

DELIVERABLE D 2.7



**Selection of pilot areas to test the programs of
Measures (litter)**

**Indicator Impact Taxa
(INDICIT-II)**

15/02/2020

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The Activity 2 “Applying the indicator “Litter ingested by sea turtles” to quantify the programs of Measures at the OSPAR and Barcelona RCSs and MSFD areas” is divided in three tasks. The task 1 “*Support the quantification of the effects of programs of measures*” is presented in this specific deliverable.

1. Objective:

The task aims at assessing the capacity of the indicator to evaluate the effect of Programs of measures (PoMs) in specific pilot areas selected in various INDICIT II partners’ countries, by comparing the amount and categories of ingested litter and litter in the environment and the specific Programs of Measures in connexion with marine litter which are currently implemented or planned to be.

After this phase of selection, the objective is to evaluate how the effect of these PoMs is recorded by the respective indicators developed by INDICIT-II (i.e. litter ingestion and entanglement).

2. Methodology:

2.1. Availability of data (ingestion/entanglement)

2.1.1 Indicator “Ingestion”

The project INDICIT-II allows collecting more qualitative data in each involved partner’s country (France, Italy, Spain, Greece, Portugal, Tunisia, Turkey) and in a new country (Cyprus). The INDICIT II consortium, in partnership with a large network of stakeholders, is collecting data to fill the gaps of information identified during INDICIT project in certain sub-regions. Other expert knowledge is being collecting for covering a wider area.

Data shows that plastic ingestion is a common threat overall the Atlantic studied area and overall the Mediterranean Sea. While the dataset collected in the Atlantic area of the project needs to be completed by involving more stakeholders, INDICIT necropsy data on occurrence and quantity of ingested litter showed a gradient of plastic impact on sea turtles across the Mediterranean, from Turkey to Spain. A new map for the indicator is now available (figures 1a Occurrence of ingested litter and figure 1b dry mass of ingested litter), confirming the differences within the Mediterranean Sea, with potential gradient of pressure. The ongoing update and cleaning of INDICIT II data including the integration of new data in Cyprus area will enable validating this observed gradient.

At this time of the project, the database for the indicator Ingestion needs some cleaning: a revision of the total database is conducted with each partner/stakeholder to check for last mistakes or inaccuracy and homogenize qualitative information. It is also the opportunity to add some important precision such as the precise origin of some data (e.g. splitting the data set for Italy into Adriatic and Tyrrhenian Sea). Therefore, some changes (e.g., percentage of occurrence) could be possible at the end of the project, according to the ongoing data cleaning and adding, but the main pattern of litter pressures will remain (Figure 1a).

It is now possible to classify ingested litter according to plastic categories (i.e. INDICIT protocol/RAC-SPA and MSFD guidelines, Figure 1b) and table 1 below:

Table 1: Mean ingested mass (grams) of principal litter categories found in necropsied loggerhead turtles or category FOA possibly related to PoM (see text) (from 2013 until now; too decomposed individuals excluded).

Mean	Azores	Canary Isl	Spain	France Atl	France Med	Italy	Greece	Turkey	Tunisia
USE SHE	0.29	0.11	0.39	0.13	0.36	0.36	0.45	0.005	0.23
USE THR	0.16	0.02	0.06	0.1	0.08	0.25	0.26	0.19	0.09
USE FOA	0.07	0	0.07	0	0.14	0.07	0.02	0.005	0
USE FRA	0.44	0.06	0.65	0.001	0.63	7.54	0.02	0	0.12

Without over-interpreting the data (mean per country), we can see that the categories USE FRA (Fragments, broken pieces of thicker type plastics) and USE SHE (remains of sheet, e.g. from bag) have the highest ingested mass. For these two categories, the Eastern Med basin also exhibited the lowest values. USE THR (Threadlike materials, e.g. pieces of nylon wire, net-fragments) is also well represented in the whole area. However, the highest quantity for this category is observed in Eastern Med.

USE FOA (all foamed plastics e.g. polystyrene foam) is ingested in lower quantities, but appears in higher quantities in Western and Mid-Med areas.

We will not provide at this time a more precise description and analysis of the distribution of these categories (e.g. comparing between seasons, etc.) since an interpretation will be done with finalized cleaned data in the coming weeks, but it will be necessary to explain the observed differences.

2.1.2 Indicator “Entanglement”

A dataset on this indicator is currently collected (see Progress report deliverable D3.3 Implementation of the indicator “Entanglement in floating debris by sea turtles, birds and cetaceans” at the OSPAR and Barcelona RSCs and MSFD areas).

The same methodology as for the indicator “Ingestion” is used to define pilot areas connected with PoM.

Figure 1a: Last evaluation of the indicator “litter ingested by sea turtles (% of sea turtles having ingested litter) in the Atlantic, Western, mid and eastern Med Basins from 2013 to today (Status 5 individuals removed) (data cleaning and results in progress)

(a)

71%
azores

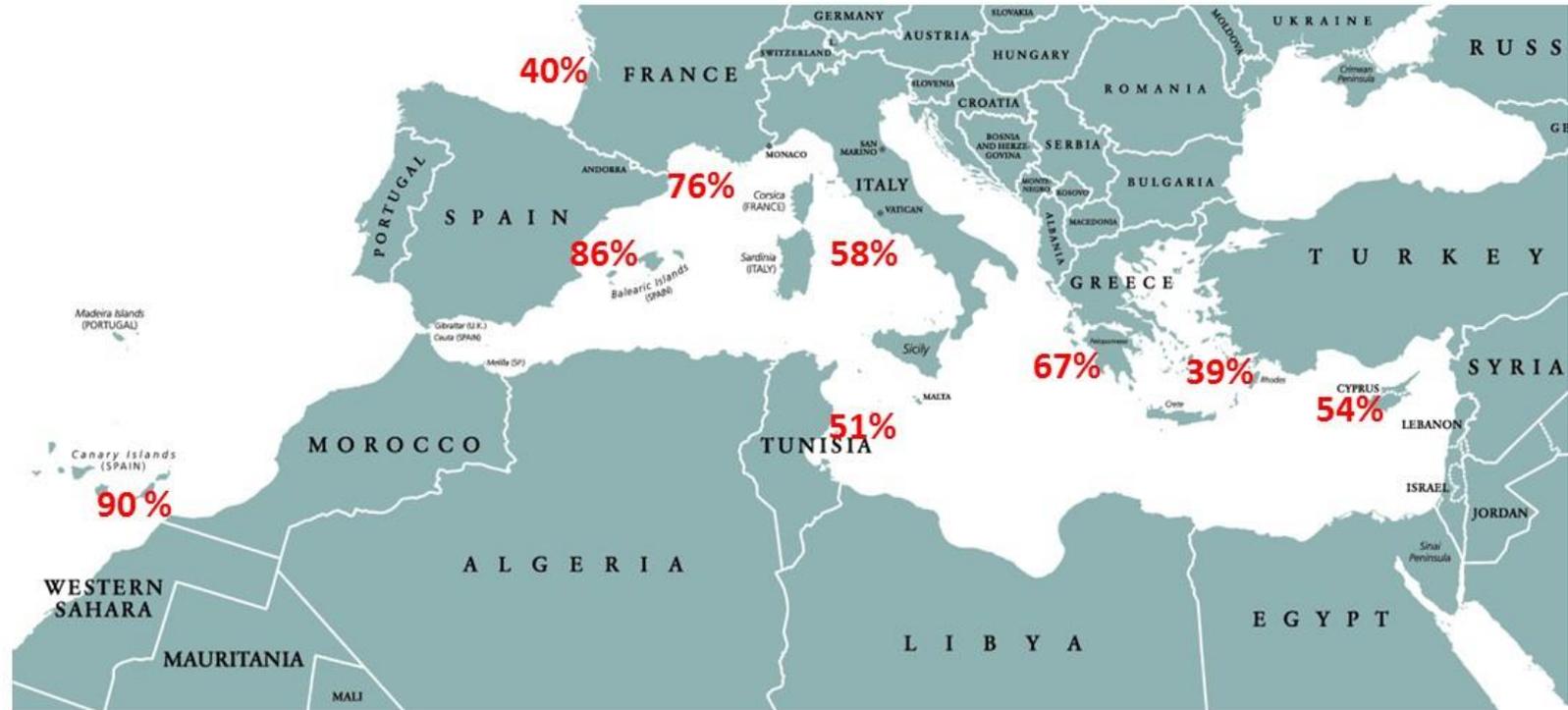
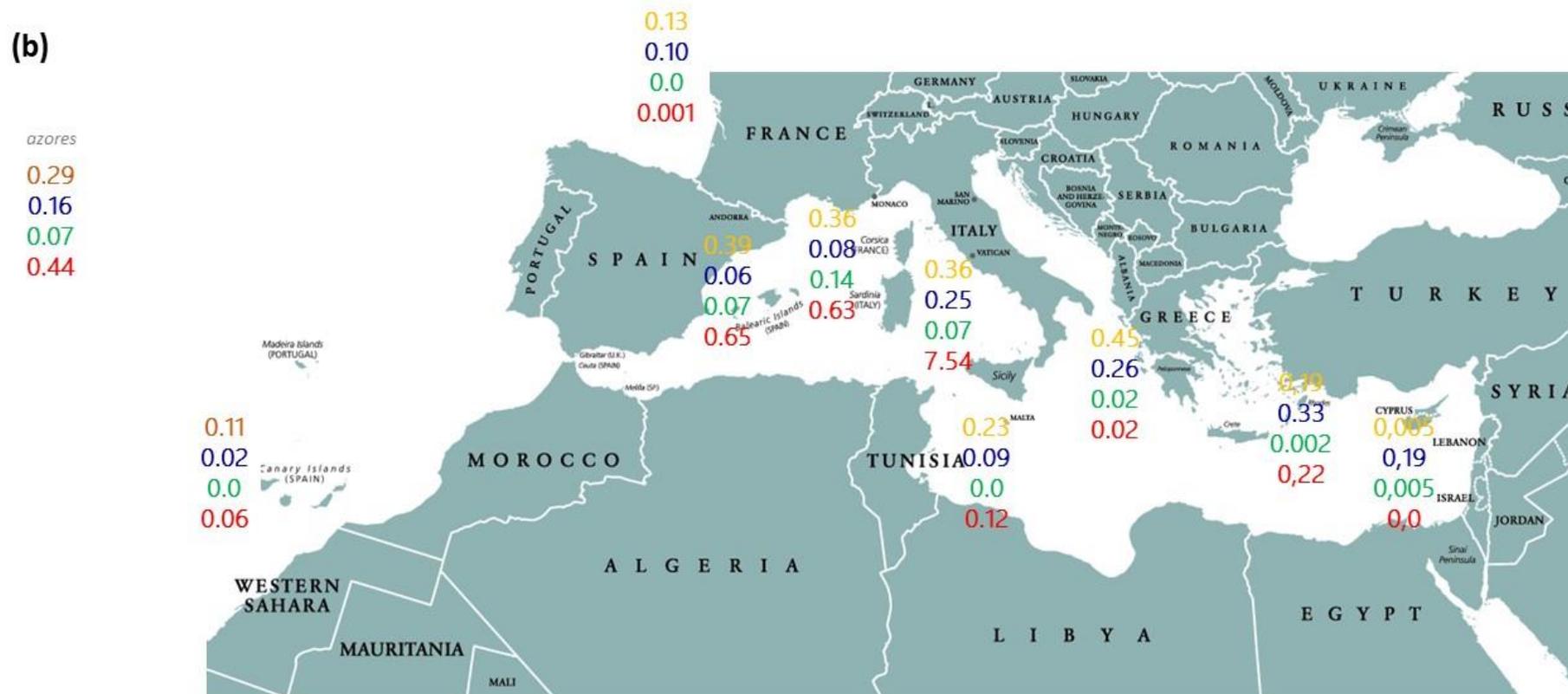


Figure 1b: Last evaluation of the indicator “litter ingested by sea turtles” (mean dry mass in g) of litter ranked by categories in the Atlantic, Western, mid and eastern Med Basins from 2013 to today (Status 5 individuals removed) (data cleaning and results in progress).



- USE SHE:** Remains of sheet, e.g. from bag, cling-foil, agricultural sheets, rubbish bags, ...
- USE THR:** Threadlike materials, e.g. pieces of nylon wire, net-fragments, woven clothing,...
- USE FRA:** Fragments, broken pieces of thicker type plastics, can be a bit flexible, but not like sheet like materials.
- USE FOA:** All foamed plastics e.g. polystyrene foam, foamed soft rubber (as in mattress filling).

2.1.3 Litter in the environment

The closed collaboration with the MEDSEALITTER project (<https://medsealitter.interreg-med.eu/>) allowed having access of raw data for the distribution of marine floating litter across the Mediterranean (Mansui et al., 2020).

This information is crucial to help explaining the data obtained with the indicator ‘Ingestion’ (and potentially ‘Entanglement’). Floating litter distribution all over the Mediterranean exhibited seasonal fluctuations (Mansui et al., 2020, figure 2). In summer, litter is concentrated in the North-western sub-basin, while many adult turtles are frequent in the Eastern sub-basin, where the main spawning beaches are present.

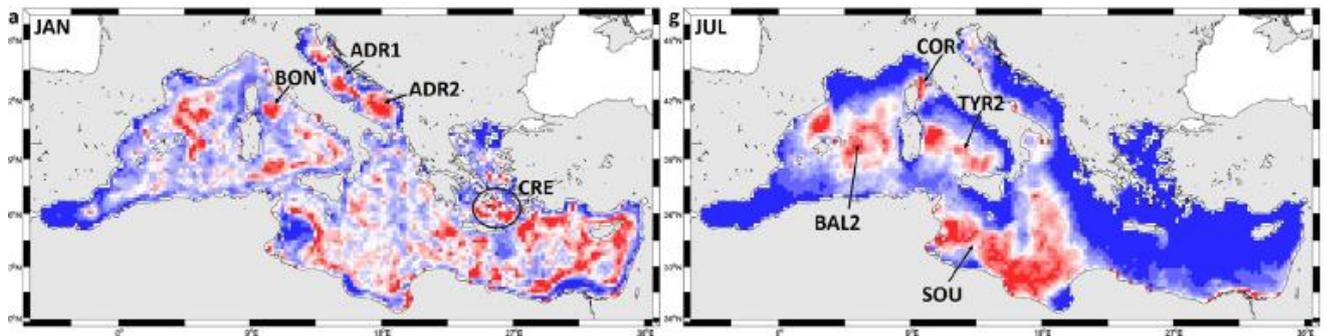


Figure 2: Monthly accumulation of floating litter in the Mediterranean Sea from an initial homogenous distribution of particles, in January (left) and July (right), from Mansui et al. (2020).

The synergy with Project Interreg CLEAN ATLANTIC will soon also allow the consideration of litter dispersal and accumulation on the Atlantic façade (figure 3). Similarly, this knowledge helps understanding risks (temporal interactions between litter transfer, accumulation, and turtle presence) in Macaronesia, and connecting with PoMs.

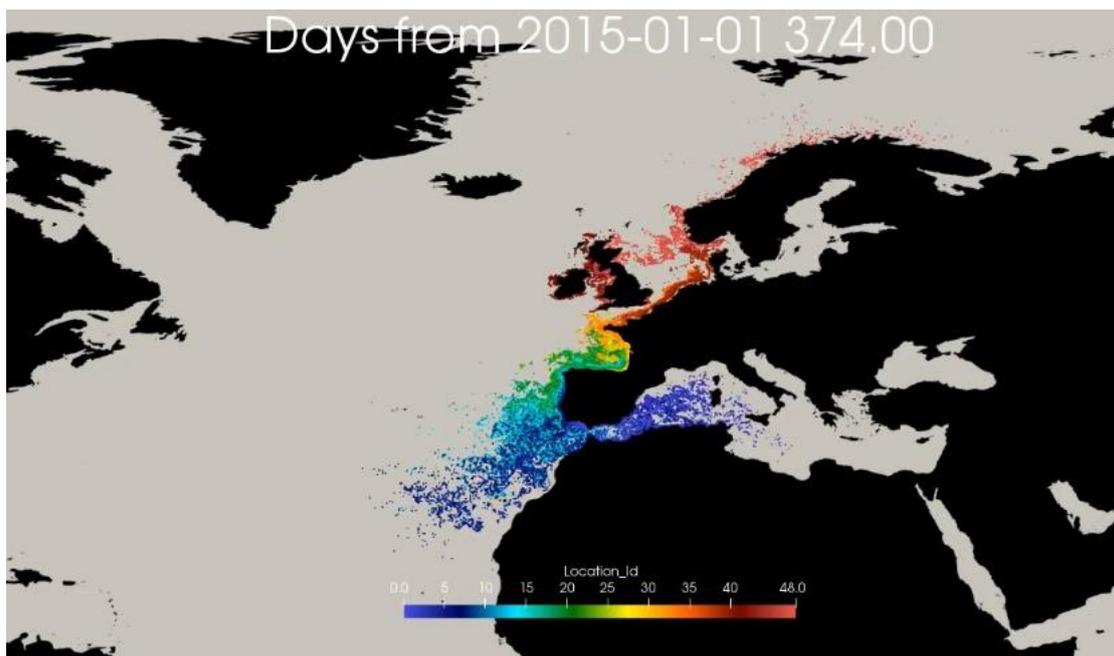


Figure 3: Screen capture of the modelling of floating litter distribution originated from the main Western European Rivers (one color per river), courtesy F. Galgani, Project Interreg CLEAN ATLANTIC.

2.2. List of PoMs connected with litter ingestion/entanglement

An excel table has been built and shared with all partners during the first months of the project, containing (a) criteria connected with risks on sea turtle and (b) information on National Policies connected with plastics in UE and non-UE countries.

(a) Risks of litter ingestion by sea turtles, based on:

- Available knowledge on sea turtle distribution crossed with marine litter distribution;
- Capacity to collect specimens, which may be related to site accessibility, collaboration with local stakeholders, collaboration with fishermen, etc.;
- Testable PoMs implemented in corresponding waters;
- Availability of data on litter ingestion by marine turtles in the different areas.

The list of criteria includes:

- 1) Location information: Country, Partner, geographic location, potential pilot area;
- 2) PoM information: List of PoMs, implemented/proposed;
- 3) Indicator information: indicator (ingestion/entanglement) concerned, species, type of litter, stakeholder locality;
- 4) Availability of data: past data, sampling capacity, percentage of litter occurrence (validated at the end of the project), and pro and cons for the selected pilot areas.

The excel file is provided in Annex 1.

(b) A questionnaire has been sent to partners in November 2019 in order to collect information on National Policies connection with plastics in UE and non-UE countries. A first list is provided in Annex 2. A simplified table summarizes this information (this table will be updated) (Table 2).

Table 2. Programs of Measures implemented in partners' country

LITTER CATEGORIES	TYPE OF BAN	COUNTRY									
		Italy	France	Spain	Tunisia	Cyprus	Greece	Turkey	Azores	Canarian	
Type of POM/legislation	USE@She	Plastic@bags/Shopping@bags	X	X		X	O	O			
	USE@Frag;USE@She	Single-use@plastic	O	X				P			
	IND@	Microbeads	X								
	USE@Frag	Cotton@buds	X					P			
	USE@Thr;USE@Frag;USE@Oth;Other	Legge@Salvamar@Waste@management@in@ports@fishery)	O	O	O						

X@Adopted
O@Approved@but@still@not@adopted
P@Proposed

An email entitled “INDICIT II _ Validation of Pilot areas in relation with PoMs” has also been sent to the EAB for advice on the methodology for selecting pilot areas on the 3rd October 2019. We obtained two rather similar comments recommending continuing the strongest effort of data collection in each county (for both indicators), and then looking at “regional” (e.g. by country or by group of countries) where PoM implementation are similar.

The MSFD Full list of measures, sent by INDICIT II Policy Officer in January 2020, is also available (Annex 3), and detailed reports on PoM (including working documents) at the scale

of the MSFD and member states (technical reports per country) are available at: https://ec.europa.eu/environment/marine/eu-coast-and-marine-policy/implementation/reports_en.htm

3. Selection of pilot areas

The definition of pilot areas regarding PoMs has to consider the new knowledge acquired since INDICIT II submitted proposal (July 2018), in particular on:

3.1 Data collection

Partners have then decided to use the following criteria:

- 1) Collect as many samples as possible from specimens sized between 40 to 60 cm of curved carapace length. This size class is frequently observed and should be encountered at the global scale and in the selected areas in higher proportion. The upper limit is the size at which adult female turtles start reaching the beaches for nesting in the North-East basin (Turkey nesting beaches). As sea turtle does not (or less) feed during reproduction, the immature and sub-adults are better choice for the indicator “Ingestion” at least during the summer season.
- 2) Sampling remains to be carried out in an opportunistic manner (i.e. analysis of ingestion of all the possible collected turtles) at the whole INDICIT II area. This will enable acquiring knowledge to verify our first evaluations especially in Southern and Eastern Mediterranean as well as in the Atlantic where data collection was initiated more recently. This opportunistic data collection will also contribute to reinforce the stakeholder network created during INDICIT project (see Task 2.2).
- 3) The *Dermochelys coriacea* species was proposed to be added for the Atlantic area of the project (see INDICIT Final report). More than 60 dead specimens of this species have been recorded in France Atlantic waters (necropsies in process) but samples of the species have rarely been collected in other areas. Further analyses will enable verifying if this species could be used to complete the evaluation of PoMs in the Atlantic area of the project.

3.2 Litter classification regarding PoMs.

The INDICIT protocol proposes to differentiate plastic categories of litter ingested by sea turtles according to the MSFD guideline (Galgani et al., 2013):

USE SHE: Remains of sheet, e.g. from bag, cling-foil, agricultural sheets, rubbish bags...

USE FRA: Fragments, broken pieces of thicker type plastics, can be a bit flexible, but not like sheet like materials.

USE THR: Threadlike materials, e.g. pieces of nylon wire, net-fragments, woven clothing, ...

USE FOA: All foamed plastics e.g. polystyrene foam, foamed soft rubber (as in mattress filling).

USE POTH: Any other plastic type of plastics, including elastics, dense rubber, balloon pieces, soft air gun bullets

USE SHE: The plastic bags, frequently ingested by sea turtles, are included in this category. Soft packaging such as for candy or cake should be included in USE SHE too. These specific

items were not detailed in the MSFD guideline for monitoring litter impacts nor INDICIT protocol. They may have been noted in column “Notes” by the stakeholders in charge of data collection.

USE FRA: Single use plastic can correspond to cotton bud, plastic straws, fragments of plastic cups and corks, that are found ingested by sea turtles. These specific items were not detailed in the MSFD nor INDICIT protocol. They may have been noted in column “Notes” by the stakeholders in charge of data collection. Hard plastics are also included in USE FRA.

USE FOA: Items of this category are ingested by sea turtles in low frequencies of occurrence. Polystyrenes are subject to specific measures. Spatial and temporal variations can be evaluated in order to assess risks related to polystyrene and future influence of PoMs targeting this category (see Activity 5 progress report, synergy with CLEAN ATLANTIC).

USE THR: Items of this category are ingested by sea turtles, often as fishing lines or mixed of fishing lines and nets, and less frequently related to textile fibres. This category should be concerned by measures targeting fishing activities. The analysis of this specific category can be related to Activity 3, entanglement being mostly caused by litter from fishing and aquaculture activities. Detailed categories are proposed in INDICIT II Entanglement protocol, being currently validated by partners.

These three categories (USE SHE, USE FRA and USE THR) are the main litter found ingested by loggerheads (data collected during INDICIT project, on-going with INDICIT-II, fig 1b).

3.3. Relation ingested litter categories and PoMs

The relation between PoM and litter categories are:

Ban of plastic bags: The plastic bags are included in the category USE SHE.

Ban of single use plastics: These items can correspond to cotton bud, plastic straws, fragment of plastic cups and corks, which belong to the category USE FRA. Soft packaging such as for candy or cake should be included in USE SHE.

Ban of fishing gear deposition at sea (or facility to trash litter in harbour): Threadlike materials, e.g. pieces of nylon wire and net-fragments are included in the category USE THR.

The policies implemented in the partners’ country are related to the ban of plastic bags and the bans of single use plastics. Hard plastics (not single use items also) are included in USE FRA. Ingested items are generally not specified by stakeholders (except sometime in the column “note”). However, the efficiency of the PoM should be evaluated by recording the decrease in the three main ingested categories (both in occurrence and quantity).

The relation between entanglement and measures (e.g. limitation of lost net-fragments) will be studied at the end of the project.

The selection of the pilot areas is at this time focused on areas allowing the evaluation of these (three) main measures.

Looking for appropriate pilot areas can also take into account historical data, e.g. collected before the implementation of the INDICIT programme:

In Italy the occurrence of litter ingestion was found at 85% until 2014. Further data, until 2017 and from 2018, will be used to detect trend in e.g. USE SHE, USE FRA and USE THR.

In Italian Mediterranean waters, an increase of occurrence from 2008 to 2017 was observed (Camedda et al., 2014; Matiddi et al., 2017),

In the Spanish Mediterranean waters, no significant increase in ingested marine litter was observed in the last years (Domènech et al., 2019).

These trends or absence of trends have to be analysed with litter categories when possible.

At the whole INDICIT II area, there is not enough standard past data to assess temporal trend without some bias to consider. The implementation of measures can also be too soon to have a significant effect (e.g. decrease of plastic bags, USE SHE) in the field.

For the next RP, the dataset will enable to evaluate the occurrence and quantity of ingested litter per category, and when feasible, to identify the ingested items.

4. List of proposed pilot areas

A first proposal of pilot areas is provided in figure 4. The methodology presented in this D2.7 (and ongoing new knowledge collected) will be shared with the EAB and other relevant experts (see also Activity 5 Synergies with other programmes) for the selection of pilot areas (also based on the information collected in Annex 1).

The current proposal gives some examples of available information useable to select these areas.

Following the previous statements on data availability and PoM implementation, the partners have discussed (Mid-term meeting Paris, January 2020) on pilot areas for analysing the indicator's GES (see Task 2.3) and relationship with PoMs (without giving up the opportunistic data collection in other areas):

Pilot area 1:

In Turkey waters, 39% of necropsied individuals are found with ingested litter (and dry mass average of $0.37 \pm 0.29\text{g}$) at the studied population level, from 2013 to 2019 (fig. 1a). This is the lowest observed value and this area could be considered as the minimum impacted area. Note that the knowledge of litter density variation in time (season), and biology of sea turtle (adults with limited feeding activity during breeding) can explained the lowest % of occurrence observed in this area in summer. Using other specimens (e.g. non-reproductive of less than 60 cm) will allow testing these hypotheses.

The selection of a third country is questionable as the contract is about MSFD PoMs. However, baseline for GES can be outside the study area (Minutes of WG GES, Berlin, May 2019). More analysis will allow providing a consolidated baseline proposal, considered as the “least”

impacted area at the relevant scale (MSFD and RCS areas), and especially with the new data collected in Cyprus.

Pilot area 2:

In the Italian waters, 58% of necropsied individuals are found with ingested litter (and dry mass average of $0.92 \pm 0.19\text{g}$) in the Tyrrhenian, Ionian and Sardinian Seas (to be spatially specified according to the availability of specimens and stakeholders in charge of data collection). The implementation of PoM and availability of sea turtles are argument to select this region for a pilot area. PoMs implemented in Italy would lead to a reduction of plastic bags, single used plastics and fishing lines and nets (also interesting for the indicator “Entanglement”).

Pilot area 3:

Zone 1: In the French waters (Gulf of Lion and Corsica), 76 % of necropsied individuals are found with ingested litter (and dry mass average of $0.89 \pm 0.27\text{ g}$). More restricted sub-areas (e.g. Rhone Delta / Provence-Corsica) could be considered as differences in occurrence occur.

Zone 2: In the Spanish Mediterranean waters, 86 % of necropsied individuals are found with ingested litter (and dry mass average of $1.4\text{g} \pm 0.46\text{g}$). More restricted sub-areas (e.g. Mainland coast / Balearic Islands) could be considered as differences in occurrence occur.

The implementation of PoM and availability of sea turtles are argument to select these two regions for a pilot area. PoMs implemented in France, Spain would lead to a reduction of plastic bags, single used plastics, and fishing lines and nets (also interesting for the indicator “Entanglement”).

Potential complementary area was discussed among partners, in the Atlantic (Azores waters (Portugal) and Canarias Islands (Spain)). In Azores archipelago, 71 % of necropsied individuals are found with ingested litter. The characterization of litter items will help identifying the sources and potential PoM (e.g. Europe), as simulations showed that a significant flux of litter is coming from Southwestern Europe. In Canarias Islands, 90% of necropsied individuals are found with ingested litter. Similarly, sources have to be identified according to ingested litter categories. The starting collection of data on entanglement seems also to indicate the importance of the Atlantic areas for this indicator.

Figure 4: Proposal of pilot areas to test the PoM regarding the indicator “litter ingestion”



ANNEXES

- **Annex 1:** Excel table shared with partners during the first months of the project
(*separated document*)
- **Annex 2:** National Policies connection with plastics in UE and non-UE countries
- **Annex 3:** Excel table with MSFD Full list of measures
(*separated document*)

Annex 2: National Policies connection with plastics in UE and non-UE countries (INDICIT II partners' countries)

FRANCE

- Law on energetic transition and green growth **17 August 2015**
- Decree n° **2016-379, 30 March 2016** (Decree published 31 March 2016, JORF n°0076 du 31 mars 2016) on the procedures for implementing the limitation of single-use plastic bags.
- **1st July 2016**, plastic bags with a thickness of less than 50 micrometres will be prohibited in stores. In exchange, consumers will be offered reusable plastic bags (over 50 micrometres) or paper, cardboard or fabric bags;
- **1st July 2017**, ban of non-compostable plastic bags less than 50 micrometres thick, intended for the packaging of goods at the point of sale other than checkout bags, in particular bags distributed on the shelves, as well as packaging in non-biodegradable and non-compostable plastic, for sending the press and advertising (blistered)
- JORF n°0202 31 august 2016 text n° 4
- **Decree n° 2016-1170 30 August 2016** relating to the procedures for implementing the limitation of disposable plastic cups, glasses and plates
- **Decree n° 2019-1451 24 December 2019** on the ban of certain single-use plastic products (JORF n°0300 27 December 2019 text n° 20). Ban of single-use plastic product: product made entirely or partially from plastic and which is not designed, created or placed on the market to accomplish, during its lifetime, several journeys or rotations by being returned to a producer to be refilled, or which is not designed, created or placed on the market to be reused for a use identical to that for which it was designed.
- Packaging and packaging waste, goblets and glasses, disposable kitchen plates for the table, forks, knives, spoons and chopsticks, meal trays, ice cream pots, salad bowls and boxes, straws, glass or beaker lids.

Italy

- Law on non-biodegradable plastic bags
- **3 August 2017**, decree n°123 – ban of non-biodegradable plastic bags
- Implementing provisions of Directive (EU) 2015/720 of the European Parliament and of the Council of 29 April 2015 amending Directive 94/62 / EC as regards the reduction of the use of light plastic bags. Infringement procedure no. 2017/0127)
- Art. 9 -bis (Ban on the marketing of plastic bags).
- **Since January 1, 2018**, Italian law requires the exclusive use of biodegradable plastic for "ultralight" bags with which bulk products such as bread, vegetables and fruit are weighed and priced.
- Law on ban of cotton buds and microbeads
- **Law 27 December 2017** n. 205 “State budget for the financial year 2018 and multiannual budget for the three-year period 2018-2020”;art. 1 paragraph 545, 546
- **January 1, 2019** ban on the production and sale of cotton swabs with a plastic core (Shops are really selling only cotton buds with a paper/cardboard core)
- **January 1, 2020** ban on the production and sale of microbeads in cosmetic
- Law on ban of single-use plastic (not yet transposed in Italy)
- EU directive SUP 2019/904 (Single Use Plastic)
- Italy by **July 2021** must stop the production of Disposable Plastic (art. 17)
- Prohibited plastics: straws, plastic cutlery and plates, sticks for inflatable balloons, cotton buds, palette for mixing cocktails, bone-degradable plastic bags, and polystyrene foam containers for food.
- Legge Salvamare (not yet in force): The Assembly of the Chamber (House of Representatives), in the session of 24 October 2019, approved the draft law of the A.C. Government. 1939-A and abb., containing "Provisions for the recovery of waste at sea and inland waters and for the promotion of the circular economy (« save sea law »)", which now passes to the Senate examination.

- Professional fishermen (in particular those who use trawling net gears recover the most of sinking marine litter, but also those with gill/trammel nets) will be authorized to bring marine litter found at sea in their gears to the port so to be recycled, when possible, with other kind of waste. In this way, fishermen should avoid discarding marine litter.

Spain

Regional Law 14/2018, of June 18, on waste and its taxation. Autonomous community of Navarre.

Article 23. Use of plastic bags, single-use plastic products and products packaged in single-dose or single-use capsules

- **As of July 1st 2018**, (a) The delivery of plastic bags to consumers free of charge at the point of sale of goods or products, as well as for home delivery or for online sales, shall be prohibited, with the exception of very lightweight plastic bags. (b) Traders shall charge a fee for each non-compostable plastic bag provided to the consumer. In determining the price of plastic bags, traders may take as a reference the guide prices laid down in the regulations in force.
- From **January 1st 2020**, the delivery of plastic bags to the consumer at the point of sale of goods or products, as well as home delivery or delivered for sale online, is prohibited, with the exception of compostable plastic bags that meet the requirements of the standard UNE-EN 13432:2000 or equivalent and these may not be delivered or distributed free of charge.
- **From July 3rd 2021**, the sale of products packaged in single-dose or single-use capsules, which are not covered by Directive 94/62/EC on packaging and packaging waste and Directive (EU) 2019/904 of the European Parliament and of the Council of 5 June 2019 on the reduction of the impact of certain plastic products on the environment, shall be prohibited, provided that they are made of organically or mechanically non-recyclable materials.

Royal Decree 293/2018 of May 18, on the reduction of consumption of plastic bags and establishing the register of producers. Ministry of agriculture and fisheries, food and environment

Article 4. Measures to reduce the consumption of plastic bags

- **As of 1 July 2018**, (a) The delivery of plastic bags free of charge to consumers at the point of sale of goods or products shall be prohibited, with the exception of very lightweight plastic bags and plastic bags with a thickness of 50 microns or more containing 70% or more recycled plastic. c) Traders shall charge a fee for each plastic bag provided to the consumer. In determining the price of plastic bags, traders may take as a reference the guide prices set out in Annex I.
- From **1 January 2020**, (a) The supply of plastic carrier bags to consumers at the point of sale of goods or products shall be prohibited. (b) Plastic bags with a thickness of 50 microns or more shall contain a minimum of 50 % recycled plastic.
- As from **1 January 2021**, the delivery of light and very light plastic bags to the consumer at the point of sale of goods or products shall be prohibited, unless they are made of compostable plastic. Traders may also choose other packaging formats to replace plastic bags.

Portugal

- Law 82-D/2014, single use plastic bags charges.
- Law 69/2018, establishment of an incentive system for the return of non-reusable plastic beverage packaging, to be implemented by **December 31st 2019**, and a deposit system for non-reusable plastic, glass, ferrous metal and aluminium beverage packaging, mandatory from **January 1st 2022**.
- Law 76/2019, single use plastic ban from restaurants and supermarkets.

Greece

- Law 2939/2001, **6 August 2001** (OJ 179/A/6-8-2001): “Packaging and Alternative Management of Packaging and other products, Establishment of a National Organization for the Alternative Management of Packaging and other products, and other provisions”. The purpose of this law was to introduce measures for the management of packaging and other products with a view to the re-use or recycling of their wastes.
- Introduction of Eco-Tax for plastic bag
- Law 4496\2017, **8 November 2017** (OJ 170/8-11-2017): “Amendment of Law 2939/2001 on Alternative management of packaging and other products, adaptation to Directive 2015/720/EU, regulation of issues of the Greek Recycling Agency and other provisions”.
- The government has introduced a so-called Eco-Tax of 4 cents for every plastic bag. No charge for plastic bags were imposed for shopping in the open markets and kiosks. As of **2019**, the charge raised to 7 cents. There is also the “National Strategy of the Circular Economy (in Greek)”: <http://www.ypeka.gr/LinkClick.aspx?fileticket=R7N5HFvj2dM%3D&tabid=37&language=el-GR>

Tunisia

- Framework law 96-41 of **10 June 1996** on waste management
- Decree 97 – 1102 of 2 *June 1997* fixes the conditions and the arrangements for the collection and the valorization of the packaging waste. The main products recycled are: Plastic, metal, tires, paper and textile
- 2003: Ecotaxes of 5% from the company revenues importing or producing plastic (particularly granules or semi-final plastic products)
- Decree 2005-2317 of **22 August 2005** on the creation of the National Agency on waste management (ANGed)
- Conventions of **March 1, 2017** and **March 1, 2018**, ban of bags in single-use plastic from supermarkets (with a thickness of less than 40 microns) and the ban of plastic have been prohibited at the exit of the boxes in pharmacies.
-

Turkey

- The Law on Environment was changed (Law n° 2872, Annex 13) and the decree was published on 10.12.2018. Free plastic bags were prohibited in stores since **January 1, 2019** and penalties started for stores that do not comply with the ban. Plastic bag usage reduced by 77% in the first 11 months of the ban, according to the officials of the Ministry of Environment and Urbanisation. This is the only legal regulation for plastic waste for now in Turkey.