

How to prevent maritime theft?





This paper offers an introduction to the phenomenon of maritime theft, by exploring the general context of the issue and examining the effectiveness and implementation possibilities of potential prevention initiatives. The target groups with the most to benefit from this paper are law enforcement units, municipalities, regional and/or national authorities, harbours and boat manufacturers. Each actor can concentrate on a specific focus area that is most relevant for them and take away lessons on how to devise their own interventions, mobilise partners and conduct evaluations.

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Authors/editors

Sarah Bosman, Research Officer, EUCPN Secretariat.



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Introduction

This paper is the result of a collaboration between the European Crime Prevention Network (EUCPN) and the European Multidisciplinary Platform Against Criminal Threats (EMPACT). EMPACT's Operational Action Plan on organised property crimes states:

The aim of this priority is “to disrupt criminal networks involved in organised burglaries and theft, organised robberies, motor vehicle crime and illegal trade in cultural goods, with a special focus on those that are highly mobile and operating across the EU.”

In this publication, organised property crimes (OPC) in maritime areas refers to the theft of boats, outboard engines and other parts or accessories that can be installed in vessels (e.g. GPS). The aim of the paper is to provide an overview of the phenomenon of maritime theft, while proposing potential prevention interventions. The target groups are therefore law enforcement, municipalities and higher (regional) authorities, boat/engine manufacturers, as well as boat owners and harbours. Each actor can focus on the specific elements within the paper which are most relevant for them.

The main data source is an expert meeting that was held in Brussels and included experts from law enforcement in Germany, the Netherlands, Belgium, France,

Sweden and Europol as well as from private entities including Securmark, Mercury Marine, Brunswick Corporation and Sigfox. The core elements of this meeting are supported by research (from limited available resources) conducted into this specific phenomenon by Goodhead and Kašić in the 1990s.

The structure of the paper follows the tasks of the 5Is framework. This framework supports the creation of crime prevention interventions. It involves five interlinked tasks (intelligence, intervention, implementation, involvement and impact) to gather information in a structured manner and create a detailed intervention model. These tasks suggest that there is an ideal sequence, while in reality the order will probably overlap.²



01

What is maritime theft?

The first task, ‘intelligence’, refers to gathering and analysing information on the crime phenomenon in question, namely theft in maritime areas.³ In this stage, the focus is on the general context and immediate causes of the issue, using a problem analysis triangle. Understanding the crime phenomenon provides the necessary foundation to devise prevention initiatives during the subsequent tasks.

General context

Maritime theft refers to both theft of a boat or boat parts (e.g. engine or accessories). Theft of boats is a relatively common occurrence, possibly due to the high value of boats and the relatively portable nature of boat engines.⁴ While some countries may experience more boat thefts, in others the problem is primarily thefts of engines and accessories. A general observation is that the perpetrators mainly seem to target small boats less than 10 metres long. Large yachts only represent a small fraction of thefts.⁵

Apart from specific environmental or perpetrator-related characteristics, there are two main factors that facilitate the theft of boats or boat parts. Thieves need the opportunity and the ability to remove the targeted property.⁶ There are plenty of suitable opportunities, as the European Union has approximately 68,000 kilometres of coastline and 37,000 kilometres of inland waterways.⁷ As a result, various countries (e.g. Sweden) have numerous small and/or secluded harbours that create attractive target locations for thieves. While in other countries, such as the Netherlands, the large number of canals offers suitable opportunities.⁸

Nevertheless, according to the German stolen boat team, many boats and engines are stolen, and recovered, on land.⁹ Accessible locations on land include storage units that are used during winter or for repairs, as well as trailers to store or transport a boat. Consequently, all these different target locations will require unique prevention measures.¹⁰

Evidence of maritime theft

It proved difficult to find extensive research on the topic of maritime theft. Crime research and statistics largely remain a landlocked matter, so there is significantly less information available on certain types of maritime crime, including theft of boats and engines.¹¹ While statistics can generally be found on various types of property crime (i.e. car and bicycle theft), no statistics are available on maritime theft throughout European Union, as most countries have no centralised body that collects statistics on this phenomenon.¹² It can be assumed that maritime theft is generally included in the 'other type of thefts' category within property crime statistics.

However, this would appear to be a European shortcoming, since much more comprehensive and accurate figures can be found in the United States' database. As an illustration, in 2021, 4,644 boats were reported stolen, a fall of 13% compared to the year before.¹³

The available European data comes from SIS (the Schengen Information System in which stolen property can be registered and retrieved) and SIENA (the Secure Information Exchange Network Application, that allows crime-related information to be exchanged between law enforcement units). Nevertheless, a large proportion of the information collected in SIS is either incorrect or missing. This is because many thefts are not reported in good time, as the victims often realise their boat is stolen only weeks after the theft actually occurred. Furthermore, the circulation of incomplete or false numbers make it increasingly difficult to find a match.¹⁴ For this reason, while the system is rapid, it needs to become more efficient and designated units need to be envisaged.

Consequences of maritime theft

The theft of boats and/or boat parts has serious economic, material and emotional consequences. As boats and their engines are expensive to build and to procure, there will likely be substantial economic loss for the boat owners in question when these are stolen.¹⁵ Law enforcement will subsequently be responsible for tracking and/or recovering the stolen property, while insurance companies will compensate the damage incurred by

the victim, creating an additional cost. Finally, like all (property) crimes, thefts in general have an emotional impact on the victim. For instance, their sense of personal safety and privacy may be affected if their boat is stolen on their private property.¹⁶

Associated crimes

Various other crimes are related to theft in maritime areas. The main reason why perpetrators steal boats or their engines is presumably to sell them afterwards.¹⁷ Fencing can be a lucrative business, as unknowing customers often buy second-hand goods without knowing they are stolen. Another option is to use a fence that will sell the engine or specific parts through a (seemingly) legitimate business.¹⁸

An alternative intended use is for smuggling goods (such as drugs) or trafficking victims. Various law enforcement units have found drugs in hidden spaces (e.g. in the hull or the stern) when searching boats that were transported on trailers. Lastly, cases of fraud have also emerged when tackling property crime in the maritime domain. Some criminals have used legitimate information from existing boats that they found on retail or second-hand websites to create a fake identity for their stolen goods.¹⁹

Risk factors of maritime theft

Having described the general context in which maritime thefts occur, it is now time to take a closer look at the main risk factors attributed to this phenomenon. The problem analysis triangle (also known as crime triangle, see figure 1) is used to create a systematic overview of risk factors.²⁰ This triangle consists of two layers, with the inner layer representing the characteristics of the perpetrator, the suitable victim, and the targeted location. The outer layer represents the people, mechanisms or circumstances that could prevent the crime phenomenon in question.²¹

Based on the risk factors listed in this triangle, prevention interventions will be devised in the second step, 'intervention'.

CRIME TRIANGLE



Figure 1: Problem analysis triangle van Dijk, et al., 2021.

Targeted objects

Certain types of vessels and engines are targeted more frequently than others. Generally, small and private boats are stolen more frequently than large yachts. Furthermore, significantly more outboard engines are stolen than inboard engines. This is because they are smaller, easier to access and easier to remove. Manufacturers likewise prefer outboard engines as they are cheaper to produce and easier to install.²²

A common issue among victims is that most boat owners do not possess the necessary information to identify their boat or boat parts. This poses a problem when the boat is stolen and law enforcement requires basic information to track and identify the object (e.g. the watercraft identification number (WIN) to enter in SIS).²³

Crime protector

The best preventive action that can be taken to protect targeted objects is target hardening. Target hardening means that opportunity-reducing mechanisms will be put in place, to deter potential thieves.²⁴ In this case, locks on outboard engines or restricted access to harbours and storage facilities will increase the risk for criminals and potentially reduce the value of the stolen property, making it less worthwhile to commit the crime.

Perpetrators

The (limited) information collected from law enforcement records suggests that the perpetrators are mainly organised crime groups originating from Eastern Europe, such as Romania, Poland and Lithuania. These groups are generally well prepared and easily relocate their activities once they identify heightened police attention.²⁵

The modus operandi varies depending on which perpetrators are operating in which area, but in general they are always well prepared. For example, they carry out a lot of preparatory work, such as researching which security measures might be in place and where potential escape routes might be. They also often have specialised tools to remove engines, or they have fake stickers that are used to (temporarily) cover official serial numbers.²⁶

There are various methods of transporting stolen goods. In a specific case in France, a group stole numerous engines in a certain area on successive nights. They stored them in a central location, before returning with a truck to then take the stolen goods back home. Another known method involves using delivery services that unknowingly transport a package of stolen parts.²⁷

Crime influencers

Crime influencers are people whose presence or actions will decrease the likelihood of crime being committed. In this case, people (i.e. boat owners, marina visitors or police officers) can provide (in)formal surveillance while patrolling, visiting or working on their boat. Law enforcement in particular also plays an important role in investigating and tracking these groups.²⁸

Target environment

As boats on land are easier to access, the typical environment where boats or engines are stolen are harbours as well as storage facilities and trailers.

Several countries in the European Union have extensive coastlines and subsequently many remote harbours with little to no surveillance (by a harbour master, for example) or social control (by the presence of other boat owners or passers-by). Additionally, many boat owners leave their boats unattended for extended periods of time, so there may be a long time between a theft occurring and it being identified by the victim.²⁹ Additionally, many countries have observed the fact that thefts are concentrated in border areas, since perpetrators can leave the territory and transport the stolen goods home relatively quickly.³⁰



02

How to prevent maritime theft?

The second task, 'intervention', aims to block, disrupt or prevent the causes of the crime phenomenon. It builds on the information gathered during the first task ('intelligence') by designing practical methods to devise specific intervention principles (see table 1).³¹ Based on this information, the prevention interventions will be designed around two main focus areas: target hardening strategies to protect the targeted property and locations, and identification of stolen objects, to prove ownership.

Risk factors		Prevention interventions	
Object	<ul style="list-style-type: none"> > small boats; > mainly outboard engines 	Protector	<ul style="list-style-type: none"> > target hardening strategies (locks, immobilisers, etc.) > easy identification of boats (serial number, marking, etc.)
Perpetrator	<ul style="list-style-type: none"> > organised crime groups often originating from Eastern Europe > complex and diverse modus operandi 	Influencer	<ul style="list-style-type: none"> > Formal and informal surveillance (lighting, CCTV, harbour watch, etc.); > Border/car controls;
Location	<ul style="list-style-type: none"> > harbours > storage facilities on land > mainly border regions 	Manager	<ul style="list-style-type: none"> > Target hardening strategies (gates); > Formal and informal surveillance (lighting, CCTV, harbour watch, etc.); > Cross-border cooperation

Table 1: Overview of the risk factors and corresponding prevention interventions related to maritime theft.

Target hardening strategies

Target hardening focuses on mechanisms that reduce opportunities for theft by deterring potential thieves.³² It can include mechanisms that protect boats or outboard engines (e.g. locks or immobilisers) or measures that protect the environment where boats are stored (e.g. limiting access to storage facilities). A few target hardening mechanisms combined make it impossible to commit theft. Most are intended to make things harder or more risky for thieves, or to limit the potential rewards.³³

Since there is limited data and scientific research on the theft of boats, it might be helpful to take inspiration from a comparable crime phenomenon for which there is a lot of data. Some practitioners assert that the phenomenon of maritime theft is similar to vehicle theft, as both types of transport are generally stolen to be sold somewhere else or to repurpose specific parts. Consequently, efforts to prevent maritime theft could learn a lot from vehicle security measures that have been implemented and evaluated over the past decades.

Locks

High quality locks are one of the most effective anti-theft measures, both as regards domestic burglaries and vehicle theft.³⁴ In terms of maritime theft, locks can be used for various purposes, for instance to enhance the general security of a boat (e.g. restricting access to the deck) or to reinforce the attachment of an outboard engine. Various manufacturers sell these locks. Examples

include outboard locks that prevent a saw or angle grinder (quickly) cutting through the cables or metal bars connecting the outboard engine, or a lock to protect the screws used to attach an outboard engine.

Ideally, a quality label or certificate is available so boat owners can easily identify high quality designs or brands of locks. One such example is the quality mark designed by the Dutch Centre for Crime Prevention and Security (*Centrum voor Criminaliteitspreventie en Veiligheid*) which is awarded to anti-burglary measures (such as locks) that meet their high standards.³⁵ Ideally, existing systems could be expanded to also include maritime theft protection measures.

Immobilisers

Immobilisers prevent the electronic control unit from starting, making it impossible to start the engine without the necessary key. Immobilisers became mandatory for cars throughout the European Union in the 1990s. Initially, these were rather basic mechanical systems that cut out the ignition, fuel supply and electric starter of a car and were easy to bypass by thieves. But more recent electronic versions combine various components to create a much more complicated immobilising system.³⁶

Electronic immobilisers have proved to be effective thanks to consistent roll-out around the world. But their effectiveness may be due to the fact that the opportunistic criminals involved in vehicle theft now need

enhanced technical knowledge and tools to overcome immobilisers.³⁷ In the case of maritime theft, it is clear that the majority of perpetrators are well prepared professionals. This prevention method might therefore not be as generally effective as it has been in the vehicle industry.

Trackers

A tracker is able to identify the exact location of a boat anywhere in the world. This makes a stolen boat less lucrative, as its whereabouts can subsequently be identified. Trackers in vehicles appear to be highly effective in locating stolen cars, but they are not widely used, and are not yet a general requirement.³⁸

Various brands offer different types of trackers using different communications systems, meaning that the signal range and type of monitoring varies. Nevertheless, unless a tracker is specifically attached to an outboard engine, it will not stop criminals who only intend to steal outboards. Even if this is the case, the tracker must be hidden, difficult to remove, and offer a certain level of quality since many criminals have ways of finding and then jamming trackers.³⁹

Alarms

Alarms to deter burglars generally prove to be inefficient and at times even make it more likely that someone will be the victim of a burglary.⁴⁰ Car alarms are slightly more effective in preventing theft from inside a car than the theft of the vehicle in general.⁴¹ But overall, they merely enhance a vehicle's security in combination with other measures, such as an electronic immobiliser and central locking.⁴²

Applying this knowledge to the field of maritime theft would suggest that alarms do not have much effect in preventing the theft of boats. A potentially interesting option could be using alarms to protect outboard engines, in particular in combination with other measures including high quality locks and hidden trackers, especially for boats located on private property not far from the owners (i.e. driveway or nearby shed) where they would be alerted by the alarm. More isolated locations, such as remote harbours, would likely benefit from more sophisticated alarm systems that use an online network to notify the owner, harbour master or local law enforcement.⁴³ Ultimately, alarms also need to be high quality, otherwise criminals can easily bypass basic systems.⁴⁴

Protecting the maritime environment

Besides target hardening boats and outboard engines, the environment in which boats are stolen also needs

to be considered. Protecting the environment in which maritime thefts occur can be organised using two strategies, limiting or controlling accessibility, and improving the surveillance of harbours and storage facilities.⁴⁵

There are various ways in which easy access to a harbour can be limited, for example by installing small gates or specific entrances that require a keypad code or badge before boat owners can enter the berths. Another example would be creating a security post that verifies the identity of all vehicles (i.e. of maintenance workers) wishing to access a storage facility.

Restricting accessibility is an effective and commonly used burglary prevention method, better known as alley gating. By closing off entryways in and around storage facilities, or docks in harbours, the risk for criminals increases, as they need to overcome a physical barrier. At the same time, they have no legitimate reason to be there if they are caught in a secured area. Important aspects to ensure the effectiveness of alley gating are the access measures (keys or codes) that need to be well regulated and the users (i.e. boat owners or marina personnel) who need to be responsible for closing the gates. At the same time, all measures need to be proportionate and should not disrupt the general functioning of the harbour.⁴⁶

A second strategy to protect a marine environment against property crimes is by focusing on surveillance. Both informal guardianship and formal surveillance will increase the chances of thieves being detected or interrupted during their activities.⁴⁷

Informal surveillance within a harbour can be achieved by installing strategic lighting. Effective lighting can transform a remote area into a pleasant pathway which is inviting for pedestrians, for example. The pedestrians perform a kind of guard function, and subsequently increase the risk for criminals committing a crime unnoticed.⁴⁸ Another option relevant for boats that are stored on a trailer somewhere around the house is using lights with motion sensors. Neighbourhood watches for the boating community, in this case harbour or boat watches, are another type of informal guardianship. Here, boat owners join forces by keeping an eye out on daily goings-on while they are in the harbour and reporting suspicious activity to the harbour master or law enforcement.⁴⁹ While neighbourhood watches in general have proven to be effective, it is not entirely clear which elements are crucial for its effectiveness or whether harbour/boat watches would have the same result as neighbourhood watches.⁵⁰

When it comes to formal surveillance, closed-circuit television (CCTV) surveillance is a suitable method for harbours and storage facilities. CCTV surveillance has been proven to have the best and most consistent effect in reducing vehicle theft in car parks, in combination with other measures, such as improved lighting and the presence of security personnel.⁵¹ This may be due to the fact that increased lighting might help identify criminals caught on camera. CCTV cameras could therefore be considered as an additional measure to enhance formal surveillance in targeted environments.

To conclude, both the quality of the target hardening measure and the chosen combination of methods will have an impact on the degree of effectiveness. As an example, combining an alarm, a central locking system, a tracker and an electronic immobiliser proved to have the best results against vehicle theft, while theft from a vehicle is best tackled by combining an alarm with central locking.⁵² This is a valid conclusion, as criminals that steal a laptop from a car do not care whether the vehicle has an immobiliser. The same assumption can be made as regards maritime theft. Trackers and immobilisers installed in the hull of a boat will likely not deter criminals from stealing an outboard engine. This type of crime potentially requires a separate or additional set of measures, such as specialised locks or a high quality alarm system.

Identification of stolen items

One significant bottleneck in maritime theft is the lack of identification markings on boats and outboard engines. This is a common occurrence, as boat owners often do not have the essential information (e.g. WIN number) of their boat to provide to law enforcement if it gets stolen. Without basic information or any further type of identification, law enforcement have no leads to help their search or verify legitimate ownership.⁵³ Additionally an obligated registration form for boat owners could offer a solution in safeguarding such information. Two copies of this form could be kept, for instance, with the boat owner and on the boat and could aid law enforcement in confirming ownership and identifying stolen vessels.

The most important as well as basic measure that can help in identifying stolen items is through either forensic or physical property marking. Marking can be performed in various ways, ideally it comprises unique serial or WIN numbers that are applied during the manufacturing process, which ensures high quality application.⁵⁴ There are numerous alternatives available that boat owners can

use themselves, such as engraving tools or microdots (tiny labels containing a unique code).⁵⁵ However, it is important to keep in mind that these measures need to be able to withstand (salt) water in combination with harsh weather conditions.

Property marking has proven to be effective against vehicle crime and domestic burglaries, albeit mainly in combination with other measures such as warning labels and crime prevention advice.⁵⁶ Two relevant side notes have to be made in relation to these results. While marking and using warning labels might have a deterrent effect for opportunistic burglars, it will likely not deter criminals who steal outboard engines to the same extent. Furthermore, the marking must be high quality, not basic stickers that are easily removed by criminals. The marking therefore also needs to be applied consistently, preferably by manufacturers or professional dealers, to ensure high quality techniques as well as consistency of the marking, if theft is to be prevented.⁵⁷

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Two examples of comprehensive marking initiatives

The Norwegian company Securmark offers a two-layered system in which forensic marking (i.e. microdots) provide an alternative if the physical marking (i.e. unique engraved serial numbers) is defaced by criminals. A similar British example is Datatag, who also combine visible registration numbers with alternative technologies such as microdots and electronic transponders. Both companies keep a centralised database in which information on the boats, the unique marking codes and the responsible manufacturer, dealer and owner is available in case stolen or recovered objects need to be identified.

The importance of these initiatives is in their consistent and high-quality methods, as well as extensive collaboration with external partners. For instance, for various years all boats and engines produced by a particular manufacturer in Sweden have been routinely and individually marked by Securmark. The engravings and microdots are only performed by official dealerships, in order to ensure the legitimacy of the approach.⁵⁸ Likewise, all manufacturers in the United Kingdom incorporate Datatag technology in their boats and engines. Additionally, both organisations provide training and screening materials (scanners for the microdots) for law enforcement officers.⁵⁹

As regards organising property marking, this needs to be well-regulated in order to remain legitimate. By making the manufacturers or official dealerships responsible in this regard, it prevents these tools from falling into the wrong hands. By way of illustration, cities sometimes offer engraving kits to their residents so they can mark their property, such as laptops, bikes or smartphones. But as a result, these kits can also be used by criminals to mark items they have stolen. Secondly, a comprehensive up-to-date database is necessary in order to effectively use the gathered data. When law enforcement recover a potentially stolen engine, it is essential to quickly trace the actual owner. Ideally, the engine will be marked so the owner can be traced via the microdots' unique code. However, if this information is inaccurate, for example if the boat has been resold multiple times, this system will not be very effective.⁶⁰

One added difficulty in identifying (potentially) stolen engines or boats is the limited expertise on maritime theft within law enforcement. While there are particular units, particularly in Germany and the Netherlands, that are specialised in recognising and tackling this phenomenon, many law enforcement officers are not aware of this phenomenon or its prevalence, and therefore would not recognise suspicious situations such as an outboard engine with cut cables. Even if they are aware of the issue and conduct searches for stolen property, a certain level of expertise is needed to recognise a fake serial number.

Otherwise, fake numbers will be used to verify stolen engines in the SIS system, which will never result in a hit.⁶¹ This is why training is crucial to increase awareness and expertise within law enforcement units, so they can make use of the identification measures to detect and recover stolen goods.

A subsequent step is working towards a more coordinated approach, as it is likely that various cases of maritime theft are handled by local police units as an isolated event, without considering that similar cases might have occurred in other regions. In Sweden, a similar situation occurred when a series of organised domestic burglaries were committed by a well-organised group of criminals who subsequently transported the stolen items back home. As a result, multiple Swedish police districts set up 'Operation Borderless', in which intelligence and investigation groups were created to coordinate information sharing, analysis gathering and prosecuting the criminals.⁶² Ideally, similar initiatives would be set up to analyse and investigate this issue.

In summary, maritime theft can be tackled by focusing on target hardening both boats and the maritime environment, combined with marking engines and enhancing law enforcement expertise, to help identify stolen property. The following task, 'implementation', will focus on the design and implementation of specific initiatives.



03

Designing and implementing prevention initiatives

The third task, ‘implementation’, translates the objectives and envisaged actions of the intervention into a practical action plan that can be used by practitioners.⁶³ The objectives of this 5Is framework are shown in a target tree in Figure 2. It reflects the main objective of this paper (i.e. preventing maritime theft) and its sub-objectives which each include more specific actions that are necessary to achieve the main objective. Subsequently, a logic model is used to convert these actions into practical initiatives. A logic model is useful for systematically representing the link between the intervention’s objectives, activities and (intended) outcomes.

Using objectives is important to guide an intervention and set a benchmark for evaluating it (which will be discussed in task five). But in order to come up with strong and realistic goals, they have to be SMART. Each letter in SMART refers to one of five criteria used to obtain realistic and measurable objectives:

- 1. Specific:** the goals must be clear and specific so they are not open to interpretation. In this case, instead of applying a too general main objective such as 'preventing maritime theft', a more specific goal is, for example, to increase the use of target hardening measures on boats and in harbours to deter thieves.
- 2. Measurable:** the goals must be measurable, either quantitatively (numbers, percentages) or qualitatively (opinions or behaviours). In this case, manufacturers could make efforts to install improved locks or trackers to each engine they produce, or harbours could aim for a 10% increase in formal surveillance.
- 3. Acceptable:** a mutually accepted goal is supported by all stakeholders involved, meaning it is more likely to be accomplished. This means that, as regards target hardening strategies for example, both boat owners and harbour masters accept and support these measures.⁶⁴ If they do not accept the positioning of gates on docks, they will not be used correctly and fail to act as prevention.
- 4. Realistic:** It should be possible for the stakeholders involved to achieve the objectives. If the goal is too demanding, it will be discouraging. It is therefore important to strike a good balance between realism and ambition, such as aiming for a 10% increase in surveillance instead of immediately aiming for 50%.
- 5. Time-bound:** set a clear start and end point, indicating when the goal should be achieved and when the results should be measurable. Many actions in the area of crime prevention are continuous and might only show results in the long term, such as efforts to enhance the expertise of law enforcements in this area. Nevertheless, implementing target hardening measures in every harbour or on every boat is a goal that can be achieved within a few years.

By way of illustration, a boat manufacturer could pursue the SMART objective to 'reduce maritime theft by 20% by fitting locks as a target hardening measure, in combination with forensic marking on all small and personal watercraft with outboard engines produced by manufacturer X by 2025'. Another example would be for a national or regional police organisation to aim for 'enhancing the expertise of our law enforcement units in region X, regarding the occurrence and prevention of maritime theft, via a two-day training course every year'.

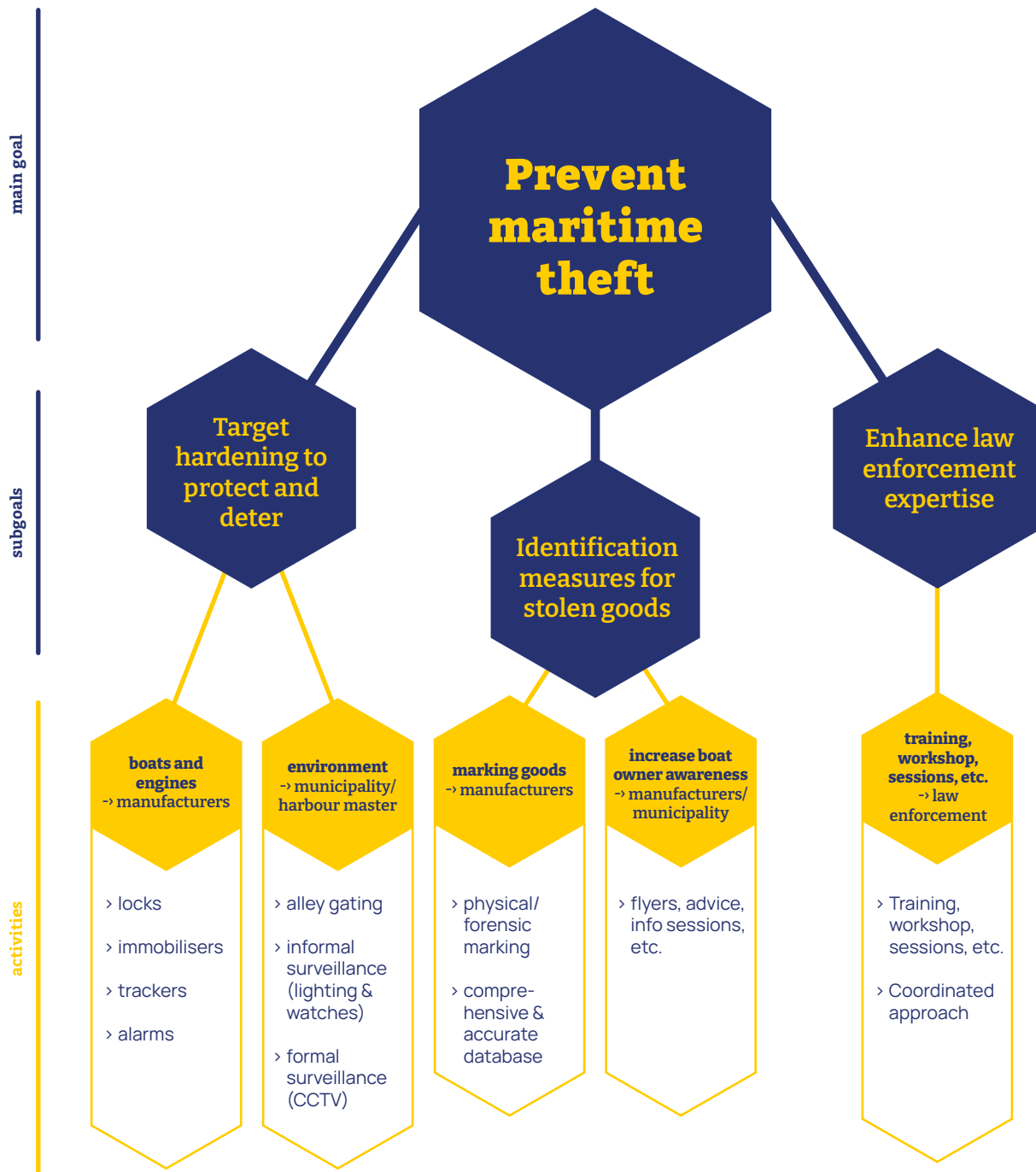


Figure 2: Target tree on preventing maritime theft.

A target tree focuses on the main- and sub objectives. Yet it can also include which actors are or should ideally be responsible for these activities. The fourth task, 'involvement', focuses on getting stakeholders involved, but in order to create acceptable objectives, the necessary partners need to be committed from this stage in order to generate a realistic logic model. In this illustration (see figure 2), manufacturers can only be identified as the responsible actor as regards target hardening and marking boats if they agree with this objective and are willing to work towards achieving it.

The second step is to create a logic model for each initiative that will be created. A logic model represents the intervention's underlying logic. It outlines the necessary resources of the intervention (inputs), the actions that should lead to the intended outcomes (activities), the products or services created by the activities (outputs) and finally the changes created by the intervention (early and later outcomes).⁶⁵

Inputs	Activities	Outputs	Early outcomes	Later outcomes
<ul style="list-style-type: none"> > Financial investment and working hours for manufacturers 	<ul style="list-style-type: none"> > Investment in forensic marking materials and tools to install them; > Installing target hardening measures; > Investment in setting up a database; 	<ul style="list-style-type: none"> > Locks, micro dots, trackers, stickers on all newly produced boats and engines; > A central database with basic information on each boat; 	<ul style="list-style-type: none"> > Engines are pro-actively protected; > Easy tracing of stolen goods; > Easy identification & confirming correct ownership of stolen goods; 	<ul style="list-style-type: none"> > Less theft as thieves should be deterred; > Better information exchange with law enforcement;
<ul style="list-style-type: none"> > Municipal/ harbour funding 	<ul style="list-style-type: none"> > Ordering and installation of CCTV, gates, lights, etc. in harbours and around storage facilities; 	<ul style="list-style-type: none"> > Clearly signed CCTV monitoring; > Gates with keypads to control access; > Improved lighting; 	<ul style="list-style-type: none"> > More difficult access to docks or storage areas; > More formal surveillance & easier identification through cameras; 	<ul style="list-style-type: none"> > Increased informal surveillance by pedestrians; > Less theft as thieves should be deterred;

Table 2: Example of a logic model relating the goal 'protecting boats and harbours through target hardening'.

Table 2 shows an example of a logic model that could be elaborated for the goal 'target hardening to protect boats and harbours'. The first input is the financial and working time investment required by boat manufacturers in order to fulfil this sub-objective. As regards the desired activities, manufacturers will need to implement target hardening measures (e.g. locks and trackers) as well as forensic marking (i.e. microdots). But in order to implement microdots to their full potential, a corresponding database will need to be designed to store and track all the collected information. This in turn requires an additional investment from the manufacturer (input). Similarly, buying new locks or trackers is one

thing, but teaching the staff to correctly install them requires dedicated working hours (input).

As a result, the output will consist of implementing the stated target hardening measures (in this case locks, trackers, microdots and stickers) on all newly produced boats and/or engines. Additionally, a centralised database will be used to collect all data from the microdots. Subsequently, these outputs should lead to specific short-term and long-term outcomes. Fitting locks and applying microdots will almost immediately ensure that all new boats and engines are protected. Stolen engines will therefore be easier to track (if they were equipped

with a tracker) and be identified. In the long term, these outputs could create a deterrent effect for criminals intending to steal boats and engines. But correctly using the database could also improve information exchange between law enforcement, manufacturers and other official bodies.

As an additional illustration, Table 3 shows an exemplary logic model relating to the sub-objective 'increasing the awareness of boat owners'.

Inputs	Activities	Outputs	Early outcomes	Later outcomes
<ul style="list-style-type: none"> > Boat owners' time and funds 	<ul style="list-style-type: none"> > Investment in locks, trackers, etc. > Fitting locks, trackers, etc. 	<ul style="list-style-type: none"> > Presence of target hardening measures in and around personal boats; 	<ul style="list-style-type: none"> > Easier identification of stolen goods; > Improved protection of boats and engines; 	<ul style="list-style-type: none"> > Increased boat owner awareness; > Less theft;
<ul style="list-style-type: none"> > Municipal/ harbour time and funds 	<ul style="list-style-type: none"> > Investment in campaign materials on target hardening measures; 	<ul style="list-style-type: none"> > Flyers in boat owners' mailboxes > Posters in and around harbours; 	<ul style="list-style-type: none"> > Increase knowledge among boat owners on target hardening measures; 	<ul style="list-style-type: none"> > Increased boat owner awareness; > Improved protection of boats and engines;

Table 3: Example of a logic model relating to the goal 'increasing the awareness of boat owners'.

To conclude, the implementation step converts the collected information and underlying prevention mechanisms into specific actions on the ground. While this chapter mainly focuses on the goal 'target hardening to protect boats and harbours', in practice this task should be executed for all sub-objectives and should be planned in more detail depending on the country or region where it will be implemented. Once a specific company or municipality decides to take on one of these objectives, they will have to decide on the exact timing and location of the intervention, as well as the specific inputs. A municipality or harbour might have received additional funding from the government, which will need to be incorporated as additional input. Finally, when creating a logic model, one additional reflection is to consider possible obstacles to implementation. For example, it is likely that there are delays when material is ordered.

To conclude, the implementation step converts the collected information and underlying prevention mechanisms into specific actions on the ground.



04

Which partners are needed to prevent maritime theft?

The fourth task, 'involvement', focuses on the participation of stakeholders. On the one hand, the stakeholders involved could act as partners by sharing, supporting or taking on responsibilities regarding the preventive interventions. On the other hand, they could help by mobilising others in reducing limitations, boosting facilitators or creating a more responsive environment.⁶⁶ In either case, it is important to clarify who exactly is involved and in what capacity (i.e. which roles or tasks they are taking on) they are operating.⁶⁷

Building essential partnerships

The obvious partners in this situation are boat manufacturers, law enforcement units dealing with maritime theft, harbours and municipalities (or larger regions) that have a lot of waterways and boat owners.

While many objectives can be attributed to one specific actor (e.g. manufacturers are responsible for target hardening their own products), certain aspects require some form of collaboration. Target hardening the environment, for example, is an objective that can and most likely will be shared by multiple parties. Some harbours might pro-actively take on this task, while some municipalities might include a nearby harbour or a remote storage facility within their improved lighting plan that is designed for the entire city.

Another good example involves using the database which contains information on boats and their owners. While this database should ideally be created and maintained by an official body (i.e. manufacturers or a government agency) to maintain control, it would contain a lot of relevant information for law enforcement officers investigating a stolen engine. For this to work, a sustainable partnership therefore needs to be set up between these actors.

Finally, numerous actors can play a role in raising awareness among boat owners on effective and existing prevention measures. Manufacturers (or dealerships) can advise customers on the measures they offer (e.g. specialised locks) or suggest to individuals buying a boat that they install specific solutions for a reasonable price. Moreover, harbours can inform owners mooring their boats via flyers and posters on the berths or in other public areas. Finally, municipalities in which there are many boat owners can distribute flyers detailing tips and tricks.

Mobilising stakeholders into action

Not all the stakeholders involved in the previously created initiatives need to be fully-fledged partners. It is sometimes enough to mobilise given actors to cooperate instead of involving them in every step of the initiative. This is clearly the case for boat owners, as the aim is to make them aware of the existing risk as well as encouraging them to implement certain prevention measures to protect their boats. But bringing them together is a task that can be taken on by another partner, such as the harbours or municipalities.

Depending on who will initiate the above-mentioned actions, other actors might also have to be mobilised.

Certain objectives such as target hardening the environment can be taken on by different initiators. If a certain region decides to tackle maritime theft by target hardening all the harbours in its area, then these harbours will have to be mobilised into cooperation.⁶⁸ Similarly, a manufacturer or municipality can try to mobilise an insurance company into cooperating. Boat owners might be more inclined to implement prevention measures if these result in an insurance discount. As such, manufacturers, for example, could aim to mobilise insurance companies and initiate a partnership where customers of certain boats who implement certain measures will receive a discount.⁶⁹

A useful tool to bring together stakeholders is the CLAIMED framework (clarify, locate, alert, inform, motivate, empower and direct). This framework aims to mobilise specific actors, for example to act as a crime preventer or to stop being a crime promotor.⁷⁰ According to the CLAIMED framework this mobilisation process consists of seven steps:

1. Clarify the tasks, roles and responsibilities that are expected. As an illustration, when targeting boat owners as facilitators, they should understand which tasks (i.e. installing locks on their engines) are expected of them and to what end.
2. Locate the most suitable actors to undertake these actions. Instead of targeting all boat owners at once, it might be more cost-effective to find key stakeholders within a neighbourhood (e.g. a harbour watch) and use their connections to spread the message.
3. Alert boat owners on how their actions (e.g. leaving a boat unattended without additional protection measures) might facilitate crime and how they can help in preventing it;
4. Inform them of the nature of the issue, such as which types of engines are targeted most often and which target hardening measures work best.
5. Motivate them to become involved, for instance through incentives. Boat owners might be more inclined to install locks or trackers if they benefit from an insurance discount for their efforts. Another possibility is through legislation, by requiring every boat to be equipped with basic security systems.
6. Empower them through education and guidance, for example on how to install these measures yourself or by supplying tools to do so.
7. Direct them in their actions in order to obtain the desired standards and objectives.



05

How to evaluate prevention initiatives?

The final task, 'impact', specifies the type of evaluation most suitable for the chosen initiatives and how these can be planned and implemented.⁷¹

Evaluations have various benefits; they help improve the implementation of the initiative, inform decisions on whether to continue with it, enforce accountability, etc.⁷² Generally, two main types of evaluation can be identified. A process evaluation focuses on the (correct) implementation of an intervention. Depending on the specific emphasis, it is ascertained whether the target group is reached, whether the implementation is going according to plan and whether there are any unexpected obstacles. An outcome (or impact) evaluation, on the other hand, confirms whether or not an intervention is effective, i.e. whether the objectives are met.

Process evaluation

Process evaluations are ideally carried out throughout the implementation of an initiative. This means that relevant data is collected when the target hardening measures are installed on boats or in harbours, or when police training takes place. This eases the evaluator's task compared to searching for scattered data after the intervention has ended.

In order to set up an evaluation, the first step is to decide on what you want to learn. This is entirely dependent on the specific context of the initiative and the actor initiating it (i.e. the available time and resources). For each objective, a specific set of evaluation questions can be devised (see Table 4). As regards the phenomenon of maritime theft, relevant process evaluation questions for the first objective include, without being exhaustive:

- > How many measures (locks, immobilisers, cameras, gates, etc.) were installed?
- > Are these measures (locks, immobilisers, cameras, gates, etc.) installed correctly?
- > Did any issues arise during the installation? For example, in terms of staff, budget, time or due to external and/or unforeseen reasons.

Objective	What do we want to learn?	Relevant indicators	Applicable data collection methods
Target hardening boats/engines & maritime environment	<ul style="list-style-type: none"> > How many locks, trackers, cameras, etc. have been installed? And were they installed correctly? > Did any issues arise during the installation? 	<ul style="list-style-type: none"> > (Correct) implementation of the measures > Costs associated with the implementation > Internal/external obstacles 	<ul style="list-style-type: none"> > Gather relevant documentation (invoices, reports of working hours, etc.)
Identification measures for stolen goods through marking and increasing awareness	<ul style="list-style-type: none"> > How many boats/engines received microdots? > How many boat owners in area X received flyers? > Did the harbour and municipality cooperate effectively? 	<ul style="list-style-type: none"> > (Correct) implementation of the measures > Feasibility > Cooperation 	<ul style="list-style-type: none"> > Gather relevant documentation > Survey for boat owners > Interviews with the relevant stakeholders
Strengthen law enforcement expertise through training and improved cooperation	<ul style="list-style-type: none"> > Which and how many LEO's participated in the training? > How did the participants experience the training? > How did the trainers experience the training? 	<ul style="list-style-type: none"> > Participation rate > Quality of training 	<ul style="list-style-type: none"> > Surveys for participants > Focus groups with trainers

Table 4: graphic overview of a process evaluation's questions, indicators and data collection methods.

Secondly, linked to the desired evaluation questions, process indicators as well as corresponding data collection methods that will be used to collect this information will be selected (see Table 4). The three research questions of the first objective correspond with three process indicators: implementation of the measures, correct implementation of the measures and potential internal and/or external obstacles. The corresponding data collection methods can be chosen regarding the time and abilities of the evaluator. In this example, it may be enough to perform a document analysis by collecting invoices of ordered locks or keeping reports of working hours.

As a result, the selected indicators will provide insights into the context of the intervention (the implementation of the target hardening measures), identify obstacles (e.g. a shortage of staff) and clarify the (successful or unsuccessful) outcomes of the initiative. An important remark when designing a process evaluation is to not over-estimate. It may be more achievable to focus on a limited amount of indicators. A strong quality evaluation of one or two indicators will be more usable than an average evaluation containing five or more indicators.

Outcome evaluation

Generally, the most important reason to conduct an evaluation is to examine the effectiveness of an intervention. An outcome evaluation can be used in this regard. Outcome evaluations focus on the result of an intervention, for instance whether target hardening reduced the amount of engine thefts or whether boat owners are actually more aware and they did actually implement specific measures. For this reason, outcome evaluations generally take place after an intervention has ended or when it has been consistently taking place for a longer time.

Ideally, the results will indicate whether the intervention has been effective, but various other results are also possible. For instance, the intervention may have no effect at all, or even be counter-productive. In this case, the initiative should be reconsidered and changes have to be made. It is also possible that there are alternative consequences, for example an intervention may be effective against an entirely different crime phenomenon.

When setting up an outcome evaluation, certain considerations need to be made. First of all, as the aim is to measure the (positive) effects of an intervention, an outcome evaluation must have a before and after measurement. This means that the situation (e.g. the amount of engine thefts) already needs to be measured before any actions are implemented. This is an important factor, as additional resources are often needed to handle the workload. The following step is to choose relevant indicators that are once more related to the objectives of the intervention. The outcome evaluation indicators will therefore vary based on the stated goals, as well as the type of intervention selected.

To continue the previous illustration and focus on the goal of target hardening harbours by installing CCTV, lighting and gates that control access. The first step is to take a baseline measurement, by collecting data on engine thefts from harbours in a given region. In addition, it is important to get an overview of the existing prevention measures in these harbours. By sending a questionnaire to the harbour masters or municipalities (or potentially through document analysis), an overview can be obtained of which harbours already have certain target hardening measures, and what these measures are.

The intervention will then be implemented. This means that, in this example, a basic set of CCTV, lighting and gates are installed in all harbours in region X. After the installation phase, a specific follow-up period can be

Training on the evaluation of crime prevention initiatives

The EUCPN offers a comprehensive 10.5 hour evaluation training course designed for crime prevention practitioners and policymakers. It provides participants with the minimum level of knowledge and skills necessary to understand and conduct evaluations of their crime prevention initiatives. In addition, more complex evaluations are explained and participants are guided to seek external help if necessary.

The course consists of eight modules, which focus on six necessary steps to evaluate crime prevention initiatives, starting from preparing an evaluation and choosing the most appropriate type, to implementing it and presenting the results. Finally, the focus is on real-life experiences with existing projects, in order to make the training as practical and relevant as possible.

Find out more at: [Training | EUCPN](#).

decided on (e.g. the following six months) in which the engine theft data is registered and compared to the baseline measurement. A fall in recorded cases might indicate that the intervention was successful.

However, a positive result (in this case a reduction in recorded engine thefts) does not necessarily mean that the intervention was successful. It is still possible that the number of thefts fell due to external factors, such as restricted borders that reduced the easy access for criminal groups. To better ensure the result can be attributed to the intervention, a control group can be added to the evaluation. This would mean that in region X only half of the harbours receive lighting and gates (the experimental group) while the other half does not (the control group). As a result, both measurements as well as both groups can be compared with each other, meaning that if the theft rates fall in both groups, this is a general trend that cannot be credited to the intervention.

Conclusion

This paper offers an introduction to the phenomenon of maritime theft, by exploring the general context of the issue and examining the effectiveness and implementation possibilities of potential prevention initiatives. The target groups with the most to benefit from this paper are law enforcement units, municipalities, regional and/or national authorities, harbours and boat manufacturers. Each actor can concentrate on a specific focus area that is most relevant for them and take away lessons on how to devise their own interventions, mobilise partners and conduct evaluations.

The structure of the paper consists of five tasks that together make up the 5Is model:

1. Intelligence:

The intelligence task shows that maritime theft primarily constitutes theft of small and private boats as well as outboard engines. These are often stolen on land, for instance in storage facilities or on personal trailers. The perpetrators are generally professional, well-organised groups originating from Eastern Europe.

2. Intervention:

Based on the intelligence picture, it is apparent that target hardening measures are necessary to protect boats and outboard engines (e.g. through locks, immobilisers, trackers and alarms) as well as the environment in and around harbours and storage facilities (e.g. by fencing off the perimeter, installing lighting and CCTV or creating a harbour watch).

Moreover, the identification of stolen items needs to be improved. This can be achieved by property marking boats and engines via engraved serial numbers or using microdots. Ideally, the information gathered through marking is collected in a centralised database, so this information can be used for police investigations or checks.

3. Implementation:

As a result, three sub-objectives can be formulated that together will help prevent maritime theft:

- > Increasing target hardening measures:
 - for boats and engines;
 - for the maritime environment;
- > Identification measures for stolen goods:
 - By marking goods;
 - By raising awareness among boat owners;
- > Strengthening the expertise of law enforcement:
 - Through training and workshops;
 - By creating coordinated investigations.

Each actor can focus on a sub-objective or initiative that is most relevant to their specific situation. Based on this decision, a logic model should be created that specifically lays out the required inputs for the intended actions and the desired outputs and outcomes.

4. Involvement:

The involvement task looks into setting up the necessary partnerships based on the needs and goals of each actor. Most sub-objectives will require some type of collaboration (e.g. information sharing between boat manufacturers and law enforcement). But in other cases it will be enough to mobilise specific stakeholders into action, for example offering an insurance discount may persuade boat owners to install target hardening measures. Insurance companies will therefore have to be motivated to participate in this initiative.

5. Impact:

Finally, evaluating the implementation and result of an intervention is crucial to knowing whether or not it was successful. The impact task therefore focuses on the necessary steps when conducting a process and outcome evaluation (e.g. choosing indicators and deciding which evaluation questions to focus on).




Endnotes

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Contact details

EUCPN Secretariat
Email: eucpn@ibz.eu
Website: www.eucpn.org

 twitter.com/eucpn
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 linkedin.com/company/eucpn