SUSTAINABLE CRUISE

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Project Overview

Eu Programme: LIFE + ENVIRONMENT POLICY AND GOVERNANCE
Duration: from 1 Sept. 2011 to 30 June 2014

Coordinating Beneficiary: Costa Crociere SpA, Genova

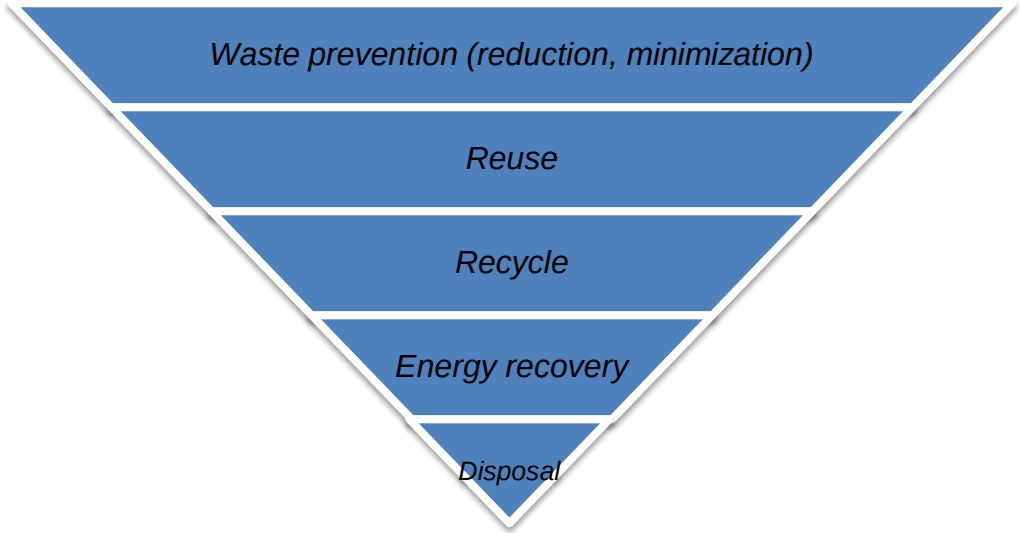
Partners:

- Ce.Si.S.P - Centre for the Development of Products Sustainability (Università di Genova)
- MedCruise - Association of Mediterranean Cruise Ports
- VOMM Impianti e processi SpA, Rozzano (Mi)
- Contento Trade Srl – Terenzano (Ud)
- Design Innovation Srl, Milano
- Rina Services SpA, Genova

Main stakeholders:
Carnival Corporation & plc; European Cruise Council; FederAmbiente; Comieco

Project Overview

Sustainable Cruise aims at waste hierarchy on a cruise ship focusing on three on-board waste streams:

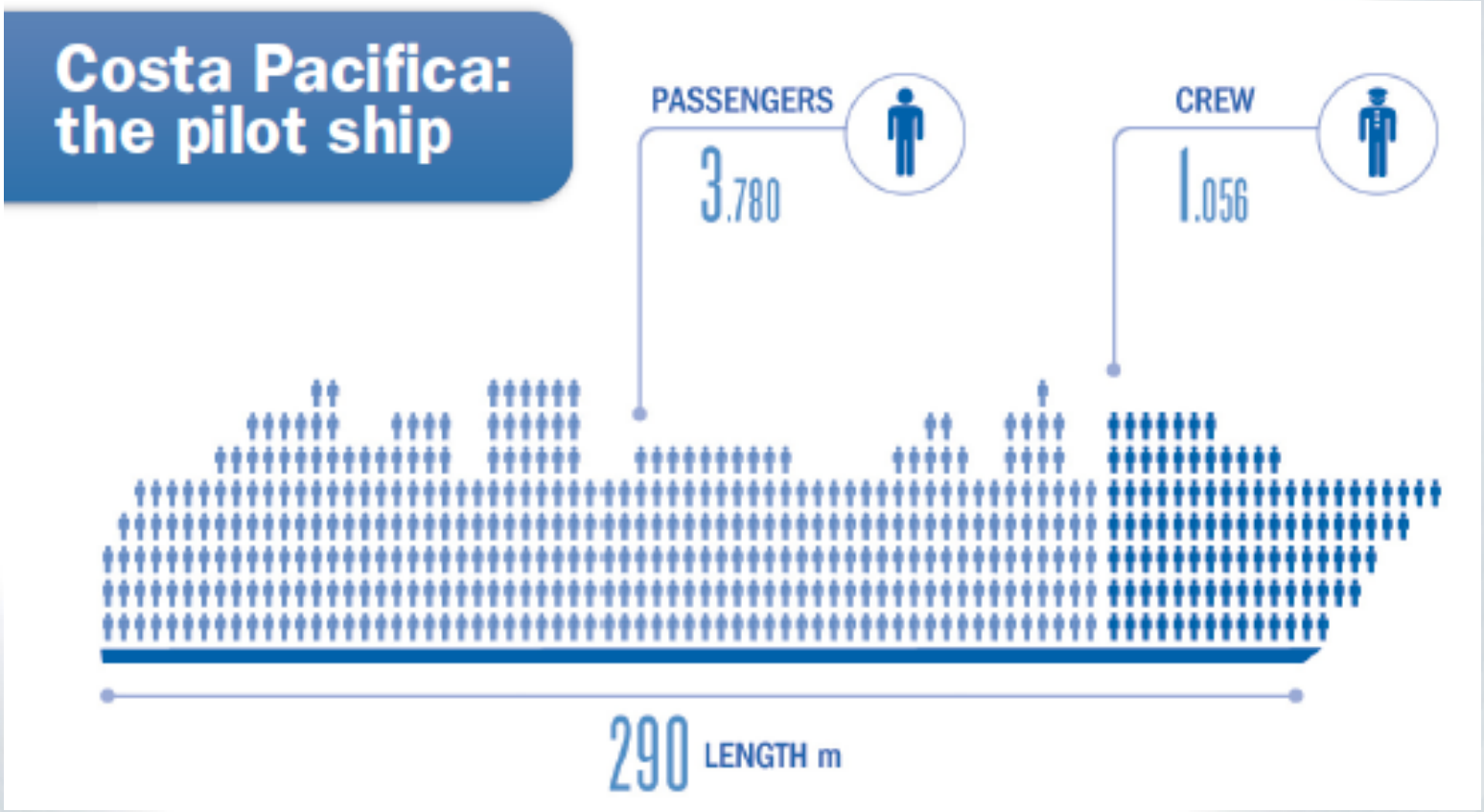


Packaging → Define a plan for the recovery or re-use of **30%**

Bio-waste → Re-use the economic value of **2,000 (- 90%)**

Paper → Define a plan for the recovery or re-use of **40%**

Project Overview



Project Overview

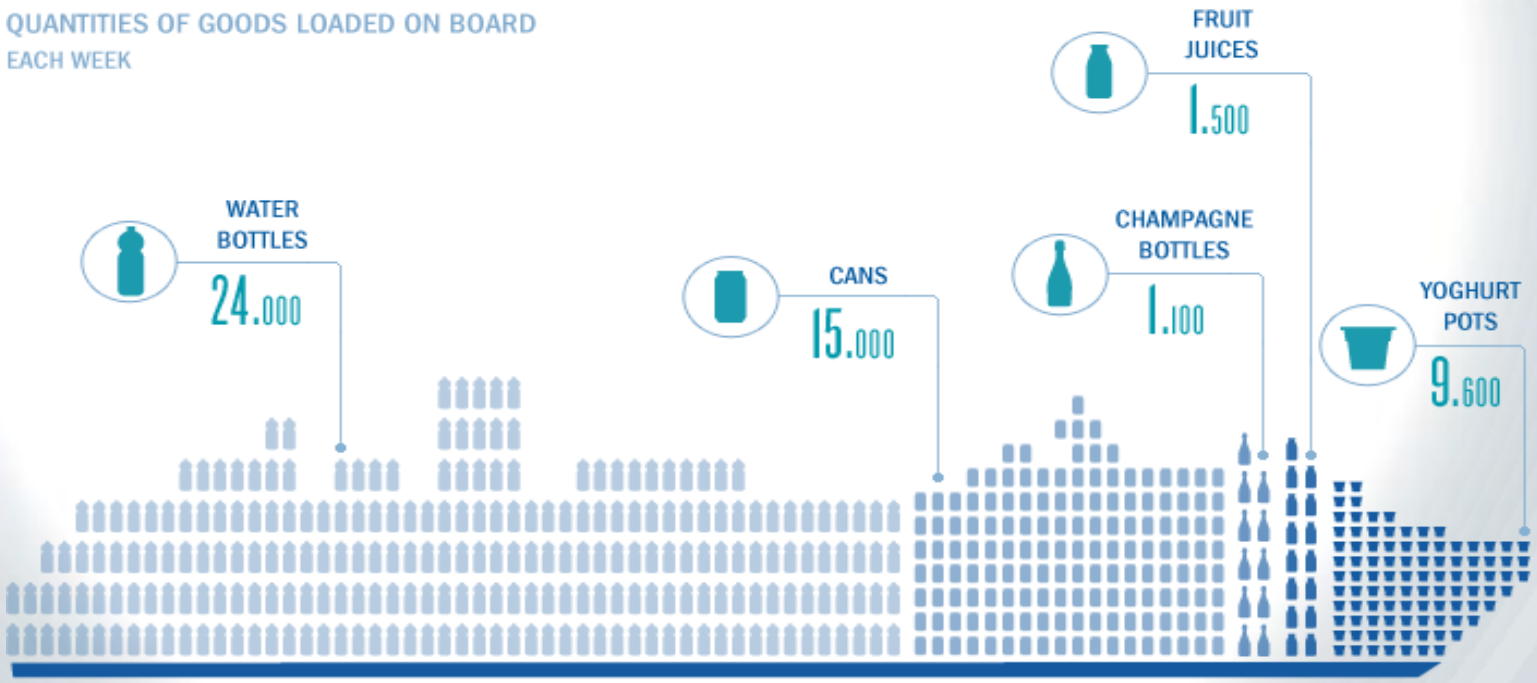
"Sustainable Cruise" has three further transversal objectives:

- To create a **Euro-Mediterranean network of ports** for the cooperation in the management of waste that is offloaded to shore.
- To quantify the reduction of carbon dioxide emissions deriving from sustainable management of shipboard waste as a first step for the **application of the Kyoto objectives for the reduction of CO2 to the maritime sector.**
- To define a new type of voluntary **certification regarding the treatment of waste on board ships** for anticipating and orienting the European regulations on these themes.

Packaging

Partners involved: *Rina Services SpA, Ce.Si.S.P, Design Innovation*

Packaging = over 50% of the waste produced on board



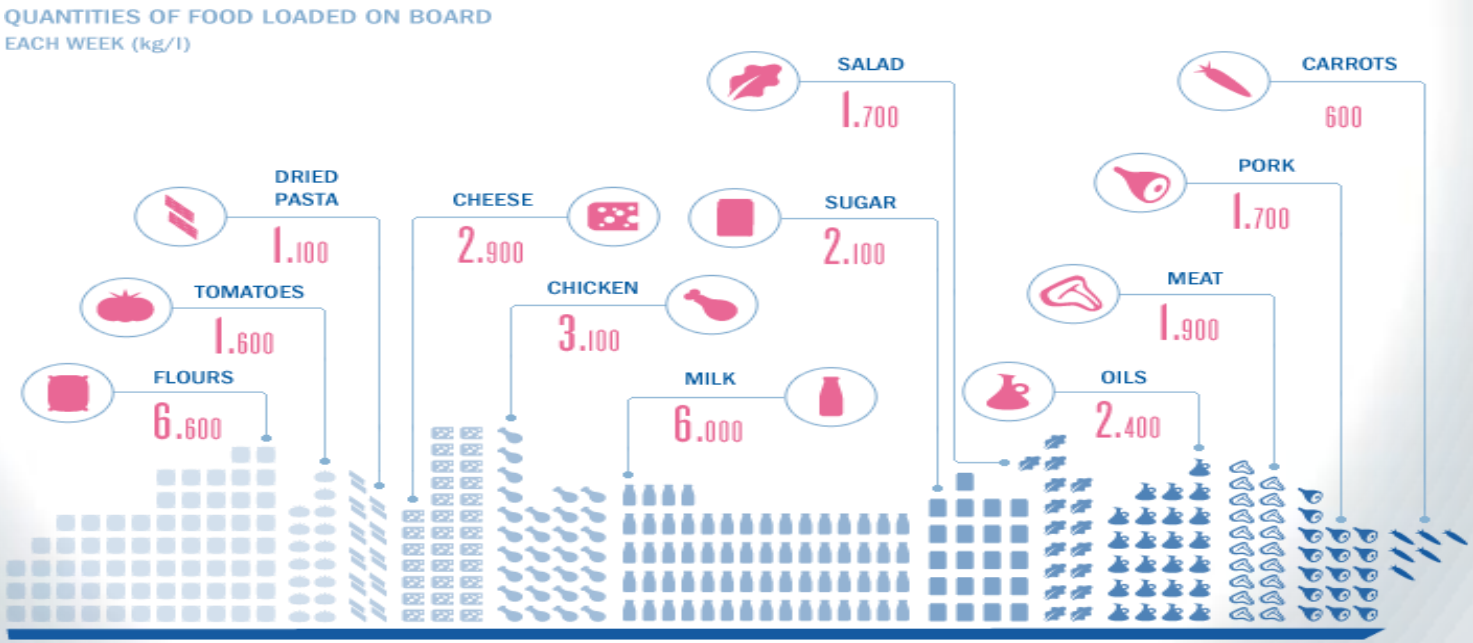
Packaging reducing proposals

MATERIALS	PROPOSAL
PLASTIC	Transform plastic bottles into plastic grain
	- Easy to store
	- Easy to sell

Bio-waste

Partners involved: *VOMM Impianti e processi SpA, Contento Trade Srl, Rina Services SpA, Ce.Si.S.P*

Biodegradable waste = 22% of total waste produced on board



Bio-waste

In order to recycle or recover it, “Sustainable Cruise” foresees its treatment and transformation, by experimenting the application and comparison of different technologies.

Bio-waste

Ideas

- ✓ In order to collect data for the partners VOMM and Contento Trade, for their analisys on food waste composition, a sampling program was planned and performed.
- ✓ A radar sensor was installed onboard Costa Pacifica in order to monitor the levels of pulper collecting tanks (after dewatering)

From waste

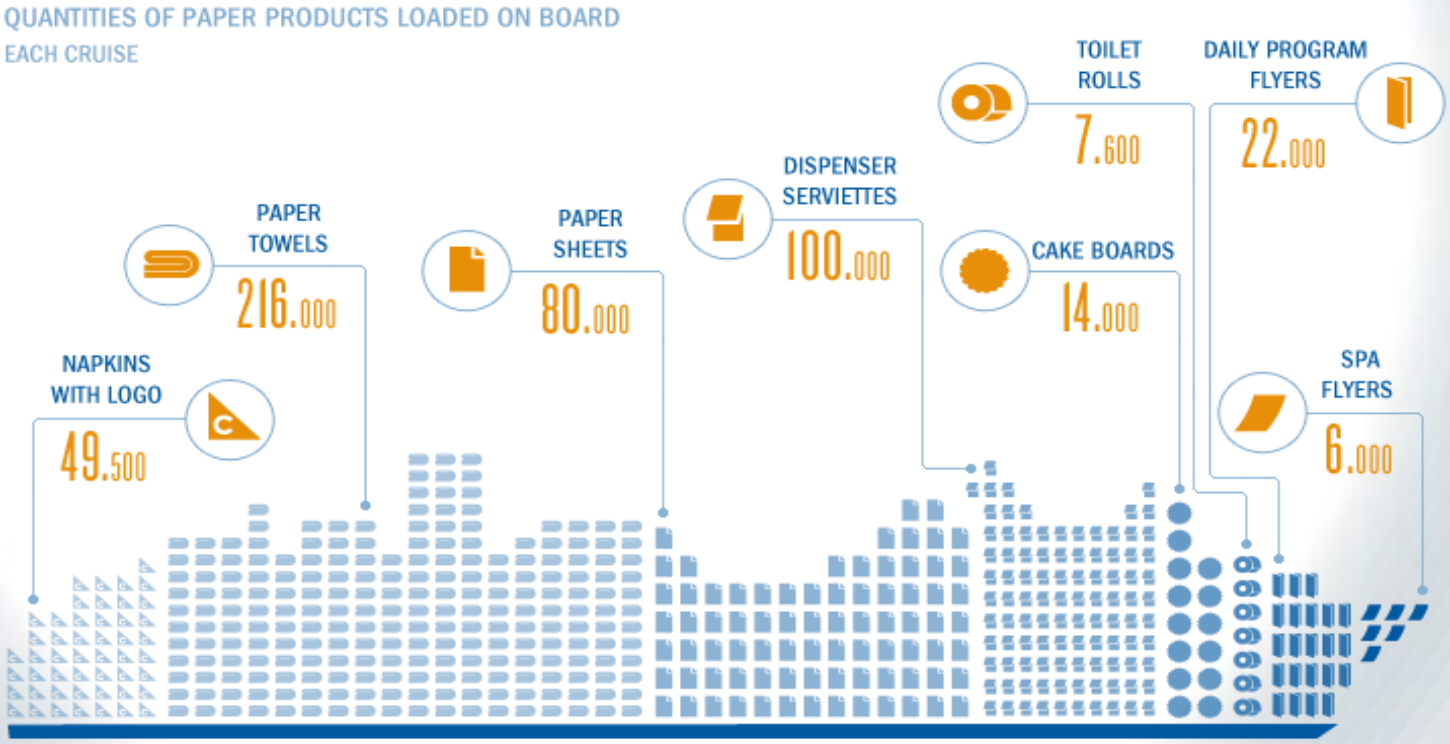
To product

- ✓ A first analysis was performed with the aim of identify applicable legislation and existing constraints on food waste recycling (the option to transform the residue into food for farm animals was excluded)

Paper

Partners involved: *Design Innovation, Rina Services SpA, Ce.Si.S.P*

Paper = around 16% of waste produced on board



Paper

Ideas

The types of paper used on board are very varied: kitchen paper, packaging paper, paper used in offices of for brochures and publicity material

For paper, “Sustainable Cruise” foresees:

- **The overall in-depth analysis of supply, storage and disposal of paper on board.**
- **The study and analysis of the technologies available for the disposal and re-use.**

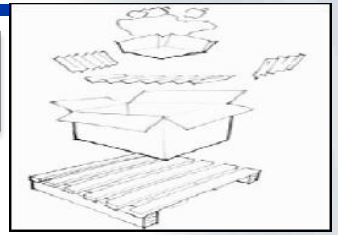
Paper

Ideas

PAPER FIRST PROJECT HIPOTESES

PACKAGING

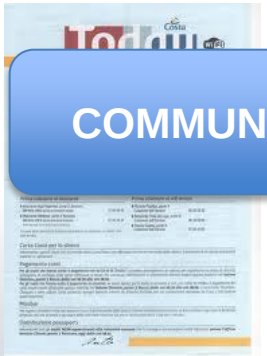
- REDUCTION → SMART PACKAGING



- TRASFORMATION → WET DRY FIBER PULP

CONSUMERS

- REPLACEMENT



COMMUNICATION

- GUIDELINES
- REDUCTION → DIGITAL APPLICATIONS

APP

- TRASFORMATION → CREATIVE LABS

Waste ashore governance

Partners involved: MedCruise

A preliminary study was released to learn from the cruise lines the best practices used to separate, prepare and manage waste on board

Expected results

- European database and map of ashore waste streams facilities that will allow an efficient decision making to all ships sailing in the area and it will prevent from discharges of such regulated garbage streams — **March 2013**

- Coordination with ports that will provide advanced waste management services to the Costa pilot ship — **March 2014**

Waste ashore governance

Analysis and collection of waste management best practices at ports.

OBJECTIVE

Determine efficient mechanisms implemented to recycle, reuse or treat ship's waste at ports in order to increase waste management efficiency

Catalogue the best practices and state-of-the-art regarding ashore ships waste management services, facilities, technologies worldwide.

Waste ashore governance

Analysis and collection of waste management best practices at ports.
METHODOLOGY

Best practices classification *according to*

- UE principles for waste management
- Waste Hierarchy
- MARPOL73/78 AnnexV

INTEGRATED SHIP'S SOLID WASTE MANAGEMENT SYSTEM

Storage	Reception
Segregation	Storage
Reuse	Segregation
Treatment	Treatment
- Compactors	Recycling
- Grinders	Re use
- Pulpers	Compost
- Crashers	Biogas
Incinerators	Energy recovery
Recycling	Transfer to Centralized Station
Energy Recovery	

Waste ashore governance

Analysis and collection of waste management best practices at ports. ***GENERAL FINDINGS***

- The role of ports in ship's waste management is mostly focused in transfer plant activities alike.
- Reduction of emissions is the field where ports are developing more environmentally related actions.
- Environmental management and waste management planning is essential to an integrated approach to the issue.
- The consultation process is key to port waste management planning: Communication with Community, users...searching for Stakeholder and public-private engagement.
- Some ports have specialized contractors in selling and shipping materials directly.
- In other ports, agents control the waste types and quantities reported by the ships.
- Existence of different charges for the waste previously treated onboard (compacted/grinded) or not treated waste.
- World Port climate initiative. 10% discount on port dues on more environmentally friendly ships

Waste ashore governance

Analysis and collection of waste management best practices at ports. ***CONCLUSIONS***

- Even though there are ongoing initiatives of the cruise industry and existing best practice manuals and other plans of the maritime and port sector in the solid waste management issue…
- …it doesn't exist an actively integrating and pro-active environmental behavior into their daily operations
- High technological solutions suitable for cruise industry exist for an integrated waste management on board.
- An integral element of the planning and ongoing management of port waste reception facilities is the collection and assessment of information regarding port users requirements.
- Ports of call should collect information on types and volumes of cruise ships traffic, on kinds of waste generated, segregated on board and regularly delivered.
- En exhaustive analysis of port reception facilities is also crucial.
- Identifying reuse possibilities, separating and storing garbage properly upstream where it's generated are the pillars of an integrated waste policy but **waste prevention** is suggested as the best strategy to implement in terms of efficiency**.**

Waste ashore governance

Analysis and collection of waste management best practices at ports. ***CONCLUSIONS***

In regard of general **costs** to the ports of providing specific waste management and recycling services for cruise ships, many ports provide garbage facilities without additional charges.

However, facilities for MARPOL Annex I, II, III, IV type wastes, are generally more suited to direct charging because they tend to be more specialized and expensive than facilities for wastes such as garbage (MARPOL, Annex V).

Extensive researches reviewed have shown that some ship operators place much more importance on the time it takes to use a facility, rather than its immediate cost.

Several methods have been found for recovering the costs of service, even though the most common strategies are: indirectly through port and cargo dues; as part of a contract covering the use of facilities over a fixed period; as a flat for a single use of a facility; according to the amount and type of wastes.

Under the polluter pays principle, the costs should be met from the ship operators, likewise, waste management should be economically appealing

the implementation of a cost recovery system (applying a waste fee), providing an incentive to ships not to discharge ship-generated waste at sea, appears as an ecoefficient option.

Waste ashore governance

ON-GOING ***Actions***

ACTION 4: Waste ashore governance

Sub-action 4.2	• Collection and synthesis of national regulatory framework applicable in MedCruise EU countries	31th March 2013
Sub-action 4.3	• Analysis of member ports' waste management facilities - questionnaire	31th March 2013
Sub-action 4.4	• Development of CMS platform and creation of map of MedCruise members facilities	31th March 2013

List of MedCruise Coutnries

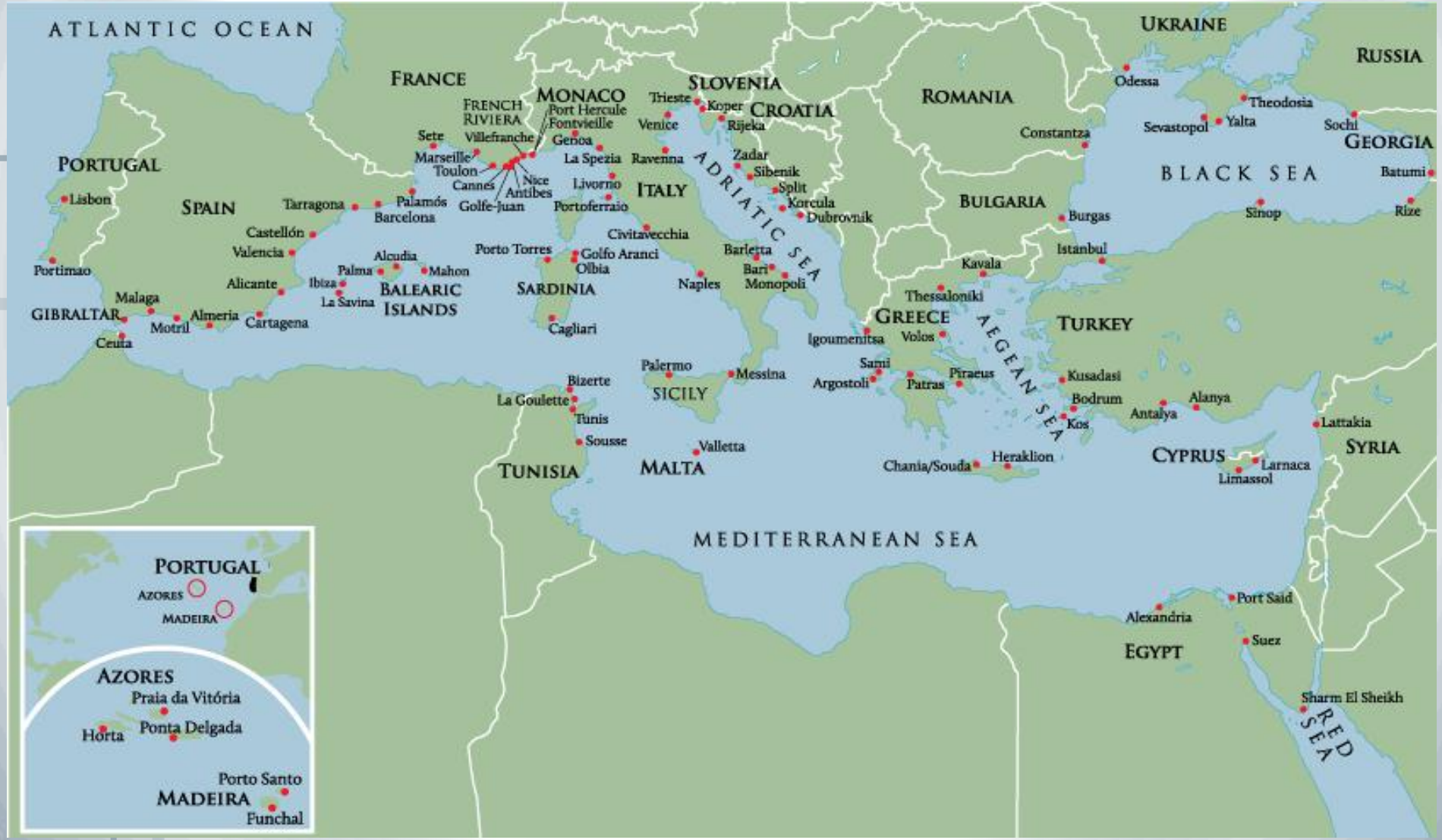
1. CROATIA
2. CYPRUS
3. EGYPT
4. FRANCE
5. GEORGIA
6. GIBRALTAR
7. GREECE
8. ITALY
9. MALTA
10. MONACO
11. MONTENEGRO
12. PORTUGAL
13. ROMANIA
14. RUSSIA
15. SLOVENIA
16. SPAIN
17. SYRIA
18. TUNISIA
19. TURKEY
20. UKRAINE

List of MedCruise Members

Alanya
Alicante
Almería
*Azores**
Balearic Islands
Barcelona
Bari
Batumi
Brindisi
Cagliari
Cartagena
Castellón
Ceuta
Civitavecchia
Constantza
Corfu
Cyprus Ports
Dubrovnik/Korcula
*Egyptian Ports**
*French Riviera**
Genoa
Gibraltar
Heraklion
Igoumenitsa
Istanbul
Kavala
Kefalonia
Koper
Kos
Kotor
Kusadasi
Bodrum
Antalya
La Spezia
Lattakia
Lisbon
Livorno
Madeira
Málaga
Marseille
Messina
Monaco
Motril
Naples
*North Sardinia**
Odessa
Palamós
Palermo
Patras
Piraeus
Portimao
Portoferraio
Ravenna
Rijeka
Rize
Sète
Sevastopol
Sibenik
Sinop
Sochi
Souda/Chania
Split
Tarragona
Thessaloniki
Toulon
Trieste
*Tunisian Ports**
Valencia
Valletta
Venice
Volos
Zadar

Waste ashore governance

Map of MEDCRUISE PORTS



Thank you for your attention

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