

A photograph showing a large marine turtle, likely a hawksbill, caught in a green trawl net. The turtle is surrounded by a large quantity of shrimp, which are the primary target of the fishery. The scene is illuminated by artificial light, possibly from a boat at night or in a dark environment. The turtle's head and front flippers are visible, and it appears to be struggling within the net. The shrimp are piled around the turtle, filling the net and the surrounding area.

THE NEED FOR A EUROPEAN UNION IMPORT REGULATION TO REDUCE MARINE TURTLE BYCATCH IN SHRIMP FISHERIES

How to condition imports of wild-caught shrimp to the European market to
minimise impacts on marine turtle populations

Front cover:

© M. Nalovic @ CRPMEM Guyane

Authors:

Théa Jacob, WWF-France
Nadia Deckert, consultant
Michel Nalovic, consultant

Reviewers:

Isabelle Laudon (WWF-France), **Antonia Leroy** (WWF European Policy Office),
Louis Lambrechts (WWF European Policy Office), **Larissa Milo-Dale** (WWF
European Policy Office)

Suggested citation:

Jacob, T., Deckert, N. and Nalovic, M. WWF, 2022. The need for a European Union import regulation to reduce marine turtle bycatch in shrimp fisheries: How to condition imports of wild-caught shrimp to the European market to minimise impacts on marine turtle populations.

Published in November 2022 by WWF – World Wide Fund For Nature (formerly World Wildlife Fund), Brussels, Belgium. Any reproduction in full or in part must mention the title and credit the above-mentioned publisher as the copyright owner.
© Text 2022 WWF. All rights reserved.

TABLE OF CONTENT

INTRODUCTION.....	3
I - OVERVIEW OF THE CONSERVATION, CREDIBILITY AND LEGAL CHALLENGES DUE TO THE LACK OF EU REGULATION.....	5
A - Negative impacts resulting from the EU turning a blind eye to the harvesting methods of imported shrimp species associated with turtle bycatch.....	5
B - A worrying discrepancy between EU policies, international commitments and reality	6
EU policies aim to protect biodiversity and habitats:.....	6
EU trade policies:	7
Legally-binding international commitments signed by the EU:.....	7
Regional agreements the EU is a Party to:	9
Codes of conduct and guidelines endorsed by the EU:	9
Other non-legally binding commitments:.....	10
Regional Fisheries Management Organisations	10
II - EFFICIENCY OF TEDS	11
A - A very cost-effective solution.....	11
B - Going beyond the standard TED and further conservation implications.....	12
III - WHAT ABOUT EU FISHERIES?	14
A - EU fisheries in EU waters.....	14
B - EU fisheries outside of EU waters	15
SFPAs.....	15
Private Agreements	16
C - How can policymakers act?	17
IV - REVIEW OF THE SECTION 609 OF THE U.S. PUBLIC LAW 101-162 AND THE WORLD TRADE ORGANIZATION (WTO) CASES.....	18
A - Overview of the 609 U.S. regulation	18
B - The U.S. 609 certification process	19
Initial TED introductory visit	19
TED certification visit	20
Annual attribution of TED certification.....	21
C - A focus on NOAA's TED training capacity.....	22
D - The "Shrimp-Turtle" WTO case and how it was dealt with and resolved.....	22
E - What is needed from an EU perspective to avoid the same case and legislation issue when the EU regulation on wild-caught shrimp import will be implemented	25
1. Ensure the EU's ST fisheries comply with rules similar to those required of import ST fisheries	25

2.	Provide the same conditions to all importing countries in applying the new regulation	27
3.	Design and apply the regulation to be flexible enough to take into account specific situations.....	27
VI -	POSSIBILITIES TO INTRODUCE A TED REQUIREMENT WITHIN THE EXISTING EU LEGAL FRAMEWORK AND FIRST DRAFT FOR A SPECIFIC EU REGULATION ON IMPORTATION OF WILD-CAUGHT SHRIMP	28
A -	TED requirements for EU fisheries, inside and outside EU waters, within existing EU regulation	28
B -	Regulating EU imports from shrimp trawling fisheries	29
VII -	FEEDBACK FROM COUNTRIES WHERE TEDS HAVE BEEN OR ARE BEING INTRODUCED	34
A -	French Guiana success, hindered by the non-compliance of the Brazilian TED law	34
B -	The Gabon success story	35
C -	Mozambique's attempts	36
D -	India's difficulties	37
E -	Countries in Western Africa.....	37
VIII -	RECOMMENDATIONS AND NEXT STEPS TO SUCCESSFULLY SET AND IMPLEMENT THE EU LEGAL FRAMEWORK	38
IX -	VIGILANCE POINTS.....	40
	BIBLIOGRAPHY	41
	APPENDIX 1 - RECOMMENDATIONS ON COMMUNICATION AND SUPPORT FOR A SUCCESSFUL IMPLEMENTATION OF AN EU TED REGULATION AND PROGRAMME	45
	APPENDIX 2 - MARINE TURTLE BYCATCH IN THE MEDITERRANEAN SEA BY EU AND NON-EU MEDITERRANEAN BOTTOM TRAWL FLEETS*	46
	APPENDIX 3 - SUPPLYING COUNTRIES INTERESTED IN TEDS WITH KITS INTENDED TO FACILITATE IMPLEMENTATION.....	48
	APPENDIX 4 - APPROVED TEDS (FROM 50 CFR § 223.207).....	53

LIST OF ACRONYMS

CBD – Convention on Biological Diversity

CFP – Common Fisheries Policy

CITES – Convention on International Trade of Endangered Species

CMS – Convention on Migratory Species

CRPMEM – Comité Régional des Pêches Maritimes et des Elevages Marins (Regional Maritime Fisheries and Aquaculture Committee)

CNPMEM – Comité National des Pêches Maritimes et des Elevages Marins (National Maritime Fisheries and Aquaculture Committee)

EC – European Commission

EEZ – Exclusive Economic Zone

EFCA – European Fisheries Control Agency

EMFAF - European Maritime, Fisheries and Aquaculture Fund

EU – European Union

GATT – General Agreement on Tariffs and Trade

GFCM – General Fisheries Commission for the Mediterranean

GRT – Gross Register Tonnage

IFREMER – French Institute for Exploitation of Sea Resources

IOSEA - Indian Ocean and South-East Asia

IUU – Illegal, Unreported and Unregulated

IUCN – International Union for Conservation of Nature

NGO - Non Governmental Organisation

NMFS – National Marine Fisheries Service

NOAA – National Oceanic and Atmospheric Administration

RFMO – Regional Fisheries Management Organization

SFPA – Sustainable Fisheries Partnership Agreement

SMEFF – Sustainable Management of External Fishing Fleets

ST – Shrimp Trawling

TEDs – Turtle Excluder Devices

TST – Tropical Shrimp Trawl

TTEDs – Trash and Turtle Excluder Devices

U.S. - United States

WTO - World Trade Organization

EXECUTIVE SUMMARY

At a time when the European Union (EU) is striving to restore biodiversity, ensure sustainable food systems and lead the way towards reducing the impact of fisheries on the marine environment, it is overdue for the EU to ensure that imported tropical shrimp are not contributing to the depletion of marine turtle populations.

Today, **6 out of the 7 existing species** of marine turtles are listed as *Vulnerable, Endangered or Critically Endangered* by the International Union for Conservation of Nature (IUCN), and all are listed as *most endangered* (Appendix I) by the Convention on International Trade of Endangered Species (CITES). Bycatch, alongside illegal trade, is considered the principal threat to their survival, with hundreds of thousands of marine turtles captured in fishing gears each year. Tropical shrimp trawls (TSTs) are particularly problematic fisheries, as shrimps and turtles share the same habitats and therefore end up in the same nets.

The bycatch of marine turtles, however, **can be greatly reduced (by up to 97%) by using a Turtle Excluder Device (TED)**. A TED is a grid which diverts marine turtles and other large marine fauna out of a trawl net, while letting the shrimp in. In tropical shrimp trawls, TEDs have proven both particularly effective to reduce turtle bycatch and profitable due to, *inter alia*, better quality products, reduced fuel costs and damage to nets.

A legislation prohibiting the import of shrimp harvested in a manner which may adversely affect marine turtles was adopted in the United State (U.S.) in 1989 ([Section 609 of the U.S. Public Law 101-162](#)). U.S. fishing fleets and foreign ones wishing to export wild-caught shrimp to the U.S. are required to use TEDs or to prove they are not impacting marine turtles. More than 40 shrimp-exporting countries now meet this requirement.

However, the EU, the largest importer of shrimp in the world,¹ does not yet require the use of TEDs in shrimp trawl fisheries whose products are imported to the EU, thereby providing an alternative market for countries that do not use TEDs. This contributes to the bycatch of tens of thousands of marine turtles a year.

In November 2020, an IUCN [motion](#) was adopted - with the large support of EU Member States - which, *inter alia*, calls on the EU to adopt a regulation that requires TEDs (or equivalent) for tropical shrimp fisheries exporting to the EU. Now is the perfect time for the European Commission (EC) to submit a legislative proposal for an import regulation requiring the use of TEDs by 2026, to support

¹ FAO (2021) [GLOBEFISH Highlights](#) - A quarterly update on world seafood markets. No. 1-2021

exporting countries in the implementation of their respective TED regulations and to ban imports from those failing to adequately implement TED regulations.

This report provides recommendations on how the EU should move forward regarding the legislative steps needed. Following revision of several options, WWF concludes that the most straightforward way forward is to:

1. Update the current technical measures of the Common Fisheries Policy to extend the current obligation of TED use to all relevant shrimp trawlers, both within and outside of EU waters. This would enable the EC to adopt a regulation requesting TEDs for all trawling fisheries willing to start or maintain shrimp exports to the EU, without facing the risk of a World Trade Organization (WTO) dispute; and
2. Elaborate and implement a specific regulation regarding EU importations from trawling shrimp fisheries, conditioning imports from fisheries that do not impact marine turtle populations.

INTRODUCTION

Shrimp Trawling (ST) is a fishing method that involves towing a net through water to catch one or several species of shrimp, though fish and other species can sometimes also form a part of the catch. In the absence of appropriate technical and management measures, ST can be highly unselective, resulting in the capture of large quantities of marine fauna additional to those which are targeted. Though, to date, there is no clear explanation as to why marine turtles and shrimp overlap,² **shrimp trawlers operating in warm waters are especially problematic for marine turtles, which are often incidentally caught as bycatch due to the habitat they share with some of the frequently targeted shrimp species.** However, it is not realistic to define the risk presented to marine turtles by a specific trawling fishery only according to the species it targets, as many other parameters associated with the fishing environment also enter into consideration.

Seven species of marine turtles are recognised in the world: the green turtle (*Chelonia mydas*), loggerhead (*Caretta caretta*), flatback (*Natator depressus*), hawksbill (*Eretmochelys imbricata*), leatherback (*Dermochelys coriacea*), olive ridley (*Lepidochelys olivacea*), and Kemp's ridley (*Lepidochelys kempi*). Six of these seven species are categorised as vulnerable, endangered, or critically endangered on the IUCN Red List (the global status of the flatback turtle cannot be evaluated because of insufficient information), and all seven are listed in Appendix I of CITES. **Marine turtles are particularly vulnerable to a wide range of threats from climate change to habitat destruction, but bycatch is the major threat to all species of marine turtles worldwide,**³ resulting in hundreds of thousands of deaths every year.⁴

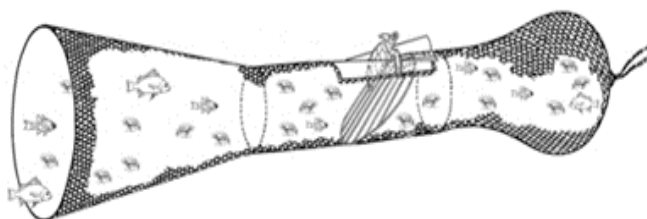
The bycatch of marine turtles, however, can be greatly reduced using a **Turtle Excluder Device (TED).**

² Caillouet Jr, C. W., Duronslet, M. J., Landry Jr, A. M., Revera, D. B., Shaver, D. J., Stanley, K. M., Heinly, R. W. and Stabenau, E. K. (1991) Sea turtle strandings and shrimp fishing effort in the northwestern Gulf of Mexico, 1986-1989.

³ Wallace, B. P., Kot, C. Y., DiMatteo, A. D., Lee, T., Crowder, L. B. and Lewison, R. L. (2013) Impacts of fisheries bycatch on marine turtle populations worldwide: toward conservation and research priorities. *Ecosphere* 4(3):40.

⁴ Davies, R. (2016) Wild-caught tropical shrimp imports into the EU and associated impacts on marine turtle populations: the need for EU import restrictions. CRPMEM Guyane, 94 pp.

A Turtle Excluder Device or TED is a grid that fits into a trawl net, whereby the spacing of the bars and angle of the grid are designed to allow shrimp to pass through to the back of the trawl net (or ‘cod-end’), while diverting marine turtles and other large marine fauna such as sharks and rays through an escape hatch.



TED Illustration, Ifremer

TEDs exclude at least 97% of captured turtles⁵ with minimal loss of target catch species (less than 2%), while increasing the productivity of trawling operations by reducing damage to nets, reducing the crushing of the catch, lowering fuel costs and creating higher market prices for more sustainable and better quality shrimp.

A legislation prohibiting importation of shrimp harvested in a manner which may adversely affect marine turtles has been in place in the U.S. since 1989 ([Section 609 of the U.S. Public Law 101-162](#)). U.S. and foreign fishing fleets wishing to export wild-caught shrimp to the U.S. are required to use TEDs or to prove they are not impacting marine turtles. More than 40 shrimp-exporting countries now meet this requirement (which allows them to continue to receive technical support from U.S. shrimp fishing gear experts - as they did prior to certification). The 16 Party States of the Inter-American Convention for the Protection and Conservation of Sea Turtles also committed to “the development, improvement and utilisation of fishing gear, devices and appropriate techniques, including the Turtle Excluder Devices (known as TEDs)”.

However, the EU, the main importer of shrimp in the world,⁶ does not yet require TEDs in the ST fisheries from which it imports. It therefore provides an alternative market for countries that do not use TEDs, *de facto* resorting to environmental/ecological dumping (applying less strict environmental legislation in order to obtain economic benefits) and potentially causing the bycatch of tens of thousands of marine turtles a year. EU consumers eating shrimp products are, without knowing it, directly contributing to the ongoing decline of marine turtle populations caused by unsustainable fishing.

⁵ Eayrs, S. (2007) A Guide to Bycatch Reduction in Tropical Shrimp-Trawl Fisheries. Rome, FAO, 108 pp.

⁶ FAO (2021) [GLOBEFISH Highlights - A quarterly update on world seafood markets](#). No. 1-2021

I - OVERVIEW OF THE CONSERVATION, CREDIBILITY AND LEGAL CHALLENGES DUE TO THE LACK OF EU REGULATION

A - Negative impacts resulting from the EU turning a blind eye to the harvesting methods of imported shrimp species associated with turtle bycatch

As previously mentioned, six of the seven marine turtle species are categorised as Vulnerable, Endangered, or Critically Endangered on the IUCN Red List of Threatened Species and all are found in CITES Appendix I. Bycatch is recognised as the main threat to this group of species. Between 1990 and 2008, more than 85,000 turtles were caught,⁷ “but due to the small percentage of fishing effort observed and reported (generally <1% of total fleets) this probably underestimates the true total by at least two orders of magnitude”.² Shrimp trawling is generally considered as one of the least selective fishing methods because bycatch can outweigh the shrimp catch by 20 to 1 or even more.⁸

Of the main countries that export wild-caught shrimp to the EU, at least six (Bangladesh, India, Indonesia, Madagascar, Thailand and Viet Nam) have been identified as not using TEDs in their trawls, which contributes to the bycatch of tens of thousands of turtles a year.⁹ These countries, with the exception of Viet Nam, have national legislation that require the use of TEDs in their shrimp trawls, but which are not effectively implemented. Together, those six countries export an annual average of 48,188 tonnes of wild-caught shrimp to the EU.¹⁰ The potential turtle bycatch associated with these exports is significant. It should be noted that Madagascar and Thailand were formerly certified to export to the U.S., but had their certification revoked following the U.S determining that their fisheries methods did not meet the required standards due to a lack of efficient marine turtle bycatch mitigation measures. The EU market therefore currently provides an alternative export destination for shrimp associated with unsustainable levels of bycatch of marine turtles, as well as other species such as sharks and rays.

⁷ Wallace, B. P., Lewison, R. L., McDonald, S. L., McDonald, R. K., Kot, C. Y., Kelez, S., ... & Crowder, L. B. (2010). Global patterns of marine turtle bycatch. *Conservation letters*

⁸ Eayrs, Steve. (2007). *A Guide to Bycatch Reduction in Tropical Shrimp-Trawl Fisheries*. Rome, FAO, 108 pp.

⁹ Davies, R. (2016). *Wild-caught tropical shrimp imports into the EU and associated impacts on marine turtle populations: the need for EU import restrictions*. CRPMEM Guyane

¹⁰ Davies, R. (2016). *Wild-caught tropical shrimp imports into the EU and associated impacts on marine turtle populations: the need for EU import restrictions*. CRPMEM Guyane

B - A worrying discrepancy between EU policies, international commitments and reality

There is a discrepancy between the current lack of European regulation regarding wild-caught shrimp imports and several internal EU legislations and international commitments.

EU policies aim to protect biodiversity and habitats:

- Article 191(2) of the Treaty on the Functioning of the EU requires Union environmental policy to “aim at a high level of protection”, while Article 21(2.f) requires the Union to help develop international measures to preserve and improve the quality of the environment and the sustainable management of global natural resources, in order to ensure sustainable development.
- The Habitats Directive is designed to ensure the conservation of rare, threatened, or endemic animal and plant species. Its article 12.4 states that “Member States shall establish a system to monitor the incidental capture and killing of the animal species listed in Annex IV (a). In the light of the information gathered, Member States shall take further research or conservation measures as required to ensure that incidental capture and killing does not have a significant negative impact on the species concerned”. Five marine turtle species are listed in Annex IV: *Dermochelys coriacea*, *Chelonia mydas*, *Eretmochelys imbricata*, *Caretta caretta* and *Lepidochelys kempii*.
- For the Marine Strategy Framework Directive (MSFD), two species of marine turtles are considered as an indicator for descriptors 1 "Biological diversity", 8 "Contaminants", and 10 "Marine debris".
- According to the Council Regulation EC 1005/2008 establishing a community system to prevent, deter and eliminate illegal, unreported and unregulated (IUU) fishing, (hereafter, the IUU Regulation, articles 3 and 4) “a fishing vessel shall be presumed to be engaged in IUU fishing if it is shown that, contrary to the conservation and management measures applicable in the fishing area concerned, it has (...) used prohibited or non-compliant fishing gear” and “illegal fishing means fishing activities (...) conducted by fishing vessels in violation of national laws or international obligations (...)”. Therefore, fisheries vessels flying the flag of a State, which is obliged to operate TED equipment under their national law but which does not respect this obligation, may be presumed to be practicing IUU fishing. This is the case in five of the EU’s main wild-capture shrimp import countries: Bangladesh, India, Indonesia, Madagascar and

Thailand; and in at least two non-major wild-capture shrimp import countries: Brazil and Mozambique.

EU trade policies:

- In February 2021, the EC published its new trade strategy: [Trade Policy Review – An open, sustainable and assertive trade policy](#), which aims to put sustainability at the very heart of the EU trade policy.
- All EU trade agreements contain a Trade and Sustainable Development Chapter with commitments to implement multilateral environmental agreements on, amongst others, biodiversity, and sustainable fishing. The agreements also contain a binding commitment not to lower environmental standards in order to attract trade and investment.

The EU is also a Party to many multilateral environmental agreements and has endorsed a range of international resolutions and guidelines, with specific text outlining obligations to minimise harmful fishing practices, such as those which result in turtle bycatch.

Legally-binding international commitments signed by the EU:

- The EU is a Party to the Convention on Migratory Species (CMS), which lists five marine turtle species as “most endangered migratory species” (CMS Annex I). According to CMS Article II, CMS Parties “shall endeavour to provide immediate protection for migratory species included in Appendix I”. CMS Parties have endorsed, among others, a specific resolution detailing various actions to reduce bycatch of migratory species including marine turtles ([UNEP/CMS/Resolution 9.18 on Bycatch](#)).
- The EU is also a Party to the Convention on Biological Diversity (CBD). Marine turtle conservation is relevant to the agreement given the species’ importance to overall biological diversity. The EU is therefore legally committed to strive for the maintenance and recovery of viable populations and to avoid long-term declines. For example, Article 5 provides that “Each Contracting Party shall, as far as possible and as appropriate, cooperate with other Contracting Parties, directly or, where appropriate, through competent international organisations, in respect of areas beyond national jurisdiction and on other matters of mutual interest, for the conservation and sustainable use of biological diversity.” Article 8 provides that Parties shall “promote the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings”. Article 14 stresses the need to avoid or minimise

adverse impacts on ecosystem services, structure and functions as well as other components of ecosystems.

CBD Aichi Biodiversity Target 6 on the sustainable management of fish and other marine organisms states: “By 2020, all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem-based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.” The new global biodiversity framework post-2020 is currently being negotiated, but the first [draft](#) released on the 12th of July 2021 contains, in addition to the targets on sustainability and tackling the negative impacts of fisheries on biodiversity, targets (1) for all economic/trade activities to be in line with biodiversity values and (2) for all businesses to assess and report on their impact on biodiversity and move towards full sustainability of supply chains. Another target mentions that all incentives, including regulatory incentives, must be either positive or neutral for biodiversity.

- The CITES, to which the EU is a party, lists in its Appendix I (most endangered species) all seven species of marine turtles and encourages the use of TEDs. The report, [Status, scope and trends of the legal and illegal international trade in marine turtles, its conservation impacts, management options and mitigation priorities](#) presented at the 18th meeting of the Conference of the Parties, included a recommendation to “fully implement marine turtle bycatch mitigation-related regulations (e.g. those relating to the use of TEDs, circle hooks, particular bait types, fisheries logbook and observer schemes) where these regulations are already in place” and to “encourage States’ adherence to marine turtle bycatch mitigation-related regulations (e.g. those relating to the use of TEDs, circle hooks, bait types, fisheries logbook and observer schemes) where such regulations are not yet in place”. Another recommendation encouraged to “Review national legislation and regulations relating to marine turtle conservation and management to identify inconsistencies, gaps and overlapping areas that need to be addressed by policy-makers”.
- The [1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks](#) (UN Fish Stocks Agreement), to which the EU is a Party, requires its Parties to "minimise (...) catch of non-target species (...) and impacts on associated or dependent species, through measures including, to the extent practicable, the development and use of selective, environmentally safe and cost-effective fishing gear and techniques".

Regional agreements the EU is a Party to:

- The Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (Cartagena Convention) has a [Protocol concerning specially protected areas and wildlife](#) (SPAW Protocol) which lists six of the seven marine turtle species on its list of species requiring protection measures.
- The Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention) has a [Protocol concerning specially protected areas and biodiversity](#) (SPA/BD Protocol), which states that “Each Party shall take the necessary measures to: (...) protect, preserve and manage threatened or endangered species of flora and fauna” and “The Parties shall cooperate, directly or through the competent international organisations, in the conservation and sustainable use of biological diversity in the area to which this Protocol applies.” Six of the seven marine turtle species are listed in the SPA/BD protocol Annex I “List of endangered or threatened species”. Furthermore, minimising incidental catches and eliminating of intentional killings are listed among the priorities of the [Barcelona Convention Marine Turtle regional Action Plan](#).
- The Bern Convention on European Wildlife and Habitats aims to conserve European natural heritage, including marine turtle populations in the Mediterranean, for example (Appendix II - Strictly protected fauna species). The EU aims to fulfil its obligations under the Bern Convention through its Habitats Directive.

Codes of conduct and guidelines endorsed by the EU:

- The [FAO Code of Conduct for Responsible Fishing](#) states that: “Management measures should not only ensure the conservation of target species but also of species belonging to the same ecosystem or associated with or dependent upon the target species”.
- The [FAO International Guidelines for Bycatch Management and Reduction of Discards](#) were endorsed by the FAO Committee on Fisheries (COFI), which includes the EU, at its 29th session in February 2011. They recommend management measures for the conservation of target as well as non-target species.
- The [FAO Voluntary Guidelines on Securing Sustainable Small-Scale Fisheries](#) state that: "Small-scale fisheries should utilise fishing practices that minimise harm to the aquatic environment and associated species and support the sustainability of the resource”.

- The [FAO International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated \(IUU\) Fishing](#) is relevant to the unregulated portion of ST activities that supply the shrimp exported to the EU and which may result in marine turtle bycatch and mortalities.

Other non-legally binding commitments:

- One EU Member State, France, has signed a specific CMS agreement developed for marine turtles, the Memorandum of Understanding on the Conservation and Management of Marine Turtles and their Habitats of the Indian Ocean and South-East Asia (IOSEA).
- The Sustainable Development Goals (SDGs) also call on to “by 2020...end...destructive fishing practices” (SDG 14).

Regional Fisheries Management Organisations

It is important to highlight that no tropical shrimp fisheries are currently regulated by RFMOs. Therefore, the high rate of marine turtle bycatch in those fisheries cannot be tackled through RFMO regulation, which emphasises the need and the legitimacy for an EU regulation to address this global issue.

Furthermore, it is worth highlighting that an [IUCN motion](#) approved in 2020 calls on the EU to adopt import regulations requiring the introduction and implementation of TEDs by all countries exporting wild-caught shrimp to the EU. It urges the EU to ban imports of trawl-caught shrimp from countries that don't adhere to their own national regulations requiring TEDs on ST vessels, thus engaging in dialogue to ensure alignment with the IUU Regulation. This motion was supported by many EU Member States.

Given the agreements to which it is Party, the guidelines it has endorsed and the lack of regional frameworks available within RFMOs, it is incumbent on the EU to tackle the issue of imported marine turtle bycatch as soon as possible. As the world's largest seafood market and given its domestic and international commitments to secure sustainable seafood and tackle declining biodiversity, the EU has a duty to care.

II - EFFICIENCY OF TEDs

A - A very cost-effective solution

If installed properly across a ST fleet, a TED reduces mortality of turtles and other marine megafauna by 97% with very minimal target catch losses (under 2% during comparative towing experiments), whilst increasing productivity of trawling operations by reducing damage to nets and the crushing of the catch (resulting in higher market prices for better quality shrimp).¹¹ Normal fishing operations can be extended, and production can be increased because the TED can maintain a better trawl configuration since the larger items, such as turtles, large rays and sharks do not fill the cod end of the trawl.

Proper TED use can also trigger a reduction of fuel costs since heavy turtles (and other large fauna/objects) are not being towed for hours.¹² Reduction of fuel consumption also represents advantages in terms of reduction of CO₂ emissions. With the ever-increasing cost of fuel (the most important expense for ST fisheries operations), the potential to reduce fuel consumption is increasingly important to ST fisheries. At a time when calls are multiplying to "break the silos" and promote synergies between the various multilateral fora to achieve environmental objectives, the EU as a Party to the Rio Conventions has a duty to put forward and give priority to measures and actions with multiple environmental co-benefits.

Furthermore, the use of TEDs by ST fisheries also benefits other fishers that can catch the commercial fish no longer by-caught by ST fisheries.

Moreover, turtle, shark and ray stocks with healthy populations trigger positive impacts for the ecosystem and the tourism industry. A well-established and sustainable TED programme can also contribute to a fishery's ability to target other environmental issues since the capacities created or developed can be applied to other topics (e.g., see the French Guiana and Gabon case studies developed below).

Last but not least, the reduction of megafauna bycatch also enables quicker processing of catch (reduction of workload by the crew to sort shrimp from the rest of the catch) and reduces the risk of work-related accidents at sea.

¹¹ Wallace, B. P., Lewison, R. L., McDonald, S. L., McDonald, R. K., Kot, C. Y., Kelez, S., ... & Crowder, L. B. (2010). Global patterns of marine turtle bycatch. *Conservation letters*

¹² Gillett, R. (2008). *Global Study of Shrimp Fisheries*. FAO Fisheries Technical Paper 475.

The price of a TED can range from USD 75 to USD 500 depending on the options and choice of materials. It ranges from USD 400 to USD 700 for a complete TED, i.e., a TED including the high-quality grade A aluminium super-shooter style grid device, all webbing (TED extension, reinforcement panels, accelerator funnel, flaps) with hard, high-density flotation, which can be installed in the shrimp trawl net with a single simple cut between the trawl body and cod-end. Though the initial price can seem high, TEDs can last a long time if maintained and used properly.

A TED assembled and set in webbing by the fisher himself (labour intensive) can cost significantly less: about USD 200-400 depending on the options.

TEDs constructed in developing countries with local materials are much less expensive but can be of lesser quality depending on the type of material available.

The installation of a TED does not require fishers to acquire new skills, however it does require initial training to learn how to install it correctly and maintain its performance.

B - Going beyond the standard TED and further conservation implications

Studies conducted in French Guiana¹³ and Suriname show clear indications that TEDs have the potential to do even more than to reduce the bycatch of larger specimens of turtles and sharks. Indeed, one idea that seems to be gaining interest is to reduce the spacing between the bars of the TED to reduce bycatch of smaller elasmobranch, fish, jellyfish and non-target crustaceans.

In French Guiana experiments with the standard TED had showed small reductions in total bycatch and the industry sought improvements in the TED performance.¹⁴ Based on this, the Regional Maritime Fisheries and Aquaculture Committee (CRPMEM) of French Guiana, in partnership with WWF, began experimenting with Trash and Turtle Excluder Devices (TTEDs).¹⁵ The TTED is based on the standard U.S. TED design (i.e. the super-shooter TED), but shows two major differences: a reduced spacing between the deflector bars (5 cm relative to the TED 10.2cm) and the use of flat bars (6 mm width) instead of round bars (12.6 mm diameter). The reduced bar spacing of the TTED, as compared to the TED, may exclude more fish from entering the cod end. Flat bars may improve water flow towards the cod-end, since water encounters less resistance from the 6.3 mm wide flat bars than

¹³ Nalovic M.A & Rieu L. (2009). Vers L'adoption du Système de Sélectivité TTED par les Chalutiers Crevettiers de Guyane. Projet WWF/CRPM.

¹⁴ Duffaud, M.H (2011). Le plan de restauration des tortues marines de Guyane française : bilan et perspectives.

¹⁵ Trash is the common term in French Guiana to describe bycatch.

it does from the 16 mm wide round bars. Increased water turbulence ahead of the TED caused by the wider round bars can lead to deflection of water towards the opening of the TED and blowing open the flaps of the TED, which results in shrimp loss. In preliminary work, the TTED resulted in a 3-27% total bycatch reduction without significant target shrimp loss for the ST industry.¹⁶ The TTED was voluntarily adopted by the industry in March 2008, becoming mandatory in January 2010.

Tests conducted in Surinamese ST fisheries comparing the standard TED to a TTED indicated a 19% increase in shrimp catches with TTED.¹⁷

In 2012 the TTED was also evaluated in the U.S. ST fishery. Comparative towing experiments under standard commercial shrimp trawling operations demonstrated shrimp losses or gains of -4.32%, +6.07%, -1.58% respectively and an overall reduction in the capture weight of sharks (41.1-99.9%), rays and skates (76.5-93.4%) and horseshoe crabs (100%). Seeing that current level of bycatch hinders the recovery of specifically the Black nose shark population, the National Oceanic and Atmospheric Administration (NOAA) is currently preparing to evaluate the bycatch efficiency of a 5.7 cm bar spacing flat bar TED in comparison to a 10 cm bar spacing TED.¹⁸ NOAA has recently received from the government a 2.1 million dollar grant to test it in the Gulf of Mexico ST fishery.

For Costa Rica, the U.S. government certified shrimp trawlers using wider bar spacing (15 cm) than the standard TEDs. The reasoning was that turtle bycatch data showed that these individuals in Costa Rica were rather large. Furthermore, the Costa Rican trawlers were also targeting fish and there was fear amongst industry members that the 10 cm bar spacing of the standard TED would cause significant losses in these target fish and so they chose the increased bar spacing TED. Not all trawl fisheries target only (or mostly) shrimp, and most of them in fact commercialise the fish they catch even if it is not the primary target. So far Costa Rica is the only country to have had this bar spacing exemption granted by the U.S. 609 programme, but trials are also being conducted elsewhere to outfit fish trawlers with larger bar spacing TEDs. Examples include NOAA experiments conducted in 2015 aboard a Chinese-built, Gabonese-operated and flagged trawler¹⁹ or 2018 experiments aboard a Russian-built, Kenyan-flagged, Italian-owned shrimp and fish trawler.²⁰ For these experiments the TED had 14.6 cm and 10 cm bar spacing, respectively and after adjustments there was no indication that targeted fish catch was negatively affected.

¹⁶ Nalovic M.A. & A. Bardiot (2010). Réduction des Effets du Chalutage des Crevettes sur L'écosystème Marin du Plateau des Guyanes.

¹⁷ Meeremans, P., Willems T. And Babb-Echteld Y. (2017) Evaluating Trash-and-Turtle Excluder Devices (TTEDs) for bycatch reduction in Suriname's seabob shrimp trawl fishery.

¹⁸ NOAA Deepwater Horizon Natural Resource Damage Assessment and Restoration (2019) [Reducing Juvenile Sea Turtle Bycatch through Development of Reduced Bar Spacing in Turtle Excluder Devices](#)

¹⁹ Nalovic M.A. & J. Mitchel. (2015) Rapport sur l'efficacité de l'utilisation d'un dispositif d'exclusion des tortues (TED) à bord d'un chalutier Gabonais. NMFS.

²⁰ Nalovic M.A., Kimani E, Wambiji N, Anam R, Fennessy ST. (2019). Report on TED Efficiency Trials Aboard a Kenyan Shrimp Trawler. Unpublished report to WIOMSA. 62 pp. Grant No. MASMA/CP/2043/01

III - WHAT ABOUT EU FISHERIES?

A - EU fisheries in EU waters

In 2019, the EU approved an amendment to the EU's Technical Measures Regulation on fisheries requiring the mandatory use of TEDs for ST in EU waters in the Western Atlantic and the Indian Ocean. French Guiana, the only EU ST fishery to operate in EU waters, has been TED-certified by the U.S. 609 programme since 2010.

In the Mediterranean, the majority of EU and non-EU trawl fisheries are multi-specific (shrimp are not the main target species but are caught opportunistically as components of a varied catch composed of fishes, cephalopods and other crustaceans), with up to 100 species and categories recorded in landings in some areas.²¹ Nevertheless, some non-EU trawling fisheries in the Mediterranean do specifically or predominantly target shrimp, e.g. Tunisian fisheries targeting shrimp a few months per year in Tunisian waters, or Sicilian fisheries deep trawling in waters which Libya considers part of its Exclusive Economic Zone (EEZ) (but which are not associated with turtle bycatch as they operate in deep sea waters).²² In recent years, occurrences of non-indigenous shrimp species usually associated with turtle bycatch are becoming more frequent,²³ suggesting that *Penaeus aztecus* for example, which shows an invasive character and could rapidly further expand its range,²⁴ “might be considered as a new resource for Mediterranean coastal fisheries”.²⁵ Therefore, the possibility of EU fisheries in the Mediterranean targeting those species in the near future should not be excluded.

In the Mediterranean, the General Fisheries Commission of the Mediterranean (GFCM) ensures the conservation and sustainable use of living marine resources. Its scope includes bycatch-related issues, and a recommendation already exists regarding marine turtle bycatch (GFCM/35/2011/4), specifically. GFCM should amend or vote for a new resolution/recommendation to address marine turtle bycatch in the Mediterranean, including in multi-specific trawls and/or potential trawls targeting shrimp in the future.

²¹ Massutí, E., Reñones, O., Carbonell, A., Oliver, P. (1996) Demersal fish communities exploited on the 632 continental shelf and slope off Majorca (Balearic Islands, NW Mediterranean); Caddy, J.F. (2009). Practical issues in choosing a framework for resource assessment and management of Mediterranean and Black Sea fisheries. Mediterranean Marine Science.

²² Marine Stewardship Council BLUFISH PROJECT Stage 1.b – Deeper mapping/Annex III - GSA 16 “In recent years, during the shrimp season, which runs from March to September, about twenty Sicilian trawlers operate almost permanently in international waters off Greece, Turkey, Cyprus, Lebanon, Israel, Egypt and Libya, on areas fishing ranges between 500 and 800 meters deep”.

²³ Galil B.S., Froglija C, Noël P. (2015) Looking back, looking ahead: The CIESM Atlas, Crustaceans; Öztürk, B (2021). Non-indigenous species in the Mediterranean and the Black Sea. Studies and Reviews No. 87 (General Fisheries Commission for the Mediterranean). Rome, FAO.

²⁴ Kampouris T.E., Tiralongo F., Golemaj A, Giovos I., Doumpas N. and Batjakas I.E. (2018) *Penaeus aztecus* Ives, 1891 (Decapoda, Dendrobranchiata, Penaeidae): On the range expansion in Sicilian waters and on the first record from Albanian coast

²⁵ Rabab S. El-Deeb, Moustafa Sarhan, Amal R. Khafage, Fatma A. Abdel Razek, Mohammed Abdel-Wahab, Hamdy A. Omar (2020) Occurrence of *Penaeus aztecus*, Ives, 1891 (Crustacea: Decapoda: Penaeidae) in the coastal water of Alexandria, Egypt.

B - EU fisheries outside of EU waters

EU fisheries outside of EU waters (in areas beyond national jurisdictions and in third countries' EEZs) is covered by the Sustainable Management of External Fishing Fleets (SMEFF) Regulation, which is one of the three pillars of the Common Fisheries Policy (CFP) together with the Regulation on illegal, unreported and unregulated fishing (IUU Regulation) and the Control Regulation.

SFPAs

The presence of EU fisheries in third countries' EEZs is mainly undertaken in the framework of Sustainable Fisheries Partnership Agreements (SFPAs, Article 31 of Regulation EU 1380/2013 on the Common Fisheries Policy, hereafter CFP Basic Regulation). The CFP Basic Regulation requires that SFPAs be limited to surplus catches. Under SFPAs, the EU is granted fishing rights to a third country's EEZ; in return, the coastal State receives payment for the EU's access to fisheries resources, in addition to financial and technical support specifically directed at improving national fisheries governance. The EU requires the achievement of specific results as a condition for payments under the financial support, and is required to closely monitor progress. SFPAs are long-lasting framework treaties supplemented by shorter-term protocols. Currently, the EU has 13 SFPA protocols in force with third countries, among which nine exclusively cover tuna, while four are "mixed" agreements, i.e. multi-species. The "mixed" SFPA protocols in force concern Greenland, Guinea-Bissau, Mauritania and Morocco. Among those, two provide opportunities for EU trawlers to catch shrimp, which could be associated with turtle bycatch under the current circumstances of no EU legal framework requiring TEDs in the EU fishing fleet:

- On 15 November 2021, the EU and Mauritania signed a new SFPA for a duration of six years, tacitly renewable, as well as a new protocol. Regarding shrimp, the allocation is as follows: "Vessels fishing for crustaceans other than spiny lobster and crab: Spain: 4,150 tonnes, Italy: 600 tonnes, Portugal: 250 tonnes". There is no data regarding whether these EU Member States use TEDs or not in Mauritanian waters, which is not a requirement under the current protocol, nor under the previous one. It is worth noting that the first implementing protocol of the previous SFPA (2006-2021) mentioned the obligation for bottom-trawling shrimp vessels to use selectivity grids for trawls (i.e. TEDs) from 31 December 2009, but this disposition was dropped in the following protocols.
- The SFPA with Guinea-Bissau, under the current protocol (2019-2024), fixes the allocation as follows: "During the first and second years of application of the Protocol, based on a system of fishing effort (Gross Register Tonnage, GRT): (a) freezer shrimp trawlers: Spain 2,500 GRT; Greece 140 GRT; Portugal 1,060 GRT" and "from the third year of application of the Protocol,

based on a system setting catch limits for each species (Total Allowable Catch): (a) freezer shrimp trawlers: Spain: 1,650 tonnes; Greece: 100 tonnes; Portugal: 750 tonnes”. Again, there is no data regarding whether EU vessels use TEDs or not to catch shrimp in the waters of Guinea-Bissau.

The cold-water shrimp trawled in the waters of Greenland under the EU/Greenland SFPA does not overlap with marine turtle habitats.

The SFPA with Morocco entered into force on 18 July 2019. Its first implementing protocol concludes after four years and does not include shrimp trawling, but the possibility always remains that it may be included in a future implementing protocol, beyond 2023.

Moreover, the seven currently “dormant” SFPAs (i.e., with no protocol currently in force) could be reactivated in the future and new SFPAs could be negotiated with other countries, so the possibility of new ST activities from EU vessels must not be disregarded.²⁶

It should be noted that the information on the exact species and volume actually caught under the existing SFPAs is not publicly available.

Private Agreements

EU fishing operators also have the possibility to conclude private agreements directly with third country authorities. This process is known as “fishing under direct authorisations” and is permitted in those countries where the EU does not have an SFPA.²⁷ Some of those private agreements are chartering agreements, under which EU-flagged vessels fish a share of the resources within a non-EU coastal State’s EEZ in collaboration with local companies. According to the 2017 SMEFF Regulation, “any Union vessel fishing outside Union waters should be authorised by its flag Member State and monitored accordingly, irrespective of where it operates and the framework under which it does so”. The public part of the electronic fishing authorisation database lists the vessels fishing under private agreements, as well their fishing area and very broad categories of fisheries (although it should theoretically give access to the target species or species group).²⁸ It does not give access to the exact species, type of fishing gear or record of catches, but the EC should be able to access this information

²⁶ The currently ‘dormant’ SFPAs are: Equatorial Guinea, Kiribati, Liberia, Madagascar, Micronesia, Mozambique, and the Solomon Islands.

²⁷ Guggisberg, S. (2019). The EU’s Regulation on the Sustainable Management of External Fishing Fleets: International and European Law Perspectives. *The International Journal of Marine and Coastal Law*

²⁸ SMEFF Regulation, Art. 39.2 “*The list of all fishing authorisations issued under Titles II and III in the database shall be publicly accessible and contain all of the following information:*

(a) *the name and flag of the vessel and its CFR and IMO numbers where required under Union law;*
(b) *the type of authorisation including target species or species group(s); and*
(c) *the authorised time and area of fishing operation (start and end dates; fishing area).”*

via the secure (non-public) part of the electronic fishing authorisation database.²⁹ In any case, nothing prevents those agreements to include shrimp trawling possibilities, currently or in the future.

In 2016-2017, the Non-Governmental Organisation (NGO) Oceana carried out a review of information on private agreements for the period 2010-2016.³⁰ The review revealed that Spanish and French-flagged vessels were particularly active under such agreements and showed that most of those agreements concerned tuna species. The number of those private agreements is significant, so the chances that a part of them concern shrimp species associated with turtle bycatch is not negligible.

C - How can policymakers act?

The current status of marine turtle populations, EU legislation regarding legal and sustainable seafood, in addition to ongoing international environmental and fisheries-related commitments from the EU, make it explicitly clear that a regulation for EU ST in both EU and third country waters should urgently be considered. This should be done prior to or at least in parallel to undertaking a regulation process for ST fisheries exporting to the EU. Indeed, some of these EU ST are likely to be deemed comparable to the ST fisheries already exporting to the EU. This is a crucial point, given that the same norms will need to be applied to equivalent products, whether imported or of domestic origin. A WTO rule stipulates that imported products shall not be accorded a treatment less favourable than that accorded to like products of domestic origin. Shrimp harvested by EU fisheries in EU waters are, without a doubt, considered “products of domestic origin”; but shrimp harvested in third country waters by EU vessels could also be considered “products of domestic origin”. Therefore, the use of TEDs should be made mandatory for EU vessels in all future SFPA protocols and in all future private agreements involving shrimp capture fisheries potentially associated with turtle bycatch.

Once the use of TEDs becomes mandatory for all EU trawling fisheries targeting shrimp and that are at risk of being associated with turtle bycatch, it will be a logical step to require the use of TEDs for those equivalent fisheries from third countries that wish to export to the EU, unless they can demonstrate they are not at risk of turtle bycatch (e.g. deep water shrimp fishing). As mentioned in [the previous version of Regulation n° 1379/2013 of the European Parliament and of the Council on the common organisations of the markets in fishery and aquaculture products](#), “it is necessary to ensure that imported products entering the Union market comply with the same requirements and marketing standards that Union producers have to comply with.”

²⁹ SMEFF Regulation, Art. 39.1 “The Commission shall set up and maintain an electronic Union fishing authorisation database containing all fishing authorisations granted in accordance with Titles II and III, made of a public part and a secure part. That database shall: (a) record all information submitted in accordance with the Annex and other information submitted to the European Commission for the purpose of issuing fishing authorisations under Titles II and III, including the name, city, country of residence of the owner and of up to five main beneficial owners, and display the status of each authorisation as soon as possible; (b) be used for data and information exchange between the European Commission and a Member State; and (c) be used for the purposes of sustainable management of fishing fleets as well as for the purposes of control only.”

³⁰ [Oceana, Pew, EJF, WWF \(2016\) European vessels fishing under the radar, The need to regulate private and chartering agreements for access to external waters](#)

IV - REVIEW OF THE SECTION 609 OF THE U.S. PUBLIC LAW 101-162 AND THE WORLD TRADE ORGANIZATION (WTO) CASES

A - Overview of the 609 U.S. regulation

In 1987, the U.S. adopted regulations implementing mandatory TED usage requirements in the U.S. ST industry. In 1989, they adopted [Section 609 of the U.S. Public Law 101-162](#) providing that wild-caught shrimp or products from wild-caught shrimp harvested with commercial fishing technology that may adversely affect protected marine turtles species may not be imported into the U.S., unless a State Department agent in charge of Section 609 implementation (hereafter, 609 agent) certifies to Congress that the exporting country harvests shrimp under conditions that minimise the impact on endangered marine turtle populations. **It has to be noted that Section 609 text covers all “wild-caught shrimp harvested with commercial fishing technology that may adversely affect protected sea turtles species”, regardless of whether they are caught by a “shrimp only” trawling fishery or a multi-specific trawling fishery.**

Certification pursuant to Section 609 can occur in two possible ways:

1. the exporting country provides evidence of the adoption of a regulatory programme governing the incidental taking of marine turtles in the course of commercial shrimp trawl harvesting that is comparable to the programme of the U.S., and the average rate of the incidental taking by the vessels of that country is comparable to that of the U.S.; or
2. the particular fishing environment of the exporting country does not pose a threat of incidental taking of marine turtles in the course of commercial shrimp trawl harvesting.

The first way to obtain certification usually involves implementing a TED programme comparable in effectiveness to the ones in place in the U.S., which is evaluated after visits by the State Department and NOAA National Marine Fisheries Service (NMFS) personnel. They verify that local legislation requiring shrimp trawls to use TEDs is in force, and that the government effectively monitors compliance and imposes appropriate sanctions for violations.

The second way to obtain certification typically applies to fisheries where shrimp is collected in a way that does not endanger marine turtles, or where shrimp harvesting occurs only in cold or deep waters, where the risk of taking marine turtles is negligible. To certify countries under this category, the State

Department relies on a wide range of information from a variety of sources. There are no set criteria in terms of areas or depth for determining that a fishery does not pose a threat of marine turtle bycatch: the determination is made on a case-by-case basis. The State Department can also certify individual fisheries when certifying all of a country's ST fisheries is not feasible. The certifications are reviewed annually.

B - The U.S. 609 certification process

The 609 agent is in charge of conducting the exchanges with officials representing the government seeking the 609 certification. They are a diplomat and do not necessarily have any background in fisheries or conservation. As such, to assess the viability of third countries' TED programmes, they call upon the expertise of a TED specialist from the NOAA's harvesting systems branch division. Together, they visit countries on an annual or biannual basis, depending on the level of TED compliance of the ST sector. Their initial and official contacts are governmental officials, but their regular exchanges are conducted with the local fishing industry.

Initial TED introductory visit

Prior to receiving 609 certification, a country's government officials must send, in writing, a formal request to the 609 agent to access the U.S. shrimp market. This initiates a series of exchanges whereby the 609 agent requests information on the interested countries fishing sector and in particular the ST sector. They also enquire about enforcement capacities, which are a crucial component of a successful TED programme. Following this, an "introductory visit" is organised. During an in-briefing meeting between government officials the 609 agent provides historical information on the TED programme and the criteria for eligibility. The 609 agent and the NOAA expert visit the ST fishery (boats, docks, net shops, actual trawl nets, etc.) and meet with industry members (boat owners, captains, net menders, etc.). An out-briefing then takes place with government officials and industry members. Stakeholders ask questions and raise any concerns about the upcoming implementation activities such as training of government agents, nets menders, welders or even captains on the various components of TED technology. Training activities usually take place after the TED introductory visit, but can also take place during the introductory visit.³¹ One of the important particularities of the 609 certification programme and NOAA is their adaptability to address individual countries' singularities. TED programmes are tailored to fit each country, the same way a TED needs to be tailored to each fishery. The introductory visit can be repeated if the 609 agent feels that there is a need and serious interest

³¹ This was for example the case in French Guiana in 2009.

and motivation in a country to sustainably pursue TED certification. NOAA independently from the 609 programme can also provide technical support to a nation prior to the introductory visit.³²

TED certification visit

After the introductory visit and the training, and once the 609 agent is confident that there have been sufficient advances to justify a TED certification, a visit is programmed with the host government. Upon this visit, as upon all TED visits, an in-briefing meeting is organised to further clarify to government officials what the 609 programme in terms of compliance expects and the criteria used to determine this compliance level. The 609 agent requests:

- to have access to all the documentation that proves that the TED is obligatory by law;
- to have access to all the docks where shrimp boats are present so as to be able to inspect TEDs that should be installed on the boats;
- to observe national inspection agents conducting the inspections so as to be able to check how the process of TED inspections is conducted and to provide input on how to best conduct this process;
- to visit the net shops to check that the materials necessary to fix TEDs are available and to see TEDs that have been fixed or are in maintenance to provide feedback to the net mender on potential ways of improvement;
- to be provided with statistics attesting that inspection activities are conducted by national government officials both at the docks and at sea;
- to meet with industry members or industry representatives;
- in some cases, to meet with NGOs supporting the country's TED ambitions.

The 609 agent and NOAA expert then present the results of their findings during an out-briefing meeting to the host government. They provide their calculations used to determine the level of compliance (100% compliance indicates that there was not a single infraction noted on any vessel and on any TED). When a grade is attributed around 50% compliance rate for example, the 609 agent explains that during the next certification visit, and to maintain a good standing within the 609 programme, it is expected that the grade improves. Industry members are then invited to join the meeting and also receive the information on the level of compliance and recommendations. This is the occasion for them to ask questions and express any concerns. They can also request further support from NOAA such as specific workshops, which can be programmed for the next certification visit.

³² This was the case for example when NOAA experts travelled to Gabon in 2007, 2008, 2010 to conduct TED implementation activities prior to Gabon's introductory visit in 2013

Once back in Washington, the 609 agent prepares an internal report on the certification visits. All his reports are later synthesised and recommendations are prepared by the 609 agent as to which certifications should be maintained and which ones should be revoked.

Follow-up TED certification visits are planned annually or biannually depending on the evaluated TED compliance level. If a country is just starting its TED programme or if the 609 agent feels that a country is not committed enough to the TED programme, they may plan a follow-up visit in the following year. If they feel confident with the level of compliance of a particular country, they usually arrange for the visit to take place two years later.

Annual attribution of TED certification

On May 1st of each year the U.S. Congress validates the list of countries that will maintain their TED certification and countries that are exempt from TED certification. The Congress has a margin of appreciation with regards to the reports and recommendations from the 609 agent. For example, the 609 agent can determine that a country should not be considered for certification since national inspection agents did not proceed to any inspections of TEDs on shrimp trawling boats whether at sea or at the docks for several years, as this indicates that the country does not have a TED programme that is equivalent to the U.S. one. Yet, 609 TED inspections might show that the boats were effectively using TEDs. In such a case, for instance, Congress can decide to maintain certification, often considering circumstantial issues.³³

Countries exempt from TED certification are those where shrimp fishing activities are conducted without posing a threat to marine turtles. This can include fisheries of shrimp caught through artisanal fishing methods, shrimp captured in cold waters (such as Argentinian pink shrimp) or shrimp harvested in very deep waters (such as the Italian Scarlett trawl fishery occurring in the Mediterranean at 900 m in depth).

The list of annual certifications (countries and specific fisheries from certain countries) is published on the U.S. federal register and on the U.S. Congress website.

³³ This was the case for French Guiana with no inspections reported by the Department of maritime affairs in 2015, 2016 and 2017, yet, inspections by the 609 agent determined that TEDs were in fact being used independently of French inspections and Congress determined that TED certification should be maintained.

C - A focus on NOAA's TED training capacity

NOAA TED training includes construction of a TED from locally available material. NOAA experts can train welders to build solid TEDs, but also captains to adjust TEDs and inspection agents to inspect TED installations.

The NOAA Harvesting Systems Branch Laboratory also offers a 1-week course in English (the “TED University” programme) to stakeholders willing to be involved with TED implementation in third countries. For non-English speakers, arrangements can be made to have a translator present during the training session. The training covers:

- Fluid dynamics of shrimp trawls
- Theory and different models of TEDs
- Basic TED construction
- TED installation methods
- Manipulation and reparation of TEDs
- Fixing and problem shooting of TEDs
- Testing TEDs in situ
- TED inspection procedure

The beneficiaries of those sessions receive the necessary skill sets to be able to follow and support TED implementation activities at national level, and have the opportunity to build direct working relationships with NOAA TED personnel.

The U.S. government has extensive experience in helping countries meet the requirements of Section 609 of Public Law 101-162 and has an interest in mitigating marine turtle bycatch irrespective of the export destinations. They facilitated implementation of TED and certified the ST fisheries in French Guiana and Gabon, which do not currently export wild-caught shrimp to the US. This presents a great opportunity for the EU and U.S. to collaborate in efforts to support countries to meet potential future criteria for exporting wild-caught shrimp to the EU.

D - The “Shrimp-Turtle” WTO case and how it was dealt with and resolved

Originally, Section 609 of U.S. Public Law 101-102 prohibited importation to the U.S. of shrimp harvested with fishing technology that may adversely affect marine turtles — except when the harvesting nations were certified to have regulatory programmes that were “essentially the same” as the U.S. regulations including mandatory use of TEDs, and an incidental take-rate comparable to that of the US, or that the particular fishing environment of the harvesting nation did not pose a threat to marine turtles.

In 1997, India, Malaysia, Pakistan and Thailand brought a joint complaint to the WTO Dispute Settlement Body against this ban.

An important part of the discussions that took place revolved around whether the turtle conservation measures that were put in place in those countries were sufficient to protect turtles and saw the five Asian countries arguing that TEDs were not necessary in their waters, that TEDs were costly and not that effective.

They also claimed that the ban was inconsistent with Article I of the [1994 General Agreement on Tariffs and Trade](#) (hereafter, GATT 1994) on the *most-favoured-nation* principle, because identical shrimp and shrimp products from different countries were treated differently by the U.S. based on the method of harvest and the policies of the government under whose jurisdiction the shrimp was harvested.

Last but not least, they argued that the ban, as applied, was also inconsistent with Article I of the GATT 1994 because initially affected nations had been granted a phase-in period of 3 years, while newly affected nations had received only a 4 months' notice before shrimp and shrimp products harvested without use of TEDs would be refused entry into the U.S. This was effectively the case because the original guidelines (1991) detailing the ban and the certification process limited the ban to countries in the wider Caribbean/western Atlantic region and granted these countries a 3-year phase-in period. On 29 December 1995, the U.S. Court of International Trade had held that this violated Section 609 and directed the Department of State to extend the ban worldwide no later than 1 May 1996. On 10 April 1996, the Court refused a request by the Department of State to postpone this deadline. On 19 April 1996, the U.S. issued new guidelines, extending Section 609 to shrimp harvested in all foreign countries as of the 1st of May 1996. Thus, if initially affected nations had been given the opportunity to implement the required use of TEDs without substantially interrupting their shrimp exports to the U.S., that had not been the case for the most recently affected countries, among which the prosecutors. They argued that the shrimp from initially affected countries had therefore been given an "advantage, favour, privilege or immunity" over like products originating in the territories of other countries.

The U.S. argued that GATT Article XX provides for a number of special cases in which WTO members may be exempted from GATT rules.³⁴ Two exceptions relate in particular to the protection of the environment: WTO members may adopt measures inconsistent with GATT but "necessary for the protection of human and animal health and life or for the preservation of plants" (paragraph b) or "relating to the conservation of exhaustible natural resources" (paragraph g).

³⁴ GATT Article XX: General Exceptions: "*Subject to the requirement that such measures are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade, nothing in this Agreement shall be construed to prevent the adoption or enforcement by any contracting party of measures: (...) (b) necessary to protect human, animal or plant life or health; (...) (g) relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption; (...)*"

Yet, for an exception to be justified under Article XX, a country must prove that its measure falls under at least one of the ten possible exceptions case under Article XX, e.g. paragraph b and g, but also that the measure is not applied in a manner which would constitute “a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail”, and “a disguised restriction on international trade”.

In the end, the U.S. lost the case both at [first instance](#) (the dispute resolution Panel) and appeal (the Appellate Body), not because of the environmental measure they wanted to impose on the importing fisheries, but because they had discriminated between WTO members. The Appellate Body underlined that conditioning market access on whether exporting members comply with a policy unilaterally prescribed by the importing member is totally within the scope of the exceptions of Article XX. But it found that **several aspects of the application of Section 609** (but not Section 609 itself), in their cumulative effect, **amounted to a violation of the obligations of the U.S under the GATT Article XX**. First, they had **provided countries in the wider Caribbean/western Atlantic region technical and financial assistance and longer transition periods for their fishers to start using TEDs but did not give the same advantages to the four countries that filed the complaint**. Secondly, the State Department **imposed an inflexible requirement that all countries adopt “essentially the same” regulations. Yet, Article XX requires that differing conditions among countries be accounted for**. Thirdly, Section 609 directs the Department of State to initiate negotiations with all shrimp harvesting nations to develop treaties to protect marine turtles, and **the U.S. had completed an international agreement with Caribbean and Latin American countries but failed to make good faith efforts to negotiate an agreement with Asian countries**. According to the Appellate Body, all this constituted “arbitrary and unjustifiable discrimination” inconsistent with Article XX.

Below is an extract of the Appeal ruling:

“In reaching these conclusions, we wish to underscore what we have not decided in this appeal. We have not decided that the protection and preservation of the environment is of no significance to the Members of the WTO. Clearly, it is. We have not decided that the sovereign nations that are Members of the WTO cannot adopt effective measures to protect endangered species, such as marine turtles. Clearly, they can and should. And we have not decided that sovereign states should not act together bilaterally, plurilaterally or multilaterally, either within the WTO or in other international fora, to protect endangered species or to otherwise protect the environment. Clearly, they should and do.

What we have decided in this appeal is simply this: although the measure of the United States in dispute in this appeal serves an environmental objective that is recognized as legitimate under paragraph (g) of Article XX [i.e. 20] of the GATT 1994, this measure has been applied by the United States in a manner which constitutes arbitrary and unjustifiable discrimination between Members of the WTO, contrary to the requirements of the chapeau of Article XX. For all of the specific reasons outlined in this Report, this measure does not qualify for the exemption that Article XX of the GATT

1994 affords to measures which serve certain recognized, legitimate environmental purposes but which, at the same time, are not applied in a manner that constitutes a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail or a disguised restriction on international trade (...).”

Following this ruling, in 1999 the U.S. amended its regulations (the “[Revised Guidelines](#)”) to require marine turtle conservation programmes that were “comparable in effectiveness” to the U.S. programme and no longer “essentially the same”. The Revised Guidelines also require the State Department to “take fully into account any demonstrated differences between the shrimp fishing conditions in the United States and those in other nations”. Malaysia challenged the corrective measures taken by the U.S. and initiated new proceedings in 2001, but lost the case. The WTO Dispute Settlement Body found that, since the revised measure allowed exporting countries to apply programmes not based on the mandatory use of TEDs but on the adoption of a programme comparable in effectiveness, and offered technical assistance to develop the use of TEDs in third countries, the measure did not constitute a disguised restriction on international trade and was now applied in a manner that no longer constituted a means of “unjustifiable or arbitrary discrimination”.

This case is significant because the WTO recognised, for the first time, a country’s right to restrict an import based on its production process and not on the product itself.

E - What is needed from an EU perspective to avoid the same case and legislation issue when the EU regulation on wild-caught shrimp import will be implemented

Several lessons can be drawn from the “Shrimp-Turtle” WTO case that involved the U.S.

1. Ensure the EU’s own ST fisheries comply with rules similar to those required of import ST fisheries

The first thing the EU should ensure in order to avoid any attempt from an exporting country to initiate a trade dispute at the WTO, is that it is in a position to **demonstrate that it requires its own ST fisheries to comply with rules similar to those required of import ST fisheries**, therefore that it has a regulation requesting all EU trawling fisheries targeting shrimps and at risk of being associated with turtle bycatch to use TEDs, whether they operate inside or outside EU waters. This is also crucial to ensure a level playing field between EU and non-EU operators.

As mentioned above, the EU has numerous multi-specific trawling fisheries, especially in the Mediterranean, where some target up to a hundred different species. The distinction between fisheries targeting only shrimps and fisheries targeting several species including shrimps is not specified in the USA 609 regulation, which covers all shrimp “harvested with commercial fishing technology that may adversely affect protected sea turtles species”. The EU could consider limiting its regulation to trawling

fisheries targeting specifically or predominantly shrimp, in order to discriminate them from the above mentioned multi-specific trawling fisheries. Yet the question can and will legitimately be raised of what “catching predominantly” means exactly. Does this imply that the weight of landed shrimps must be superior to the total weight of other landed species, or superior to the weight of any other landed species? Whatever the response to this is, it must also be considered that the percentage of shrimp catches versus other catches can evolve according to the season and also with time. A possible reasonable way out could be for the regulation to consider the trawling fisheries that: 1) do target shrimp, whether specifically, predominantly or partially; and 2) pose a threat of bycatch to marine turtles. This would possibly cover, now or in the future, several of the existing EU multi-specific fisheries.

For a long time, it was considered a technical challenge to use TEDs on multi-specific trawling fisheries in an efficient way (i.e. effectively reduce bycatch of untargeted fauna without hindering catches of the targeted species).³⁵ Nevertheless, in more recent times TEDs have proven to be usable in these types of fisheries. According to several studies,³⁶ including a 2019 study,³⁷ tests of TEDs in Mediterranean bottom trawling fisheries demonstrated that this tool did not affect the commercial catch, yet did reduce bycatch. Published results indicate that flexible TEDs (made of a flexible plastic) are particularly adapted to those multi-specific fisheries.³⁸

Furthermore, there is a clear trend that shows that the feasibility of using TEDs in conjunction with a variety of trawl fisheries, including multi-specific trawl fisheries, will only increase with time based on scientific advice resulting from the ongoing research with TEDs and its adaptability to different trawl fisheries (for example in Spain³⁹ and Italy⁴⁰). **If the EU were to foster, promote and sponsor TED research, innovations and trials, the rhythm of progress in this regard would be accelerated.** This would technically benefit EU and non-EU trawling fisheries including those whose non-shrimp products end up on EU markets.

³⁵ Casale P. (2011). Marine turtle bycatch in the Mediterranean. *Fish and Fisheries* 12(3):299 - 316.

³⁶ Sala, A., Lucchetti, A., and Affronte, M. (2011). Effects of Turtle Excluder Devices on bycatch and discard reduction in the demersal fisheries of Mediterranean Sea. *Aquat. Living Resour.* 24, 183–192. doi: 10.1051/alr/20111109

³⁷ Lucchetti A, Bargione G, Petetta A, Vasapollo C and Virgili M (2019) Reducing Sea Turtle Bycatch in the Mediterranean Mixed Demersal Fisheries. *Front. Mar. Sci.* 6:387. doi: 10.3389/fmars.2019.00387

³⁸ Vasapollo C, Virgili M, Petetta A, Bargione G, Sala A, Lucchetti A (2019) Bottom trawl catch comparison in the Mediterranean Sea: Flexible Turtle Excluder Device (TED) vs traditional gear. *PLoS ONE* 14(12): e0216023. <https://doi.org/10.1371/journal.pone.0216023>

³⁹ Bitón, S. and al. (2009) First experiences using Turtle Excluder Device (TED) in bottom trawlers in the Mediterranean Sea. Ministerio de Medio ambiente y Medio Rural y Marino ISBN: 978-84-613-1854-4; Bitón, S. (2009). *Biología de las tortugas marinas e incidencia de la pesca de arrastre en su conservación en el Mediterráneo y Golfo de Cádiz*. Monografías de la Asociación Chelonia. Vol. I. Madrid. 117 p; Bitón, S., and al (2011). Assessing the use of turtle excluder devices (TEDs) in bottom trawlers in the Western Mediterranean Sea: a preliminary study. *Marine Turtle Newsletter* 131: 15–16.

⁴⁰ Lucchetti A. et al. (2016). Flexible Turtle Excluder Device (TED): an effective tool for Mediterranean coastal multispecies bottom trawl fisheries: *Aquat. Living Resour.* 29, 201

2. Provide the same conditions to all importing countries in applying the new regulation...

The second aspect that the EU has to consider is the **necessity to provide the same conditions to all importing countries in applying its regulation**, i.e. same deadline before TED use is mandatory for fisheries exporting shrimp. If the EU designs its regulation to be applicable universally right from the inception, it will avoid finding itself in the same situation as the U.S. found themselves, with two groups of countries affected at two different periods of time by the U.S. TED law. The **same conditions of support must also be provided for all countries requesting the EU's help in order to acquire TEDs, get trained to use them and for long-term maintenance and control/inspection**. This can be easily designed by providing a **universally applicable standard procedure/process for third countries to request this support**. However, anticipating the risk that some countries will wait until the last moment before the deadline to request this support, **it should be made clear how this support will be laid out and also that support will be attributed transparently and on a first come, first served basis**. This will prevent multiple countries from simultaneously requesting support just before the regulatory deadline.

3. ...but design and apply the regulation to be flexible enough to take into account specific situations

Finally, the EU should design and apply its regulation to be **flexible enough to take into account specific conditions within individual countries**: leaving the door open to different types of turtle protection systems as long as they are as efficient as the one applied for EU fisheries (even if so far in practice no country has been able to implement a system as efficient as TEDs); providing enforcement capacities in places where there are none, develop the TED certification as a grading process (saying to the fishers "you are currently here, next year there must be improvement, you need to be there"). **This will cut the ground away from any potential accusation of discrimination among WTO members.**

VI - POSSIBILITIES TO INTRODUCE A TED REQUIREMENT WITHIN THE EXISTING EU LEGAL FRAMEWORK AND FIRST DRAFT FOR A SPECIFIC EU REGULATION ON IMPORTATION OF WILD-CAUGHT SHRIMP

As Karmenu Vella, Director of the EU Directorate-General for Maritime Affairs and Fisheries (DG MARE), responded in 2017 to the French minister in charge of ecology, Ségolène Royal, about implementing TEDs for imports of wild-caught shrimp: “Such an action would only be possible if the EU imposed the same restrictions (mandatory TED use) on its own fisheries, otherwise it would be considered incompatible with the WTO rules due to its discriminatory character”. Indeed, to avoid any potential WTO dispute, the EU must have a TED regulation covering all current and future EU vessels (and non-EU vessels fishing in European waters) trawling for shrimp with a potential impact on marine turtles.

A - TED requirements for EU fisheries, inside and outside EU waters, within existing EU regulation

The CFP is the legal framework for managing fish stocks both within the EU (by EU and non-EU vessels) and for EU vessels outside of EU waters.

The 2019 [Technical Measures Regulation](#) covers EU and non-EU vessels fishing in EU waters, as well as EU vessels fishing outside of EU waters.

As there is no exhaustive single database regarding the whole scope of EU-flagged vessels trawling for shrimp outside of EU waters, nor of non-EU vessels trawling for shrimp inside EU waters, the EC would need to **conduct an audit of those fisheries that could be associated with turtle bycatch**; the column “Area” and “Species” of the Technical Measures Regulation could then be redefined accordingly.

Annex XIII Part C of the 2019 Technical Measures Regulation could, therefore, be amended as follows:

PART C

Marine turtles

1. Fisheries in which the use of a turtle excluder device is mandatory.

1.1. It shall be prohibited for vessels to use the fishing gear specified below in the ~~specific~~ areas as defined below without the simultaneous use of a turtle excluder device.

<i>Area</i>	<i>Species</i>	<i>Gear</i>
<i>Union waters in the Indian Ocean and the West Atlantic and non-Union waters worldwide</i>	<i>Shrimps (Penaeus spp., Xiphopenaeus kroyeri) All shrimp species whose capture is susceptible to be associated with marine turtle bycatch.</i>	<i>Any shrimp trawl</i>

As foreseen in the Technical Measures Regulation, the EC should adopt an implementing Act to establish detailed rules for the specification of TEDs as described in Appendix 4 of this report.

- If, for some reason, the option of amending the Technical Measures Regulation were to be discarded, ST fisheries outside of the EU could be targeted through the [Regulation on the sustainable management of external fishing fleets](#) (SMEFF Regulation). If this option is chosen, another regulation should then be identified to target EU ST fisheries within EU waters, as the SMEFF Regulation focuses exclusively on the external dimension of the CFP, i.e. the activities of EU vessels outside of EU waters.

B - Regulating EU imports from shrimp trawling fisheries

Several options, including the elaboration of a new regulation, have been investigated and are described below:

- EU IUU Regulation: There is potential for EU authorities to employ the [EU IUU Regulation](#) in their relationships with countries that mandate the use of TEDs in their national wild-capture shrimp fisheries, but are found to not adhere to their own national regulations. According to the Regulation,

“a fishing vessel shall be presumed to be engaged in IUU fishing if it is shown that, contrary to the conservation and management measures applicable in the fishing area concerned, it has (...) used prohibited or non-compliant fishing gear” and “illegal fishing means fishing activities (...) conducted by fishing vessels in violation of national laws or international obligations, including those undertaken by cooperating States to a relevant regional fisheries management organisation”. Therefore, the fisheries operating in countries with a TED regulation and which do not respect it are included in the scope of this Regulation and, as per article 12.1, “the import of fishery products obtained from IUU fishing shall be prohibited”. The EU could, therefore, refuse exports of shrimp from trawling fisheries operating in countries where TED use is mandatory but not enforced, until those fisheries demonstrate that they did use TEDs.

Of the six main wild-capture shrimp exporting countries (Bangladesh, India, Indonesia, Madagascar, Thailand, and Viet Nam), only Viet Nam does not have a TED regulation; yet, in the other five countries, there is no effective compliance with the national TED regulations. Brazil and Mozambique, which also export wild-caught shrimp to the EU, also have a TED regulation that is not respected. Efforts should focus on working with these countries to better comply with their national regulations. However, the principal weakness of this option is that it would only cover exporting countries that already have a TED regulation in place in their national legislation. Moreover, relying on national legislation is risky because countries can repeal their TED regulation. If they do so, shrimp from fisheries that do not employ TEDs would not be illegal, and there would therefore be no legal basis under the EU IUU Regulation to prohibit their import.

- **Bilateral agreements**: The EU could insert a TED exigence clause for ST fisheries in every new/ revised trade agreement it concludes with a third country. For example, as mentioned above, among the main exporting countries, only Viet Nam does not have a TED regulation, but Viet Nam is a country with which the EU has a free-trade agreement ([Council Decision 2019/753 of 30 March 2020](#)) under which the EU removes tariffs on 86.5% of Viet Nam’s seafood exports in the first three years, 90.3% in the first five years, and completely after seven years. Shrimp and shrimp products from Viet Nam benefit from this reduced tax,⁴¹ meaning an increase of Vietnamese seafood imports to the EU can be expected,⁴² including wild-caught shrimp.

In 2019, Viet Nam's export value of shrimp products reached US\$ 690 million, with the EU being its largest market. Introducing TED requirements in the revision of this bilateral agreement could, therefore, have a powerful impact. Nevertheless, relying on bilateral trade agreements presents two disadvantages: first, it is a long-term solution as it depends on future or revised agreements; second, it is a risky solution as countries with no trade agreement with the EU will be able to export to the EU

⁴¹ <https://vietnamnews.vn/economy/772418/viet-nam-begins-agricultural-exports-to-eu-as-trade-deal-cuts-tariffs.html>

⁴² <https://tongcucthuysan.gov.vn/en-us/fisheries-trading/doc-tin/015480/2020-12-22/it-is-an-opportunity-for-vietnam-to-export-seafood-when-the-evfta-agreement-is-approved>

shrimp harvested without TEDs. Furthermore, this solution will not alleviate EU duties to require TED use to its own ST fisheries when they are at risk of causing marine turtle bycatch (to avoid any WTO dispute).

- Import Regulation relying on due-diligence and on the first marketer: another possibility would be to introduce a EU regulation requiring companies which first place on the market shrimp imported to the EU to ensure that the shrimp is not associated with turtle bycatch. The new regulation could for instance take inspiration from the EC proposal for a Regulation to curb EU-driven deforestation and forest degradation. Companies first placing products on the EU market would thus have to carry out a risk assessment and fill out due diligence statements before the product is placed on the market. They would notably be requested to collect detailed information on the time and place (including geographical coordinates) where the shrimp was harvested and on the fishing methods, name and contact of their suppliers and whom they supplied to, as well as information proving that the products are not associated with marine turtle bycatch, etc.

Companies would need to react quickly to changes in fisheries practices. A fishery that is not “turtle-safe” could become “turtle-safe” if it adopts TEDs, for example. Of course, the opposite would then also be true.

In terms of monitoring, all EU national administrations would control the companies, but the companies may not necessarily have the means and the will to control the quality of the information they are provided with by the fisheries.

- Import regulation based on certification: given the above, the most suitable and effective option would be the adoption of a specific European import regulation requesting TEDs for all ST fisheries at risk of being associated with turtle bycatch and willing to start or continue exporting shrimp or shrimp products to the EU. Similar to the existing US 609 Regulation, this would imply on-site visits to deliver initial authorisation certificates to fisheries that wish to export to the EU and regular controls to ensure that TEDs are used efficiently for certificates to be renewed.

Below is a proposal of a first draft for an EU regulation restraining shrimp imports from ST fisheries that impact marine turtle population.

**REGULATION (EU) 20xx/xxx OF THE EUROPEAN PARLIAMENT AND OF THE
COUNCIL**

of xx xx xxxx

on importation of wild-caught shrimp

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty on the Functioning of the European Union, and in particular Article 207(2) thereof,

Having regard to the proposal from the European Commission,

(...)

Whereas:

- (1) The common commercial policy should be based on uniform principles.
- (2) The European Community concluded the Agreement establishing the World Trade Organization ('WTO'). Annex 1A to that Agreement contains, inter alia, the General Agreement on Tariffs and Trade 1994 ('GATT 1994')
- (3) (...)

HAVE ADOPTED THIS REGULATION:

Article 1

The importation of shrimp or products from shrimp harvested with commercial fishing technology which may adversely affect species of marine turtles shall be prohibited no later than XX XX 202X, except as provided in Article 2.

Article 2

The ban on importation of shrimp or products from shrimp pursuant to Article 1 shall not apply if:

- the exporting country demonstrates to the European Commission no later than XX XX 202X, and annually thereafter, that it has adopted regulatory measures governing the incidental taking of marine turtles in the course of shrimp harvesting that is comparable to that of the European Union shrimp trawling boats operating in European waters, including the use of turtle excluder devices (TEDs); and that the average rate of that incidental taking by the vessels of the country is comparable to the average rate of incidental taking of marine turtles by European Union vessels in the course of harvesting;

or

- the exporting country demonstrates to the European Commission that the particular fishing environment of the exporting country or fishery does not pose a threat of incidental capture of marine turtles in the course of harvesting.

Authorisation for exportation of shrimp and shrimp products to the EU will be notified or renewed to countries or to specific fisheries/fleets by the European Commission based on reports from EU-mandated experts (in charge of fleet inspection), after verification by them that the above-mentioned regulatory measures are in force and that the government effectively monitors compliance and adequately imposes appropriate sanctions for violations.

Annex 1 - Technical description of a TED (See Appendix 4 of this report).

VII - FEEDBACK FROM COUNTRIES WHERE TEDS HAVE BEEN OR ARE BEING INTRODUCED

French Guiana and Gabon are the two most recent places where TEDs have been implemented. Their fisheries have been certified by the U.S. State Department since 2010 and 2014 respectively. It is interesting to note that they did request the 609 certification despite the fact that they do not actually export to the U.S.

A - French Guiana success, hindered by the non-compliance of the Brazilian TED law

ST in French Guiana had been occurring since the 1960s and was originally conducted by U.S. and Japanese fleets. In 1980 the first French flagged vessels began to operate in French Guiana and by the end of 1990 all 90 shrimp trawling boats were French flagged vessels. The TED was mentioned by the French Institute for Exploitation of Sea Resources (IFREMER) as early as 1994 but little interest seems to have been given to it. At the time bycatch was estimated to be 1000 olive Ridley turtles a year.

It was not until 2006, when WWF funded IFREMER to conduct an expertise on TED in French Guiana, that a TED was tested by a ST vessel. The trials showed a 20% shrimp loss which was not very reassuring to an industry that was down to 60 boats. WWF and the CRPMEM of French Guiana then started a collaboration which continues to this day. WWF sent a CRPMEM representative to the annual NOAA TED trials in Panama City, Florida and to the NOAA TED university in Pascagoula. His report to the ST sector in French Guiana deconstructed misinformation, in particular the idea that TEDs systematically cause shrimp loss. Based on this, WWF proposed to the CRPMEM to lead at-sea experiments to help determine if TEDs were adaptable to the local fleet. A series of tests spanning from 2006 to 2009 lead to the development of a new TED design which not only eliminates turtle bycatch but reduces fish bycatch in an unprecedented way. The new TED was voluntarily adopted by industry and named the TTED. In 2010 the CRPMEM deliberated in favour of the TTED, while allowing the possibility for vessels to also use the standard TED when they catch fish in times of low shrimp production. Through a EU funded project the CRPMEM purchased 4 fully equipped TTEDs for each ST vessel. The TTED deliberation was followed by a prefectural order making the use of the TTED mandatory. The CRPMEM and the French Maritime Affairs organised training sessions for new inspection agents on how to inspect TEDs and TTEDs both on land and at sea. In June 2021 another prefectural order was passed, with an official definition of the TED including the TTED.

The success of the programme also led the French Guiana fishers to realise that they can have a role to play in conserving the resources they depend on. It paved the way for collaboration between the fishing sector and WWF in questions pertaining to bycatch reduction in all fishing activities.

Neighbouring Brazil has a law requesting the use of TED for its ST fisheries, but it has never been truly implemented. This leads to Brazilian fishers capturing and killing the turtles that have been spared in the French Guiana neighbouring waters. As a consequence, Brazil's ST fishery, which had been certified by the 609 programme, had its certification removed in 2014. It could no longer export wild-caught shrimp to the U.S. and has redirected those exports to the EU while negatively affecting marine turtle populations. Indeed, all turtle populations in French Guiana continue to decrease. Conscious that this will hinder the sustainable development of the fishing sector, the CRPMEM and the French National Fisheries Committee requested to see TEDs adopted at a broader scale. They highlighted that the EU cannot accept imports of the same species of shrimp coming from countries with a TED regulation in place that is not being implemented. The ST industry in French Guiana also raised the point that Brazilian shrimp out-compete French Guiana shrimp prices in the different markets, and that to date no distinction is made to promote the voluntary efforts of French Guiana fishers who have adopted TEDs. The CRPMEM has also officially requested that France and the EU develop a TED implementation strategy based on their successful collaborative fisheries research model, which promotes and fosters the development of working relationships between fishers, NGOs, scientists, and authorities.

B - The Gabon success story

In Gabon the shrimp TED programme, which was co-organised by the National General Directorate for Fisheries and Aquaculture, the Wildlife Conservation Society, and the Virginia Sea Grant with support from NOAA, was so successful that the Gabonese government started to develop a parallel programme aiming to equip the fish trawlers operating in their EEZ with TEDs designed specifically for this fishery, as there are more fish trawlers operating than shrimp trawlers. Experiments were conducted in 2010 and 2015 aboard fish trawlers with positive results. If the Gabonese fish TED programme is successful, Gabon will be the **first country to mandate TEDs use on their entire trawling fleet.**

The work conducted in Gabon has not gone unnoticed by some of the other courtiers in the sub region. Cameroon, Ivory Coast and the Democratic Republic of Congo have recently also expressed the desire to see a TED programme developed for their ST fleets.

C - Mozambique's attempts

Mozambique also attempted to implement TEDs in its ST fisheries. Agencies involved in this work include the National Fisheries Research Institute (ADNAP) in charge of the policy aspects and management of the resource and fishery, and the Mozambique Scientific Institute (IIP), in charge of developing scientific recommendations to ADNAP. They have been supported by WWF-Mozambique. However, due to a lack of capacity, the attempts had little success.

Based on observations on the ground there is a considerable need for capacity development in terms of welding of TED grids, assembling TEDs into webbing, fixing damaged or deformed TEDs, supporting industry in implementation and enforcement of TED use. During informal discussions with ST vessels captains in Maputo and Beira, they explained they were not certain of how to properly install TEDs, or of the appropriate configuration to use in their fishery. It was also mentioned that TEDs had been used exclusively with a top opening configuration and that some TEDs had “exploded” during trials resulting in damaged trawls, loss of time and production. The interviews also revealed that the capture of rocks was common which would suggest that the top opening TED configuration that was used might not be optimal for the Mozambique shrimp fishing grounds.

There is a crucial need to have agents dedicated to the task of communicating and demonstrating to the captains and crew how to install and maintain the TEDs properly but also to gather information on performance issues with the TEDs to better troubleshoot operational problems. Without a proper capacity building programme, it will be difficult for Mozambique to achieve its ambition of properly using TEDs and eventually requesting U.S. TED certification.

Among the encouraging points for the future of a Mozambique TED programme, we can note the positive working relationship between industry and the ADNAP. There is no resentment for non-successful implementation initiatives and captains and fleet managers have indicated their willingness to try TEDs again. The relationship between WWF-Mozambique and ADNAP is also positive and the WWF is able to provide them with both technical and financial support. The developing collaborations between the government, the industry, the scientific agency and the WWF indicate that a properly designed TED programme could well be successful in Mozambique.

It was also observed that there were in Mozambique at least 8 different types of ST vessels (fleet segments). It is recommended that implementation takes place by addressing the segments individually so that progressive implementation can be followed and adhered to by the industry. Vessels from one segment could be focused on first. Once this portion of the fleet is successfully using TEDs it will become easier and better accepted by industry to move onto another segment, since all stakeholders will have benefited from lessons learned in the first implementation phase.

D - India's difficulties

India is one of the largest exporters of shrimps globally. Its largest export markets are the U.S., the EU, South East Asia and Japan.

In India, ST fisheries pose a great threat to one of the largest mass nesting populations of olive Ridley turtles in the world, located in Orissa. This has implications for neighbouring countries along the east coast of India. Coincidentally, the turtle congregation season overlaps with the shrimp fishing season. Locally, the Orissa government undertook several protective measures, including mandating the use of TEDs in the trawl nets. Despite this, very few trawl operators are known to use TEDs. The failure can be attributed to factors that are varied and complex, primarily the poor implementation of regulations, lack of coordination between departments, misconceptions related to TEDs, as well as lack of incentives and political interests. Consequently, WWF-India engaged with multiple stakeholders to address the aforementioned issues. The misconception that TEDs cause up to 30% catch losses was overruled by carrying out trial runs with on-board operators which clearly demonstrated losses under 2% with 100% exclusion of turtles. Nonetheless, so far there has been a lackadaisical response from stakeholders.

E - Countries in Western Africa

NOAA has been working in the region to get multiple countries to develop observer programmes and to train fisheries inspectors. There is currently a regional multi-taxa bycatch programme led by Birdlife International with the support of local entities to conduct capacity training activities for fisheries management agencies in countries between Senegal and Congo. Improved selectivity of trawl fishing gear – including TEDs – is among the subjects they are preparing to promote. Though the programme is starting up it would be worthwhile for the EU to follow its developments and eventually contribute to its success, as it's an important opportunity to learn more on how to appropriately deploy TEDs.

VIII - RECOMMENDATIONS AND NEXT STEPS TO SUCCESSFULLY SET AND IMPLEMENT THE EU LEGAL FRAMEWORK

- Officially announce a hard deadline of four years, after which TEDs will be completely mandatory for all EU ST fisheries, both inside and outside EU waters, that may be associated with turtle bycatch, and after which all imports of wild-caught shrimp to the EU associated with turtle bycatch, fished without TEDs or without an equivalent system, will be banned.
- Amend the Technical Measures Regulation by means of a delegated act to extend the requirement for TED use to all EU ST fisheries at risk of being associated with turtle bycatch, inside and outside EU waters.
- Develop a regulation requesting that countries seeking to export shrimp to the EU either:
 - Demonstrate to the European Commission that their relevant fisheries are not at risk of being associated with turtle bycatch;
 - Demonstrate to the European Commission that they have adopted regulatory measures governing the incidental capture of marine turtles in the course of shrimp harvesting that is comparable to that of the EU, including the use of TEDs; and that the efficiency of these measures are comparable to that of the measures adopted by the EU for its fisheries.

Regarding shrimp products, their traceability will depend on the outcomes of the current trilogue negotiations on the revision of the EU Fisheries Control Regulation (Council Regulation (EC) No 1224/2009 establishing a Community control system for ensuring compliance with the rules of the common fisheries policy).⁴³ If the revised Regulation reflects the European Parliament's position, then traceability of transformed products, including shrimp products, will be ensured back to the point of harvest. The exporter will have to show that the shrimp used in the transformed product comes from a country or a fishery certified to import shrimp to the EU.

⁴³ Proposal for a Regulation amending Council Regulation (EC) No 1224/2009, and amending Council Regulations (EC) No 768/2005, (EC) No 1967/2006, (EC) No 1005/2008, and Regulation (EU) No 2016/1139 of the European Parliament and of the Council as regards fisheries control (COM/2018/368 final – 2018/0193 (COD))

- Develop a support plan for TED implementation in relevant EU fisheries and non-EU fisheries wishing to start/continue exporting to the EU. Upon request, support to relevant fisheries should be provided to facilitate their transition towards the use of TEDs, to help them meet the requirements as quickly as possible and respect the four-year deadline.
- Exchange/coordinate with the U.S. regarding a collaboration with NOAA on capacity development for EU and exporting fisheries to efficiently use TEDs and find optimum TED use for a particular fishery. The support of TED experts from NOAA and French Guiana (which has good expertise and experience with TED implementation) is key to ensure that the TEDs used are qualitative and employed correctly. This will prevent TEDs from not working properly (which can lead to losses in shrimp catches) and thus prevent rejection of the devices by fishers.
- Use the European Maritime, Fisheries and Aquaculture Fund (EMFAF), which has resources to help EU fishers transition to sustainable fishing practices, to support relevant EU ST fishers with capacity-building and implementation of TEDs.
- Train European Fisheries Control Agency (EFCA) agents to control the use and maintenance of TEDs. This training can be provided by the NOAA Fisheries' Southeast Fisheries Science Centre.
- Upon request, EFCA should support non-EU countries wishing to start or continue exporting wild-caught shrimp to the EU to reinforce their monitoring capacity, for effective monitoring of TED use by national authorities. Before the EU IUU Regulation came into force, the EC funded audits in exporting countries which requested them, and inspiration could be drawn from the mechanisms that were used at that time to support effective controls against fisheries bycatch.

IX - VIGILANCE POINTS

- Certification scheme: it is important that the EU certification scheme for EU ST fisheries and importing ST fisheries is developed in such a way that it is consistent with the existing U.S. scheme. This will prevent countries and fisheries willing to export to both the U.S. and the EU from needing to comply with different standards for the same fisheries and the same objective. It will also avoid putting unnecessary additional burden on countries and fisheries that are already TED-compliant.
- Prevent a shift from fisheries to aquaculture: sufficient resources need to be devoted to help ST fishers in countries exporting to the EU to successfully adopt and implement TEDs. This will prevent these countries from seeking alternate markets to export their wild-caught shrimp (e.g., in Asia) or shifting toward shrimp farming to satisfy the growing demand for shrimp. Shrimp farming can contribute to massive destruction of mangroves, pollution and waste of fresh water, biological pollution of native shrimp stocks through escapements of farmed stocks, and even bycatch of non-target species during collection of wild shrimp seed. In some cases, it is also the source of serious social imbalances.⁴⁴

⁴⁴ Ashton, A.C. (2008) The impact of shrimp farming on mangroves ecosystem. CAB Reviews: Perspectives in Agriculture, Veterinary Science, Nutrition and Natural Resources 2008 3, No. 003.

BIBLIOGRAPHY

Ashton, A.C. (2008) The impact of shrimp farming on mangroves ecosyste. CAB Reviews: Perspectives in Agriculture, Veterinary Science, Nutrition and Natural Resources 2008 3, No. 003.

Bitón, S., Merchan, M. and Thomas, J. (2009) First experiences using Turtle Excluder Device (TED) in bottom trawlers in the Mediterranean Sea. Conference: 30th Annual sea turtle symposium (Goa, India).

Bitón, S. (2009) Biología de las tortugas marinas e incidencia de la pesca de arrastre en su conservación en el Mediterráneo y Golfo de Cádiz. Ministerio de Medio ambiente y Medio Rural y Marino ISBN: 978-84-613-1854-4.

Bitón, S., Thomas, J. and Merchant, M. (2011) Assessing the use of turtle excluder devices (TEDs) in bottom trawlers in the Western Mediterranean Sea: a preliminary study. Marine Turtle Newsletter 131: 15–16.

Caddy, J.F. (2009) Practical issues in choosing a framework for resource assessment and management of Mediterranean and Black Sea fisheries. Mediterranean Marine Science 10(1), 83–120.

Caillouet Jr, C. W., Duronslet, M. J., Landry Jr, A. M., Revera, D. B., Shaver, D. J., Stanley, K. M., Heinly, R. W. and Stabenau, E. K. (1991) Sea turtle strandings and shrimp fishing effort in the northwestern Gulf of Mexico, 1986-1989.

Carpentieri, P., Nastasi, A., Sessa, M. and Srour, A., eds. (2021) Incidental catch of vulnerable species in Mediterranean and Black Sea fisheries – A review. Studies and Reviews No. 101 (General Fisheries Commission for the Mediterranean). Rome, FAO.

Casale, P. (2011) Sea turtle by-catch in the Mediterranean. Fish and Fisheries 12(3):299 - 316.

CITES Secretariat (2019) Status, scope and trends of the legal and illegal international trade in marine turtles, its conservation impacts, management options and mitigation priorities. Eighteenth (18th) meeting of the CITES Conference of the Parties (Geneva, August 2019), Document CoP18 Inf. 18.

Davies, R. (2016) Wild-caught tropical shrimp imports into the EU and associated impacts on marine turtle populations: the need for EU import restrictions. CRPMEM Guyane, 94 pp.

Duffaud, M.H. (2011). Le plan de restauration des tortues marines de Guyane française : bilan et perspectives.

- Epperly, S., Avens, L., Garrison, L., Henwood, T., Hoggard, W., Mitchell, J., Nance, J., Poffenberger, J., Sasso, C., Scott-Denton, E. and Yeung, C. (2002) Analysis of sea turtle bycatch in the commercial shrimp fisheries of southeast U.S. waters and the Gulf of Mexico. U.S. Department of Commerce, NOAA Technical Memorandum NMFSSEFSC-490, 88 pp.
- Eayrs, S. (2007) A Guide to Bycatch Reduction in Tropical Shrimp-Trawl Fisheries. Rome, FAO, 108 pp.
- FAO (2021) A quarterly update on world seafood. Globefish Highlights No. 1-2021. Rome.
- Galil, B.S., Frogliani, C. and Noël, P. (2015) Looking back, looking ahead: The CIESM Atlas, Crustaceans. Management of Biological Invasions Volume 6, Issue 2: 171–175.
- Gillett, R. (2008) Global Study of Shrimp Fisheries. FAO Fisheries Technical Paper 475.
- Guggisberg, S. (2019) The EU's Regulation on the Sustainable Management of External Fishing Fleets: International and European Law Perspectives. *The International Journal of Marine and Coastal Law* 34(2):1-34.
- Hataway, D., Foster, D. and Saxon, L. (2017) Evaluations of Turtle Excluder Devices (TEDs) with Reduced Bar Spacing in the Inshore Penaeid Shrimp Fishery of the Northeastern Gulf of Mexico. NOAA technical memorandum NMFS-SEFSC-707.
- Howse, R. (2002) The Appellate Body Rulings in the Shrimp/Turtle Case: A New Legal Baseline for the Trade and Environment Debate. *Columbia Journal of Environmental Law* Vol. 27(2); 491 - 521, 31 pp.
- Jenkins, L.D (2012) Reducing Sea Turtle Bycatch in Trawl Nets: A History of NMFS Turtle Excluder Device (TED) Research. *Marine Fisheries Review* 74(2):26-44.
- Kampouris, T.E., Tiralongo, F., Golemaj, A., Giovos, I., Doumpas, N. and Batjakas, I.E. (2018) *Penaeus aztecus* Ives, 1891 (Decapoda, Dendrobranchiata, Penaeidae): On the range expansion in Sicilian waters and on the first record from Albanian coast. *International Journal of Fisheries and Aquatic Studies* 6(4): 468-471.
- Lucchetti, A., Punzo, E., and Virgili, M. (2016) Flexible turtle excluder device (TED): an effective tool for Mediterranean coastal multispecies bottom trawl fisheries. *Aquatic Living Resources* 29:201.
- Lucchetti, A., Bargione, G., Petetta, A., Vasapollo, C. and Virgili M. (2019) Reducing Sea Turtle Bycatch in the Mediterranean Mixed Demersal Fisheries. *Frontiers in Marine Science* 6:387.
- Massutí, E., Reñones, O., Carbonell, A. and Oliver, P. (1996) Demersal fish communities exploited on the 632 continental shelf and slope off Majorca (Balearic Islands, NW Mediterranean). *Vie et Milieu / Life & Environment, Observatoire Océanologique - Laboratoire Arago*, pp. 45-55.

Meeremans, P., Willems T. And Babb-Echteld Y. (2017) Evaluating Trash-and-Turtle Excluder Devices (TTEDs) for bycatch reduction in Suriname's seabob shrimp trawl fishery.

Mitchell, J. F., Watson, J. W., Foster, D. G. and Caylor, R.E. (1995) The Turtle Excluder Device (TED): A Guide to Better Performance. NOAA Technical Memorandum NMFS-SEFSC-366, 35pp.

Nalovic M.A. & A. Bardiot (2010). Réduction des Effets du Chalutage des Crevettes sur L'écosystème Marin du Plateau des Guyanes.

Nalovic M.A & Rieu L. (2009). Vers L'adoption du Système de Sélectivité TTED par les Chalutiers Crevettiers de Guyane. Projet WWF/CRPM.

Nalovic, M.A. (2014) An Evaluation of a Reduced Bar Spacing Turtle Excluder Device in the U.S. Gulf of Mexico Offshore Shrimp Trawl Fishery. Dissertations, Theses, and Masters Projects. Paper 1539617946.

NOAA Deepwater Horizon Natural Resource Damage Assessment and Restoration (2019) Reducing Juvenile Sea Turtle Bycatch through Development of Reduced Bar Spacing in Turtle Excluder Devices.

Oceana, Pew, EJF, WWF (2016) European vessels fishing under the radar, the need to regulate private and chartering agreements for access to external waters.

Öztürk, B. (2021) Non-indigenous species in the Mediterranean and the Black Sea. Studies and Reviews No. 87 (General Fisheries Commission for the Mediterranean). Rome, FAO.

El-Deeb, R. S., Sarhan, M., Khafage, A. R., Abdel Razek, F. A., Abdel-Wahab, M. and Omar, H. A. (2020) Occurrence of *Penaeus aztecus*, Ives, 1891 (Crustacea: Decapoda: Penaeidae) in the coastal water of Alexandria, Egypt. The Egyptian Journal of Aquatic Research Volume 46 Issue 3: 303-309.

Sala, A., Lucchetti, A. and Affronte, M. (2011) Effects of Turtle Excluder Devices on bycatch and discard reduction in the demersal fisheries of Mediterranean Sea. Aquatic Living Resources 24(02):183-192.

Trachtman, J.P. Introduction to the shrimp-turtle case: Brief Summary and Analysis of the WTO Panel and Appellate Body Decisions. 23 pp.

Vasapollo, C., Virgili, M., Petetta, A., Bargione, G., Sala, A. and Lucchetti, A. (2019) Bottom trawl catch comparison in the Mediterranean Sea: Flexible Turtle Excluder Device (TED) vs traditional gear. PLoS One 14(12): e0216023.

Wallace, B. P., Lewison, R. L., McDonald, S. L., McDonald, R. K., Kot, C. Y., Kelez, S., Bjorkland, R., K., Finkbeiner, E. M., Helmbrecht, S. and Crowder, L. B. (2010) Global patterns of marine turtle bycatch. *Conservation Letters* 3(3): 131-142.

Wallace, B. P., DiMatteo, A. D., Bolten, A. B., Chaloupka, M. Y., Hutchinson, B. J., Abreu-Grobois, F. A., Mortimer, J. A., Seminoff, J. A., Amorocho, D., Bjorndal, K. A., Bourjea, J., Bowen, B. W., Dueñas, R. B., Casale, P., Choudhury, B. C., Costa, A., Dutton, P. H., Fallabrino, A., Finkbeiner, E. M., Girard, A., Girondot, M., Hamann, M., Hurley, B. J., López-Mendilaharsu, M., Marcovaldi, M. A., Musick, J. A., Nel, R., Pilcher, N. J., Troëng, S., Witherington, B. and Mast, R. B. (2011) Global Conservation Priorities for Marine Turtles. *PLoS One* 6(9): e24510.

Wallace, B. P., Kot, C. Y., DiMatteo, A. D., Lee, T., Crowder, L. B. and Lewison, R. L. (2013) Impacts of fisheries bycatch on marine turtle populations worldwide: toward conservation and research priorities. *Ecosphere* 4(3):40.

Wold, C. and Black, R. (2005) *An Analysis of Shrimp/Turtle II: The WTO Makes Room for Environmental Trade Restrictions*. 5 pp.

World Trade Organization, United States (2001) *Import Prohibition of Certain Shrimp and Shrimp Products*. Report of the Panel, Dispute Settlement DS58.

APPENDIX 1 - RECOMMENDATIONS ON COMMUNICATION AND SUPPORT FOR A SUCCESSFUL IMPLEMENTATION OF AN EU TED REGULATION AND PROGRAMME

- ✓ **The EC should start communicating on the objective and the deadline** as early as possible and **reach out to all potentially affected exporting countries** (currently mainly Bangladesh, India, Indonesia, Madagascar, Thailand and Viet Nam) **with a clear explanation of the mechanism to request training support** in using, maintaining and controlling TEDs. This will allow the EC to be aligned with WTO requirements (based on the US Shrimp-Turtle case and the way it was settled).
- ✓ **The EU-mandated experts should provide the relevant ST fisheries with “TED kits”** (see Appendix 3) and conduct on site trainings to **demonstrate the effectiveness of TEDs on reducing turtle and megafauna bycatch without reducing shrimp catches and on reducing fuel consumption.**
- ✓ **During the capacity development and testing period, experts should let the industry take ownership of decisions** such as the fleet segment to start working with, the validation of the test protocol and different modular configurations to be tested (top opening vs. bottom opening, accelerator funnel vs. no funnel, double flap opening vs. single flap) to better adapt to specific fishing conditions (as TED design depends on the size of turtles bycaught and on the target catch, e.g. “shrimp only” trawlers should use smaller bar spacing TEDs). Indeed, adopters of innovations are more inclined to adopting technologies when they contributed directly to its ‘conception’ (there are a wide variety of options associated with TEDs - see regulations which list options for approved TEDs (Appendix 4)). Successful evaluations and adaptations of TEDs will then build the confidence of the industry in the TED technologies. Preliminary results from the field experiments should be shared widely with the industry immediately after the trials. This allows the industry to provide immediate feedback, and to guide the next steps of the implementation process, which creates a sense of ownership of the results and of the TED programme.
- ✓ **In order to fulfil WTO requirements (and based on the conditions under which the US Shrimp-Turtle case was settled), once the deadline fixed by the EU is passed** and shrimp from fisheries that are not EU TED certified are no longer allowed in the EU, **support should be provided, upon request, to the fisheries that no longer have access to the EU market and wish to be able to gain access again. Fisheries that never before exported wild-caught shrimp to the EU should also have the possibility to be supported as well in their endeavour to implement TEDs.**

APPENDIX 2 - MARINE TURTLE BYCATCH IN THE MEDITERRANEAN SEA BY EU AND NON-EU MEDITERRANEAN BOTTOM TRAWL FLEETS*

** please note that the data below cover bottom trawls fisheries targeting and non targeting shrimp*

Non-EU Countries	Annual numbers of turtle bycatch	EU countries	Annual numbers of turtle bycatch
Tunisia	10'900	Italy	10'600
Libya	4'700	Greece	2'900
Turkey	3'500	Croatia	2'400
Egypt	1'900	Spain	400
Algeria	700	Slovenia	200
Albania	600	France	40
Cyprus	100	Malta	0
Morocco	200		

Syria	200	
Israel	10	
Lebanon	0	
Monaco	0	
Montenegr o	0	
Bosnia & Herzegovin a	0	
Totals	22'810	16'540

Extracted from Casale (2011).

APPENDIX 3 - SUPPLYING COUNTRIES INTERESTED IN TEDS WITH KITS INTENDED TO FACILITATE IMPLEMENTATION

Michel A. Nalovic - November 2021

What's the purpose of sending a TED kit?

As a first step to capacity building in light of developing TED programmes in countries exporting tropical shrimp to the EU, it is necessary that each country's research institute / or fisheries organization be supplied with a minimal amount of quality TED fishing gear. This gear can be used in country for multiple purposes pertaining to TED implementation activities including during communication/exchanges and outreach with governmental institutions, industry and the general public. Further, with this quality gear present in the country it becomes possible to plan TED evaluations in the local ST industry, a step deemed indispensable to create stakeholder buy-in by demystifying the idea that TED use systematically loses production.

Having the TED gear in the country removes one of the major hurdles to development of proper TED programmes which is the initial acquisition of the quality TEDs necessary to conduct the first trials. In the past makeshift TEDs have been used by captains during non-thought out implementation attempts. The results of sending ST vessels to fish with inappropriate quality gear has resulted in poor preliminary results (important loss of production or even the damaging of trawls) and scepticism by industry.

Who benefits from the TED kit and how?

Supplying the first quality prototype TEDs to countries interested in the technology guaranties that a national TED programme starts off on the right foot. Beyond evaluations, once industry has the ability to go ahead and try to build TEDs on their own the manufacturer can actually have a model TED to follow. This goes from the welder who must weld together the TED grid, going to net men who sow the TED into webbing, the personnel from the fishing companies in charge of maintaining the TED in good working order (proper angle, flotation, opening orientation), to finally the enforcement agent who needs to train his colleagues on the different components that make a TED functional.

What's in the TED kit?

A TED kit would comprise 2 TED grids sown in webbing at a 55° angle. An instruction manual would explain how to install the associated floats (6 in the TED kit) so that the TED could have an opening towards the top or the bottom and explanations as to why chose one configuration vs the other. One of the TEDs would be equipped with a single flap opening and the other a double flap opening, again with the instruction manual explaining the advantages and disadvantages of the different openings. Extra flap material would be included so that the user could change either TED to have the opening that they choose. There would also be an extra set of flaps and an extra TED extension (Tub of webbing in which the TED is fitted in case there is damage during the first trials. The TED with the bottom opening would have an optional accelerator funnel installed with the accompanying instructions and explanations of the purpose of the funnel. 2 extra accelerator funnels would be provided, one so that the user could install it in the TED that does not have the funnel and the second in case a funnel is damaged during a TED trial. The TED kit could also include all the materials necessary to conduct a comparative towing experiment (annex 3) including TED related documents and the manual for testing towed fishing gear. As for the gear that can be constructed or bought in country, this information will also listed but not part of the kit (annex 3)

Annex 1 - Interview sheet to determine what type of TEDs are needed

- Name of Interviewee:
- Date:
- Agency:
- Years of experience with TED interested industry:
- Are you very familiar with your national trawl fishery?
- What is the trawl fishery targeting, shrimp only or fish as well?
- What is the proportion of shrimp to fish catch?
- Do you have any previous in-country experience with TEDs? If so, what was the outcome and can we gather info (results, problems)?
- Are you the person who can ask the captain the questions on the Captain Interview sheet? If not, can you make sure the person who can does it?
- Is there an identified bycatch problem, please give details (CPUE Turtles, reports, etc)?
- Why are you interested in TEDs for your country?
- Has the government expressed interest in TEDs, is there a National TED law?
- Has the government expressed interest in TEDs, is there a national TED law?

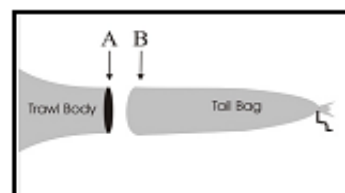
Annex 2 - Captain interview sheet

Questionnaire for captains shrimping of the coast of _____.

- Date: _____ Phone: _____
- Name: _____ Number of years shrimping in _____ waters:

Gear description and fishing strategies:

- Head rope length / trawl type design:
- Mesh size and number (circumference) at A & B in the tail bag?
- Tow Speed:



Different Fishing zones and Sea bottom descriptions with note on debris encountered (rocks, wood, trees, seagrass), ect:

- Zone _____: _____ Zone _____:
- Zone _____:
- Are you aware of zones not fished due to heavy captures of rocks or sea sponges?

Question on encounters with sea turtles:

- What month do you catch the most sea turtles and do you know what species?
- Where do you encounter the most sea turtles, what species?
- How many turtles would you say you have caught in a years shrimping, what species?

Open discussion on individual perception of TED's (Turtle Excluder Devise) and BRD's (By-catch Reduction Devise).

- How do you feel about and what have you heard about TED's or BRD's?
- Would you try TED's or BRD's voluntarily if you believed that if used correctly they (TED's and BRD's) could improve the quality of your product and reduce the work load on your crew?

Annex 3 -TED Gear included in package

- 2 USB key with all relevant documents:
 - Overview doc explaining the package and thank you message
 - Captain interview sheet
 - Protocol for comparative towing (ICES and USA NMFS)
 - How to build a back-deck separator
 - How to install different type of flaps
 - How to measure and angle of a TED
 - Gear list
 - in package
 - to be bought in country:
 - 6 x 5lt buckets
 - tape measure (20m)
 - 10x25kg sturdy baskets

- 2 TEDs
- 4 Pesola scales
 - 2 up to 10 kg
 - 2 up to 100kg

- Handheld caliber for accurate mesh size measurements
- Circular sowing needles and regular needles
- Color and sturdy zip ties
- 2 angle measurers
- NOAA DVDs:
 - 2 DVDs How to sow in a TED
 - 2 DVD How to weld a TED
 - 1 DVD CRPMEM Guyane DVD TTED

APPENDIX 4 - APPROVED TEDS (FROM 50 CFR § 223.207)

Any netting, webbing, or mesh that may be measured to determine compliance with this section is subject to measurement, regardless of whether it is wet or dry. Any such measurement will be of the stretched mesh size.

TEDs complying with the following generic design criteria are approved TEDs:

(1) Construction materials

(i) ***Single-grid and inshore hooped hard TED.*** A single-grid hard TED or an inshore hooped hard TED must be constructed of one or a combination of the following materials, unless otherwise specifically restricted below, with minimum dimensions as follows:

- (A) Solid steel rod with a minimum outside diameter of 0.64 cm;
- (B) Fiberglass or aluminium rod with a minimum outside diameter of 1.27 cm; or
- (C) Steel or aluminium round, oval, or rectangular tubing with a minimum outside diameter or width of 1.27 cm and a minimum wall thickness of 0.32 cm).
- (D) Steel or aluminium flat bar with dimensions no less than 0.64 cm in thickness by 3.85 cm in depth. For flat bar less than 0.95 cm in thickness, a horizontal brace bar to reinforce the deflector bars must be permanently attached to the frame and the rear face of each of the deflector bars within 10.2 cm of the midpoint of the TED frame. The horizontal brace bar must be constructed of approved material consistent with paragraph (1)(i) of this section. The horizontal brace bar may be offset behind the deflector bars, using spacer bars, not to exceed 12.7 cm in length and constructed of the same size or larger flat bar as the deflector bars.

(ii) ***Offshore hooped hard TED.*** An offshore hooped hard TED must be constructed of aluminium, with minimum dimensions as follows:

- (A) Solid rod with a minimum outside diameter of 1.59 cm; or
- (B) Tubing with a minimum outside diameter of 2.54 cm and a minimum wall thickness of 0.32 cm.

(2) Method of attachment.

A hard TED must be sewn into the trawl around the entire circumference of the TED with heavy twine.

(3) Angle of deflector bars.

(i) The angle of the deflector bars must be between 30° and 55° from the normal, horizontal flow through the interior of the trawl, except as provided in paragraph (3)(ii) of this section.

(ii) For any shrimp trawler fishing in the Gulf SFSTCA or the Atlantic SFSTCA, a hard TED with the position of the escape opening at the bottom of the net when the net is in its deployed position, the angle of the deflector bars from the normal, horizontal flow through the interior of the trawl, at any point, must not exceed 55°, and the angle of the bottom-most 10.2 cm of each deflector bar, measured along the bars, must not exceed 45°.

(4) Space between bars.

The space between deflector bars and the deflector bars and the TED frame must not exceed 10.2 cm, except for TEDs required to be installed in skimmer trawls, where the space between deflector bars and the deflector bars and the TED frame must not exceed 7.6 cm.

(5) Direction of bars.

The deflector bars must run from top to bottom of the TED, as the TED is positioned in the net, except that up to four of the bottom bars and two of the top bars, including the frame, may run from side to side of the TED. The deflector bars must be permanently attached to the TED frame or to the horizontal bars, if used, at both ends.

(6) Position of the escape opening.

The escape opening must be made by removing a rectangular section of webbing from the trawl, except for a TED with an escape opening size described at paragraph (7)(ii)(A) of this section for which the escape opening may alternatively be made by making a horizontal cut along the same plane as the TED. A TED installed in a skimmer trawl rigged for fishing must have the escape opening oriented at the top of the net. For TEDs installed in all other trawls, the escape opening must be centered on and immediately forward of the frame at either the top or bottom of the net when the net is in the deployed position. The escape opening must be at the top of the net when the slope of the deflector bars from forward to aft is upward, and must be at the bottom when such slope is downward. The passage from the mouth of the trawl through the escape opening must be completely clear of any obstruction or modification.

(7) Size of escape opening

(i) Hooped hard TEDs

(A) ***Escape opening for inshore hooped hard TED.*** The inshore hooped hard TED escape opening must have a horizontal measurement of no less than 89 cm wide and a forward measurement of no less than 69 cm. A hinged door frame may be used to partially cover the escape opening. Alternatively, a webbing flap may be used. The resultant opening with a webbing flap must be a minimum width of 89 cm and a minimum height of 51 cm, with each

measurement taken simultaneously. This opening may only be used in inshore waters, except it may not be used in the inshore waters of Georgia and South Carolina.

(B) **Escape opening for offshore hooped hard TED.** The offshore hooped hard TED escape opening must have a horizontal measurement of no less than 102 cm wide and a forward measurement of no less than 89 cm. A hinged door frame may be used to partially cover the escape opening. Alternatively, a webbing flap may be used. The resultant escape opening with a webbing flap must have a stretched mesh circumference of no less than 361 cm.

(ii) **Single-grid hard TEDs.** On a single-grid hard TED, the horizontal cut(s) for the escape opening may not be narrower than the outside width of the TED frame minus 10.2 cm on both sides of the grid, when measured as a straight line width. Fore-and-aft cuts to remove a rectangular piece of webbing must be made from the ends of the horizontal cuts along a single row of meshes along each side. The overall size of the escape opening must match one of the following specifications:

(A) **44- inshore opening.** The escape opening must have a minimum width of 112 cm and a minimum height of 51 cm with each measurement taken separately. A webbing flap may be used with this escape hole, so long as this minimum opening size is achieved. This opening may only be used in inshore waters.

(B) **The 181-cm opening.** The two forward cuts of the escape opening must not be less than 66 cm long from the points of the cut immediately forward of the TED frame. The resultant length of the leading edge of the escape opening cut must be no less than 181 cm with a resultant circumference of the opening being 361 cm. A webbing flap may be used with this escape hole, so long as this minimum opening size is achieved.

(C) **Double cover opening.** The two forward cuts of the escape opening must not be less than 51 cm long from the points of the cut immediately forward of the TED frame. The resultant length of the leading edge of the escape opening cut must be no less than 142 cm. A webbing flap may be used with this escape hole.

(D) **Boone Wedge Cut opening.** The escape opening is made by making two cuts in the TED extension; one cut is fore and aft (i.e., along the length of the extension) and the other cut is horizontal to the extension. The horizontal cut is 50 meshes long and begins at a point 10.2 cm inward from the outside edge of the grid on one side and runs to the same point on the opposite side of the grid. The fore and aft cut begins in the middle of the horizontal cut and runs forward 125.7 cm toward the front edge of the TED extension. The added wedge of webbing is attached along its two leading edges to the edges of the fore and aft cut. The webbing wedge is made of 4.8 cm webbing and must have at least 41 meshes measuring at least 182.9

cm wide along its base. The height of the wedge must measure at least 123 cm. The top of the wedge is two bars across the leading edge then cut with a 1 point then 6 bar taper.

A webbing flap may be used with this escape opening in the following configurations:

- (1) A triangular cut, where the base of the triangle is defined by a straight-line measurement of the opening between the webbing attachment points on the TED frame that is no less than 102 cm. The two side cuts of the triangle must be an all-bar taper from the point at which the webbing attaches to the TED frame to the apex of the triangle cut. Each side cut of the triangle must measure no less than 135 cm. The sum of the straight-line base measurement and two side cuts must be no less than 373 cm. The side cuts of the triangular opening may be reinforced using rib lines attached from the TED frame to the apex of the opening. A webbing flap may be used with this escape opening, so long as the minimum opening size is achieved.
- (2) All-bar or all-points side cuts and a horizontal leading edge cut, where the straight-line measurement of the opening between the webbing attachment points on the TED frame may not be less than 102 cm, and the two side cuts of the escape opening must not be less than 66 cm long from the points of the cut immediately forward of the TED frame. Only all-bar or all-points side cuts may be used; no combination tapers may be used when making the side cuts. The sum of the straight-line base measurement and the str, so long as the minimum opening size is achieved.

(E) **Large TED openings.** Latched measurements of the side cuts and leading edge cut must be no less than 373 cm. A webbing flap may be used with this escape opening, so long as the minimum opening size is achieved.

(8) Size of hoop or grid

(i) Hooped hard TED

(A) **Inshore hooped hard TED.** The front hoop on an inshore hooped hard TED must have an inside horizontal measurement of at least 89 cm and an inside vertical measurement of at least 76 cm. The minimum clearance between the deflector bars and the forward edge of the escape opening must be at least 51 cm.

(B) **Offshore hooped hard TED.** The front hoop on an offshore hooped hard TED must have an inside horizontal measurement of at least 102 cm and an inside vertical measurement of at least 76 cm. The minimum clearance between the deflector bars and the forward edge of the escape opening must be at least 59 cm.

(ii) Single-grid hard TED.

A single-grid hard TED must have a minimum outside horizontal and vertical measurement of 81 cm. The required outside measurements must be at the midpoint of the deflector grid.

(9) Flotation.

Floats must be attached to the top one-half of all hard TEDs with bottom escape openings. The floats may be attached either outside or inside the net, but not to a flap. Floats attached inside the net must be behind the rear surface of the TED. Floats must be attached with heavy twine or rope.

Floats must be constructed of aluminium, hard plastic, expanded polyvinyl chloride, or expanded ethylene vinyl acetate unless otherwise specified. The requirements of this paragraph may be satisfied by compliance with either the dimension requirements of paragraph (9)(i) of this section, or the buoyancy requirements of paragraph (9)(ii) of this section, or the buoyancy-dimension requirements of paragraph(9)(iii) of this section.

(i) ***Float dimension requirements.***

(A) For hard TEDs with a circumference of 304.8 cm or more, a minimum of either one round, aluminium or hard plastic float, no smaller than 25.0 cm in diameter, or two expanded polyvinyl chloride or expanded ethylene vinyl acetate floats, each no smaller than 17.2 cm in diameter by 22.2 cm in length, must be attached.

(B) For hard TEDs with a circumference of less than 304.8 cm, a minimum of either one round, aluminium or hard plastic float, no smaller than 25.0 cm in diameter, or one expanded polyvinyl chloride or expanded ethylene vinyl acetate float, no smaller than 17.2 cm in diameter by 22.2 cm in length, must be attached.

(ii) ***Float buoyancy requirements.***

Floats of any size and in any combination must be attached such that the combined buoyancy of the floats, as marked on the floats, equals or exceeds the weight of the hard TED, as marked on the TED. The buoyancy of the floats and the weight of the TED must be clearly marked on the floats and the TED as follows:

(A) ***Float buoyancy markings.*** Markings on floats must be made in clearly legible raised or recessed lettering by the original manufacturer. The marking must identify the buoyancy of the float in water, expressed in grams or kilograms, and must include the metric unit of measure. The marking must identify the nominal buoyancy for the manufactured float.

(B) ***TED weight markings.*** The marking must be made by the original TED manufacturer and must be permanent and clearly legible. The marking must identify the in-air, dry weight of the TED, expressed in grams or kilograms, and must include the metric unit of measure. The marked weight must represent the actual weight of the individual TED as manufactured. Previously manufactured TEDs may be marked upon return to the original manufacturer. Where a TED is comprised of multiple detachable components, the weight of each component must be separately marked.

(iii) ***Buoyancy-dimension requirements.***

Floats of any size and in any combination, provided that they are marked pursuant to paragraph (9)(ii)(A) of this section, must be attached such that the combined buoyancy of the floats equals or exceeds the following values:

(A) For floats constructed of aluminium or hard plastic, regardless of the size of the TED grid, the combined buoyancy must equal or exceed 6.4 kg;

(B) For floats constructed of expanded polyvinyl chloride or expanded ethylene vinyl acetate, where the circumference of the TED is 304.8 cm or more, the combined buoyancy must equal or exceed 9.1 kg; or

(C) For floats constructed of expanded polyvinyl chloride or expanded ethylene vinyl acetate, where the circumference of the TED is less than 304.8 cm, the combined buoyancy must equal or exceed 4.5 kg.

**OUR MISSION IS
TO STOP THE DEGRADATION
OF THE PLANET'S NATURAL
ENVIRONMENT AND TO BUILD
A FUTURE IN WHICH
HUMANS LIVE IN HARMONY
WITH NATURE.**

For more information:

Théa Jacob

Marine species and sustainable fisheries
expert, WWF-France
tjacob@wwf.fr



Working to sustain the natural
world for the benefit of people
and wildlife.

together possible

wwf.eu

© November 2022
Paper 100% recycled

© 1986 Panda symbol WWF – World Wide Fund for Nature
(Formerly World Wildlife Fund)
® “WWF” is a WWF Registered Trademark.

WWF European Policy Office, 123 rue du Commerce,
1000 Brussels.

For contact details and further information, please visit our
website at www.wwf.eu