domestic intelligence agencies?
 - What is the nature of inter-agency cooperation?
 - Are there inter-agency cooperation protocols?
 - How often do inter-agency meetings take place? Are these arrangements ad hoc or formalized? Do meetings take place to an agreed agenda, and are actions tracked?
- » Are there successful examples of where the State has employed IED-related intelligence to interdict the sourcing of IED precursors or the manufacture or deployment of IEDs by groups that commit acts of terrorism?
- » Does the State have a domestic security organization capable of collating relevant forms of intelligence to interdict networks that use IEDs?
- » Is the State able to adapt intelligence processes it has developed for countering transnational criminality, such as those used for counter-narcotics, to counter the use of IEDs?
- » Are the State security organizations able to share and exchange IED-related intelligence with international partners? Does the State have the secure communications and information systems architecture to facilitate storage, processing and dissemination of intelligence within its national security apparatus?
- » Is the State able to take the products from the analysis of recovered IED material and fuse this with other sources of intelligence, such as signals intelligence (SIGINT), human intelligence (HUMINT) and open source intelligence (OSINT)?
- » To what extent are there effective feedback loops between the persons recovering IED-related material and those physically conducting forensic and technical exploitation of recovered IED material?

6.3.8.3 Assessment Criteria

C-IED CM Level 1 – Initial is indicated by the following:

- » The State has very limited experience or capability to employ intelligence to reduce or degrade the employment of IEDs by groups that commit acts of terrorism.
- » The State intelligence agencies do not recognize the IED as a significant threat and have no real understanding of the IED threat networks they face.

C-IED CM Level 2 – Developing is indicated by the following:

- » The State has some experience in the use of counter-IED intelligence, but this is focused solely at the lower tactical levels.

C-IED CM Level 3 – Defined is indicated by the following:

- » The State has a defined intelligence organization with some experience of employing intelligence to reduce the use of IEDs.
- » The use of intelligence for countering IEDs is coordinated at the national level, but there are no defined formal procedures for sharing information with regional or international partners.
- » The State recognizes that IED threat networks need engaging at the network level.
- » Domestic intelligence agencies understand the worth of the technical products obtained from IED exploitation and can use them to assist in the identification of perpetrators.
- » The State has some experience in fusing all-source intelligence products from its domestic intelligence agencies and has mounted successful intelligence-led operations against criminals or groups that commit acts of terrorism using IEDs.

C-IED CM Level 4 – Managed is indicated by the following:

- » The State has a strong track record in conducting effective intelligence-led operations against groups that commit acts of terrorism, and there are examples of instances where members of such groups have been identified, captured and successfully prosecuted through the State legal system.
- » There are examples of where effective intelligence-led operations have reduced the ability of groups to source explosives and IED precursors and, as a result, the effectiveness of the IEDs employed has been degraded.
- » The State has a good understanding of the IED threat networks it faces domestically.
- » The State is a member of the Global Shield programme and participates in INTERPOL's Project Watchmaker.

C-IED CM Level 5 – Optimizing is indicated by the following:

- » The State is very experienced in conducting intelligence-led operations against armed movements, at both the national and international levels.
- » The State has well-defined procedures for the sharing of time-sensitive IED-related intelligence with regional and international partners.

6.4 ASSESSING DOWNSTREAM COUNTER-IED MATURITY

Table 4 shows the principal downstream components of the C-IED CMM.

TABLE 4. SUMMARY OF DOWNSTREAM COUNTER-IED ACTIVITIES		
SERIAL	MEASURE	COMMENT
1	IED Response – Render Safe	All actions from the finding of an IED to its final render safe
2	IED Response – Scene Exploitation	Forensic exploitation of IED scenes
3	Recovered Evidence Analysis	Effective physical analysis of recovered IED components
4	Information Management	
5	Technical Exploitation of Recovered IEDs	
6	Identification of Perpetrators	Use of recovered forensic evidence to identify perpetrators
7	Judicial Process	
8	Development of IED Countermeasures	Effective response to new or anticipated IED developments

6.4.1 Downstream Counter-IED Measures: IED Response – Render Safe

6.4.1.1 Introduction

The ability to deal safely with emplaced IEDs is a fundamental capability required by all States that face, or may face, IEDs. At its most basic level, this requires that the State has sufficiently trained and equipped EOD/IEDD teams to render safe all types of IED that may be encountered. Related capabilities are those of IED search, the preservation of IED scenes and the recovery of forensic evidence. The latter being to support the technical evaluation of the IED in order to identify sources of supply and the IED perpetrators and for use in judicial proceedings and future intelligence-led operations.

6.4.1.2 Assessment Considerations

The following should be considered in assessing a State's counter-IED capability maturity in terms of IED Response – Render Safe:

- » How mature or comprehensive are the State's policies, doctrine and technical operating procedures for dealing with the threat posed by IEDs?
- » Does the State have entities (generally police or military units) trained and equipped to deal with IEDs?
 - Are these entities deployed in such a manner that they can respond across the entirety of the State's territory?
 - Is there ungoverned space where groups that commit acts of terrorism can manufacture and employ IEDs with impunity?
- » Are other first responders provided with sufficient training and equipment to operate safely in an IED threat environment?
- » How comprehensive is the training given to those who conduct IED render safe operations?

- What level of EOD and IEDD training has been provided to those responsible for the rendering safe of IEDs?
- Has the EOD and IEDD training been delivered to recognized international standards?⁴³
- How many trained IEDD operators and IED searchers can the State call on?
- » What types of equipment do EOD/IEDD teams use? Are the teams equipped with remote-controlled vehicles (RCVs)? Are teams equipped with ECM systems to deal with the threat posed by RCIEDs?
- » How effective is the State in analysing the IED attacks that have been conducted and modifying its capabilities accordingly?
 - Is there a recognized feedback loop between the downstream response to IED incidents, the analysis of recovered IED components and the upstream development of more effective counter-IED capabilities?
 - Does the State have entities capable of analysing IED incidents and developing lessons learned in order to refine counter-IED tactics, techniques and procedures?
- » How effective are the State's capabilities in the search and IED detect areas?
 - Does the State recognize IED search as a specific discipline?
 - Does the State have personnel who are trained and equipped to search for IEDs in the threat environment that exists or is anticipated?
 - Does the State collate statistics on IEDs that have been found? Is the trend increasing?

In evaluating the State's technical capabilities to deal with IEDs, it is necessary to consider the following components of capability:

- » Personnel
- » Equipment
- » Training
- » Doctrine and technical operating procedures
- » Organization and logistics

6.4.1.3 Assessment Criteria

C-IED CM Level 1 – Initial is indicated by the following:

- » Personnel are not specifically selected and/or trained to conduct IEDD operations.
- » There is no specific equipment available for IEDD operations.

⁴³ For generic EOD training, it is appropriate to classify the level of EOD competence according to the levels defined in the International Mine Action Standards: Level 1, Level 2 or Level 3. For IEDD, it is appropriate to define the level of IEDD competence according to the United Nations Improvised Explosive Device Disposal Standards: Basic IEDD Operator, IEDD Assistant, Intermediate IEDD Operator or Advanced IEDD Operator.

- » The teams responding to IEDs are sustaining high casualties.
- » IEDD operators gain experience “on the job”, and there is limited dissemination of broader lessons learned.
- » There is no defined national doctrine or no technical operating procedures for IEDD.

C-IED CM Level 2 – Developing is indicated by the following:

- » The State has identified units and organizations that will be trained to render safe and mitigate the effects of an enduring IED threat, but overall unit capabilities are still at an embryonic level.
- » The State has started to identify the basic requirements for establishing counter-IED team technical operating procedures and lessons learned from current IED search and disposal operations.
- » Personnel are selected and trained for general EOD duties, and some basic awareness training is provided on IEDs.
- » There are local but not national procedures for dealing with IEDs.
- » There are no standard formats for reporting IED incidents and recording the technical details of items that have been recovered.

C-IED CM Level 3 – Defined is indicated by the following:

- » Personnel are selected and trained and given specific IEDD training appropriate for the types of IED they are likely to encounter.
- » IED response teams have specific equipment suitable for dealing with the majority of IEDs but lack an RCV or an ECM capability.
- » There is a defined doctrine and set of technical operating procedures that guide IEDD operators on how IEDD operations are to be conducted.
- » There is a defined career path for specialists involved in IEDD and IED search.
- » There is a standard format for the reporting of IED incidents, and reports are collated by a national entity.

C-IED CM Level 4 – Managed is indicated by the following:

- » Personnel involved in IEDD operations have substantial experience and are quick to detect changes in tactics, techniques and procedures by those using IEDs.
- » There is a nationally recognized process for validating the competence of IED specialists.
- » IEDD teams have the capability to employ RCVs to remotely render safe IEDs.
- » Where RCIEDs are a threat, IEDD teams are equipped with appropriate ECM equipment.

C-IED CM Level 5 – Optimizing is indicated by the following:

- » IEDD teams are extremely experienced and are generally recognized as operating at the expert level.

- » IEDD equipment is developed to specifically meet emerging threats, and requirements draw on the analysis of recovered IEDs and intelligence on the predicted intentions of groups that commit acts of terrorism.
- » The State exchanges IEDD-related information with regional and international peers.

6.4.2 Downstream Counter-IED Measures: IED Response – Scene Exploitation

6.4.2.1 Introduction

The preservation, collection and analysis of forensic evidence recovered from IED scenes is fundamental to the establishment of effective upstream and downstream measures for countering the proliferation of IEDs.

IED scene exploitation starts at the point where an IEDD team has rendered an IED scene safe and ends at the point when all relevant material and information from the scene has been recorded and recovered. The priority is always the preservation of life, and inappropriate risks to life should not be taken in order to preserve or collect forensic evidence.

6.4.2.2 Assessment Considerations

The following should be considered in assessing a State's counter-IED capability maturity in terms of IED Response – Scene Exploitation:

- » To what extent has the State a viable forensic science capability, and is it able to preserve, collect and analyse material recovered from IED scenes?
 - Does the State possess certified and accredited forensic laboratories?
 - Are the State forensic laboratories equipped and capable of conducting the analysis of IED-related material?
- » To what extent does the State conduct joint training or exercises involving those entities that are responsible for IED render safe and scene exploitation?
- » To what extent are IEDD teams trained in the requirements for IED scene preservation and support for the recovery of IED-related material?
- » How mature are the broader State capabilities for the analysis of forensic evidence? For example, is the State able to recover and record fingerprints and compare them to fingerprints stored in a national or international database?
- » Is the State able to recover, analyse and record DNA evidence and compare it to profiles in a national or international database?
- » Is the continuity of evidence maintained from the point at which forensic evidence is collected to the point at which it may be required to support judicial proceedings?
- » Are there examples of where the State has used information acquired from IED scenes in the successful prosecution of those using IEDs?
- » Are forensic teams able to conduct effective post-blast investigations and collect evidence from scenes where IEDs have functioned?

6.4.2.3 Assessment Criteria

C-IED CM Level 1 – Initial is indicated by the following:

- » There are no State-mandated requirements for the recovery of material from IED incidents, or the security environment is so hostile that the State is unable to safely recover IED-related material.
- » State investigative units have little or no training in how to respond to IED incidents.
- » IEDD operators are either not appropriately trained or pay limited attention to the need for forensic scene preservation at IED incidents.
- » There is no recognized approach for maintaining the integrity of the continuity of evidence.

C-IED CM Level 2 – Developing is indicated by the following:

- » Some attention is paid to the recovery of material from IED scenes, but the material is generally recovered in an ad hoc fashion and not in accordance with a State-mandated process.
- » Police crime scene investigators exist, and they are able to collect and mark recovered IED material, but they lack specific training in responding to IED incidents.
- » There is a recognized approach for maintaining the integrity of the continuity of evidence.

C-IED CM Level 3 – Defined is indicated by the following:

- » The State has a mandated process for recovering forensic evidence from IED incidents.
- » Forensic recovery teams are trained and equipped appropriately and are able to deal effectively with IED scenes.
- » There is broad understanding of the need to preserve IED scenes and recover forensic evidence.

C-IED CM Level 4 – Managed is indicated by the following:

- » The State has robust procedures for managing IED scenes, and a high level of competence is exhibited by those responsible for IED scene exploitation.
- » Forensic teams responding to IED incidents are well equipped and are very effective in their scene management, preservation and collection of forensic evidence.
- » There are examples of where recovery of forensic evidence from IED scenes has led to the identification and prosecution of those involved in the manufacture and deployment of IEDs.
- » The forensic entities can collect, process, analyse and compare fingerprints recovered from IED scenes with the recorded fingerprints of suspects stored in national and international databases.

C-IED CM Level 5 – Optimizing is indicated by the following:

- » The State participates in international forums associated with the exploitation and investigation of IED scenes.
- » The State can collect, process, analyse and compare DNA recovered from IED scenes with suspect DNA profiles in national and international databases.

6.4.3 Downstream Counter-IED Measures: Recovered Evidence Analysis

6.4.3.1 Introduction

The preservation and recovery of forensic evidence is worthless without an effective system for analysing exhibits. The analysis of recovered IED components poses some challenges as special chemical analysis techniques may be required to determine the composition of explosive mixtures and chemical precursors. The analysis of electronic components of IEDs, particularly the radio-controlled initiation systems used in RCIEDs, also requires specific equipment, knowledge and techniques in order that the method and frequency of operation of the IED can be determined.

6.4.3.2 Assessment Considerations

The following should be considered in assessing a State's counter-IED capability maturity for recovered evidence analysis:

- » Does the State have access to accredited forensic analysis laboratories? (These may be national capabilities or provided by a third party.)
- » To what extent does the State possess technical abilities to conduct the following?
 - Chemical analysis of explosive compositions and soil samples from the site of IED explosions
 - Analysis of visible forensic evidence (comparison and identification of IED components, fragments of IED containers, paints, body fluids)
 - Analysis of invisible forensic evidence (fingerprints, DNA, fibres, explosive vapour residues, microscopic fragments, and tool marks and abrasions)
 - Technical evaluation of electronic IED components
- » Does the State have a recognized training and qualification programme to ensure the competence of all personnel engaged in the analysis of forensic evidence?
- » Are there examples of where forensic evidence has been used to successfully prosecute the use of IEDs or other explosives-related offences?
- » How effective is the feedback loop between those rendering safe and recovering IED components and those analysing material in accredited laboratories?
 - How does the exchange of information between those involved in the analysis of IED-related forensic evidence, those engaged in the rendering safe of IEDs and those involved in the investigation of IED incidents take place?
 - Are there defined protocols that govern the passage of information?

- Do regular and formal meetings take place between those engaged in the analysis of forensic evidence and those at the forefront of counter-IED operations?
- » How mature are the State's capabilities for processing items recovered that are linked to IED incidents but not directly part of an IED?⁴⁴
- » Does the State have macro-analytical techniques for the processing of "big data" associated with IED incidents? Is geographical analysis of incidents undertaken?

6.4.3.3 Assessment Criteria

C-IED CM Level 1 – Initial is indicated by the following:

- » The State has no indigenous capability for the forensic analysis of recovered IED components.
- » The State does not recognize that the analysis of recovered IED components may have an important part to play in countering the use of IEDs.

C-IED CM Level 2 – Developing is indicated by the following:

- » The State has no indigenous capability for the forensic analysis of IED components but does recognize the importance of this activity and makes use of expertise provided by third parties.

C-IED CM Level 3 – Defined is indicated by the following:

- » The State has the capability to analyse recovered IED material in authorized and accredited laboratories.
- » Evidence to support judicial proceedings and information to support future intelligence-led operations is generated from the analysis of recovered IED components.

C-IED CM Level 4 – Managed is indicated by the following:

- » The State has competent forensic practitioners who can analyse the full range of exhibits recovered from IED incidents.
- » The State uses effective techniques for the macro-I analysis of IED-related data.
- » The State maintains a national biometric database and can match perpetrators to IED scenes using recovered biometric evidence, usually through the matching of fingerprints.
- » The State participates in INTERPOL's Project Watchmaker.

C-IED CM Level 5 – Optimizing is indicated by the following:

- » The State cooperates fully with regional and international partners and exchanges information acquired from IED scenes to identify transnational IED supply chains.
- » The State exchanges biometric data with international partners to identify IED makers and perpetrators who operate across international borders.

⁴⁴ This covers the technical exploitation of cellular phones, computer equipment and documents.

- » The State has the ability to employ the full range of scientific techniques to identify IED materials and recover biometric evidence from IED scenes, including the recovery and matching of human DNA.

6.4.4 Downstream Counter-IED Measures: Information Management (IM)

6.4.4.1 Introduction

A robust and effective approach to IM underpins most successful whole of government approaches taken to counter the use of IEDs. Modern information systems and networked communications can improve the efficiency of information dissemination across geographically dispersed entities, but they are not a panacea. Information overload can be a problem, and it is essential that where automated data and intelligence collection systems are employed, police investigators and intelligence analysts are provided with automated collation and analysis tools to handle the ensuing large volumes of information. Manual systems, while slower and less flexible, can be equally effective if they are structured and used appropriately.

6.4.4.2 Assessment Considerations

The following should be considered in assessing a State's counter-IED capability maturity for IED-related information management:

- » Does the State have a common format for the submission of IED incident reports?
 - Are IED incident reports used as evidence by the judicial system?
 - Do IED incident reports provide a permanent record of the technical make-up of the device, and do they record any casualties or damage caused by the IED?
 - Are IED incident reports collated at a national bomb data centre? Are these reports made available to regional and international partners?
- » Does the State have a common format for the submission of forensic analysis reports?
- » Is there a standardized method for the submission of physical exhibits collected from IED incidents?
- » Are forensic exhibits (such as fingerprints and DNA) and police interview reports collected from those arrested and subsequently prosecuted for IED-related offences?
- » Does the State make effective use of all-source intelligence reports pertaining to IED incidents or people suspected of involvement in IED-related offences?
 - Does the State employ information systems to help in the storage, processing and analysis of all-source intelligence?
 - Do the State's IM processes permit the rapid and effective flow of IED-related information to those entities that need it?

6.4.4.3 Assessment Criteria

C-IED CM Level 1 – Initial is indicated by the following:

- » The State has no standardized method for the collection, analysis, collation and distribution of information relating to IED incidents.

C-IED CM Level 2 – Developing is indicated by the following:

- » Individual units produce IED incident reports, but they are not to a common format nor are they collated by a recognized national bomb data centre.
- » Individual forensic investigators produce analysis reports, but they are not to a nationally agreed format nor are they collated nationally.

C-IED CM Level 3 – Defined is indicated by the following:

- » The State collates IED incident reports in a recognized national bomb data centre.
- » IED forensic analysis reports are produced in a common format, referenced to exhibits, and distributed in a timely fashion to all who need to see them.

C-IED CM Level 4 – Managed is indicated by the following:

- » The State's law enforcement community participates in INTERPOL's Project Watchmaker.

C-IED CM Level 5 – Optimizing is indicated by the following:

- » The State has comprehensive processes for collecting, analysing, collating and distributing information relating to IEDs among its own law enforcement, security and military units.
- » There are proven and well-tested mechanisms for the exchange of IED-related information with regional and international partners.

6.4.5 Downstream Counter-IED Measures: Technical Exploitation of Recovered IEDs

6.4.5.1 Introduction

The technical exploitation and characterization of recovered IEDs is concerned with addressing the "so what" questions generated as a result of the formal forensic analysis of material recovered from IED incidents. It is also an activity concerned with determining why an IED incident has happened and understanding the perpetrators' objectives in manufacturing and deploying an IED of that type.

The technical exploitation of IEDs establishes a picture of the technical capabilities of those who are manufacturing and deploying IEDs and identifies their method of operation. It can also help contribute to the prediction of future intentions.

6.4.5.2 Assessment Considerations

The following should be considered in assessing a State's counter-IED capability maturity for the technical exploitation of IEDs:

- » Does the State have facilities for assessing the technical capabilities of IEDs, such as the following?
 - Ranges and instrumentation for evaluating the blast characteristics of new explosive compositions
 - Electronic analysis facilities to determine the method of operation of electronic items

- » To what extent are there robust arrangements for the two-way transfer of knowledge between those involved in the rendering safe of IEDs and those conducting the technical analysis and exploitation of IEDs? Does this take place also regionally and internationally?
- » To what extent is the State able to call on support from scientists and engineers with appropriate expertise to understand the technical aspects of the IED threats being faced?
 - Is there a State entity responsible for the provision of this expertise?
 - Does the State place legal obligations on non-State entities, such as academic institutions or commercial companies, to provide technical support when required?

6.4.5.3 Assessment Criteria

C-IED CM Level 1 – Initial is indicated by the following:

- » The State has no national capability for conducting the technical exploitation of recovered IEDs.
- » Any technical exploitation of IEDs that is carried out is conducted at the lowest tactical levels, and information gained from this exploitation is not disseminated widely.

C-IED CM Level 2 – Developing is indicated by the following:

- » The State has no indigenous capability for the technical exploitation of recovered IEDs and components but does recognize the importance of this activity and makes use of expertise and capabilities provided by third parties.

C-IED CM Level 3 – Defined is indicated by the following:

- » The State has a basic indigenous capability for conducting the technical exploitation of IEDs.
- » The State understands where there are gaps in its own indigenous capabilities and seeks assistance from partners where appropriate.

C-IED CM Level 4 – Managed is indicated by the following:

- » The State has well-equipped facilities and appropriately trained personnel who can conduct the full technical exploitation of IEDs.
- » The State participates in INTERPOL's Project Watchmaker.

C-IED CM Level 5 – Optimizing is indicated by the following:

- » The State has very experienced engineers and scientists, trained in a broad range of relevant disciplines, who have an expert understanding of the technology being employed in IEDs.
- » The State exchanges information from the technical exploitation of recovered IEDs with regional and international partners and is proactive in evaluating emerging, or predicting future, threats.

6.4.6 Downstream Counter-IED Measures: Identification of Perpetrators

6.4.6.1 Introduction

The identification of those involved in the use of IEDs is a fundamental tenet of effective counter-IED operations. Where security and operational circumstances permit, it is invariably preferable to seek to arrest those involved in the illegal supply, manufacture and employment of IEDs in order that further information may be acquired to support future counter-IED operations.

Individuals may be identified through a variety of intelligence techniques, such as HUMINT⁴⁵ and SIGINT,⁴⁶ but it is the use of forensic and biometric intelligence⁴⁷ that provides the most definitive method of identifying perpetrators and linking individuals to specific IED incidents. OSINT, derived from sources such as social media accounts and published propaganda materials, may also yield considerable information to assist in the identification of perpetrators.

6.4.6.2 Assessment Considerations

The following should be considered in assessing a State's counter-IED capability maturity for identifying those involved in the use of IEDs:

- » To what extent does the State possess the fundamental core capabilities of forensic recovery, analysis and technical exploitation of IEDs?
 - Does the State follow best international practice for forensic recovery, analysis and technical exploitation of IEDs?
 - Does the State exchange information on techniques with international partners?
- » Does the State effectively integrate the various sources of information and intelligence open to it to identify perpetrators?
- » Are there successful examples of the State identifying perpetrators? If so, what were the critical success factors?
- » Does the State use a technical profiling method (i.e. non-biometric) for the identification of IED maker signatures that are unique to a particular IED maker (or group of IED makers trained by a specific individual)?
- » Does the State use geospatial or big data analysis techniques to develop intelligence to assist in the identification of those involved in the manufacture and employment of IEDs?

6.4.6.3 Assessment Criteria

C-IED CM Level 1 – Initial is indicated by the following:

- » The State has only a rudimentary ability to identify those involved in the illegal use of IEDs, and this is most often based on HUMINT.

⁴⁵ HUMINT is a category of intelligence derived from information collected and provided by human sources.

⁴⁶ SIGINT is the term used to describe communications intelligence (derived from electronic communications and communications systems) and electronic intelligence (derived from electromagnetic non-communications transmissions).

⁴⁷ This sometimes forms part of what is known as "materiel and personnel exploitation".

C-IED CM Level 2 – Developing is indicated by the following:

- » The State recognizes that important information could be gained from the effective exploitation of IED scenes and the analysis of recovered IED components but generally lacks the capability to undertake these tasks.

C-IED CM Level 3 – Defined is indicated by the following:

- » The State has a working system for the exploitation of IED scenes and the analysis of recovered IED components, and perpetrators are identified from the forensic analysis of recovered IED material.
- » Evidence to support judicial proceedings and information to support future intelligence-led operations is generated from the analysis of recovered IED components.

C-IED CM Level 4 – Managed is indicated by the following:

- » The State maintains a national biometric database and can match perpetrators to IED scenes through the use of recovered biometric evidence.
- » There are successful examples of persons associated with the manufacture and employment of IEDs being identified owing to the effective exploitation of material and information recovered from IED scenes.
- » The State participates in INTERPOL's Project Watchmaker.

C-IED CM Level 5 – Optimizing is indicated by the following:

- » The State maintains comprehensive capabilities for the analysis of material recovered from IED scenes and can use a wide variety of scientific techniques to identify perpetrators and link individuals to IED incidents.
- » The State exchanges biometric data with international partners to identify IED makers and perpetrators who operate across international borders.

6.4.7 Downstream Counter-IED Measures: Judicial Process

6.4.7.1 Introduction

The ability to identify and prosecute those who manufacture and employ IEDs is fundamental to degrading the effectiveness of IED networks. The fair application of the rule of law is also an important factor in countering the radicalization agenda of many such groups.

Some judicial systems rely heavily on human testimony, and the submission and consideration of evidence derived from technical forensic sources may be problematic.

6.4.7.2 Assessment Considerations

The following should be considered in assessing a State's capacity to use the judicial process to counter the use of IEDs:

- » Is there a track record and are there examples of successful prosecutions of persons involved in the illegal acquisition of IED precursors or the manufacture and employment of IEDs?

- » To what extent does the State judicial system permit the use of forensic evidence to support IED-related cases?
- » Is there extant legislation prohibiting the acquisition of IED components and the manufacture and use of IEDs, and is the legislation fit for purpose?
- » Are non-standard judicial processes required to deal specifically with the threats posed by groups that commit acts of terrorism using IEDs?⁴⁸
 - Does the State use nominated and/or specialized judges and prosecutors for the conduct of terrorism-related trials?
 - If special processes are employed, how many cases are dealt with by non-standard judicial processes and how many IED-related cases have resulted in successful prosecutions?
- » Is the judicial system itself a target, and are appropriate security measures in place to protect those involved in the administration of justice?

6.4.7.3 Assessment Criteria

C-IED CM Level 1 – Initial is indicated by the following:

- » There is no specific legislation in place covering the unauthorized possession of explosives or the use of explosives for criminal purposes.
- » The judicial system is unprepared or incapable of dealing with offences relating to the criminal or terrorist use of IEDs.
- » Individual members of the judiciary are extremely vulnerable to attack by criminals and groups that commit acts of terrorism.

C-IED CM Level 2 – Developing is indicated by the following:

- » There is some IED-related legislation in place, but it is not generally enforced.
- » The judicial system has difficulty applying existing legislation to an environment where groups that commit acts of terrorism are using IEDs to attack both the State security architecture and inflict casualties on the civilian population.

C-IED CM Level 3 – Defined is indicated by the following:

- » The State has a functioning judicial system that can apply the rule of law impartially and effectively to those accused of IED-related offences.
- » The utility of forensic evidence is understood, and the presentation of forensic evidence is often used by prosecution authorities to prove complicity by those involved in the supply, manufacture and employment of IEDs.
- » Appropriate levels of personal protection are provided to individual members of the judiciary to ensure that they remain invulnerable to attack or coercion.

⁴⁸ For example, are non-jury trials required for some criminal or terrorism-related trials to prevent the suborning of witnesses?

C-IED CM Level 4 – Managed is indicated by the following:

- » The utility of forensic evidence is very well understood and often forms a key part of the prosecution’s case.
- » There are examples of where the recovery of forensic evidence from IED scenes has led to the identification of those involved in the supply, manufacture and deployment of IEDs and the successful prosecution of individuals through the judicial system.

C-IED CM Level 5 – Optimizing is indicated by the following:

- » The State has a highly competent and fully functioning judicial system that responds effectively to the criminal and terrorist use of IEDs.
- » The State supports the extradition of suspects involved in the transnational use of IEDs.

6.4.8 Downstream Counter-IED Measures: Development of IED Countermeasures

6.4.8.1 Introduction

The ability to respond to change in the use of IEDs is fundamental to an effective counter-IED strategy. The key elements in assessing counter-IED maturity in this area are the extent to which the State can respond either to predicted or actual changes in the use of IEDs and is then able to develop effective countermeasures. It is, in effect, a measure of the capacity of the State to learn and respond.

To maintain the support of the civilian population in areas where IED use is prevalent, it is important that IED awareness material is updated as IED threats change. Changes in the tactics, techniques and procedures employed by criminals and groups that commit acts of terrorism also need to be brought to the attention of members of the State’s security forces who are not counter-IED specialists.

It should also be recognized that effective IED countermeasures are an important enabler of other humanitarian support activities.

6.4.8.2 Assessment Considerations

The following should be considered in assessing a State’s capacity to develop IED countermeasures:

- » To what extent does the State monitor the use of IEDs by criminals and groups that commit acts of terrorism, and can it respond expeditiously to changes in tactics, techniques and procedures?
- » How does the State develop IED countermeasures? Are nominated entities responsible for the following?
 - Development of counter-IED training (this covers both technical training for specialists and general IED awareness training for non-specialists and the general population)
 - Specification of requirements and acquisition of equipment
 - Development of armour for protected vehicles
 - Design of government infrastructure to resist the effects of IEDs

- » How quickly is the State able to respond to changes in the use of IEDs and acquire new capabilities or deliver updated training to mitigate new IED threats?
- » How often is IEED training reviewed?

6.4.8.3 Assessment Criteria

C-IED CM Level 1 – Initial is indicated by the following:

- » The State has only limited means of developing IED countermeasures.

C-IED CM Level 2 – Developing is indicated by the following:

- » The State recognizes that the development of IED countermeasures is important but has no indigenous capabilities in this area.
- » The State relies heavily on support from partner nations to acquire the counter-IED capabilities it requires.

C-IED CM Level 3 – Defined is indicated by the following:

- » The State has a working system that monitors changes in the use of IEDs and can make concomitant changes to the tactics, techniques and procedures used by its own forces.

C-IED CM Level 4 – Managed is indicated by the following:

- » The State has an effective system for the development of IED countermeasures, and that system can react quickly to changes in the use of IEDs.

C-IED CM Level 5 – Optimizing is indicated by the following:

- » The State has a very effective and proactive system for the development of IED countermeasures, and that system is capable of reacting quickly both to actual changes in the use of IEDs and to predicted changes.
- » The State shares best practice with international and regional partners.



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