CLEANATLANTIC CONFERENCE

Vigo, 21st June

09.00 – 16.30 h
(UTC+2h00, Madrid, Bruselas)

Study on fishing gear life cycle in Madeira, Portugal

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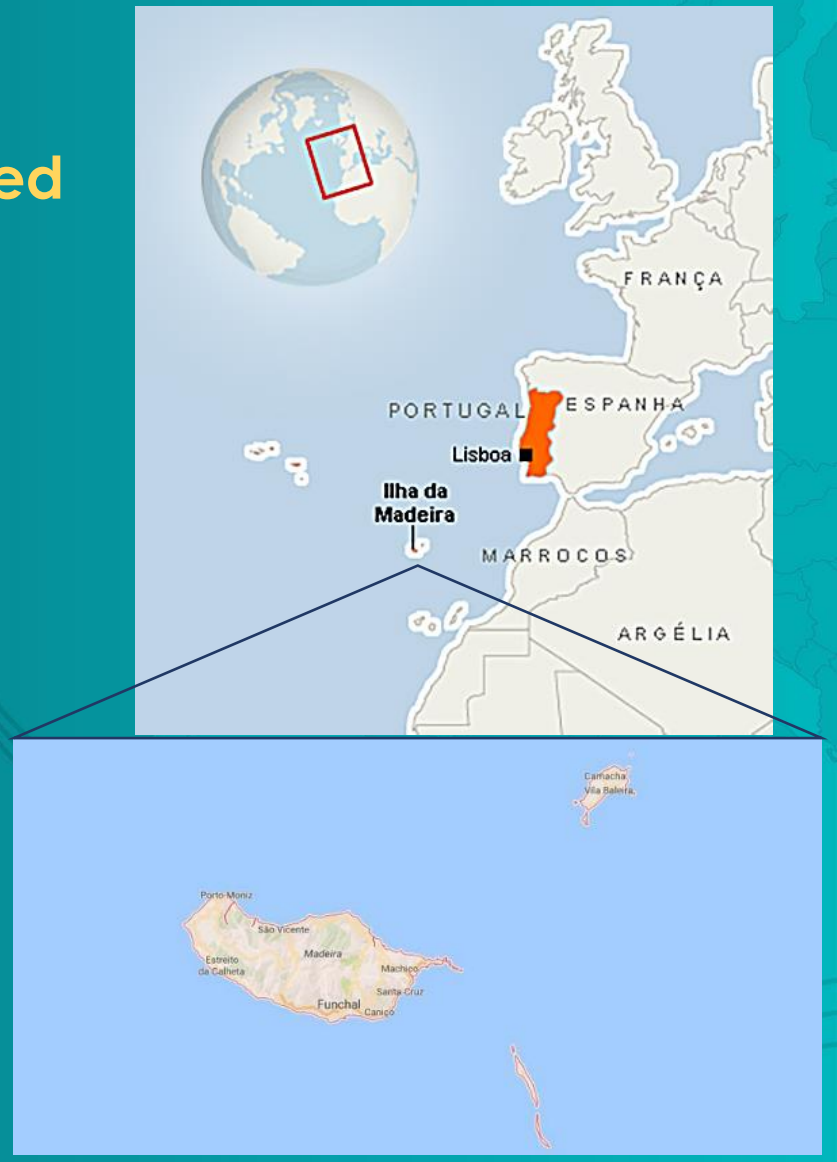
Região Autónoma da Madeira
Governo Regional

Secretaria Regional
de Ambiente, Recursos Naturais e Alterações Climáticas
Direção Regional do Ambiente e Alterações Climáticas

- Madeira Archipelago - Northeast Atlantic
- Increase of marine plastic pollution poses an unprecedented risk to oceanic islands
- High motivation to prevent marine litter, to reduce it and minimize its impact on the degradation of ecosystems and loss of biodiversity
- How, when a certain amount of items collected are from other regions?



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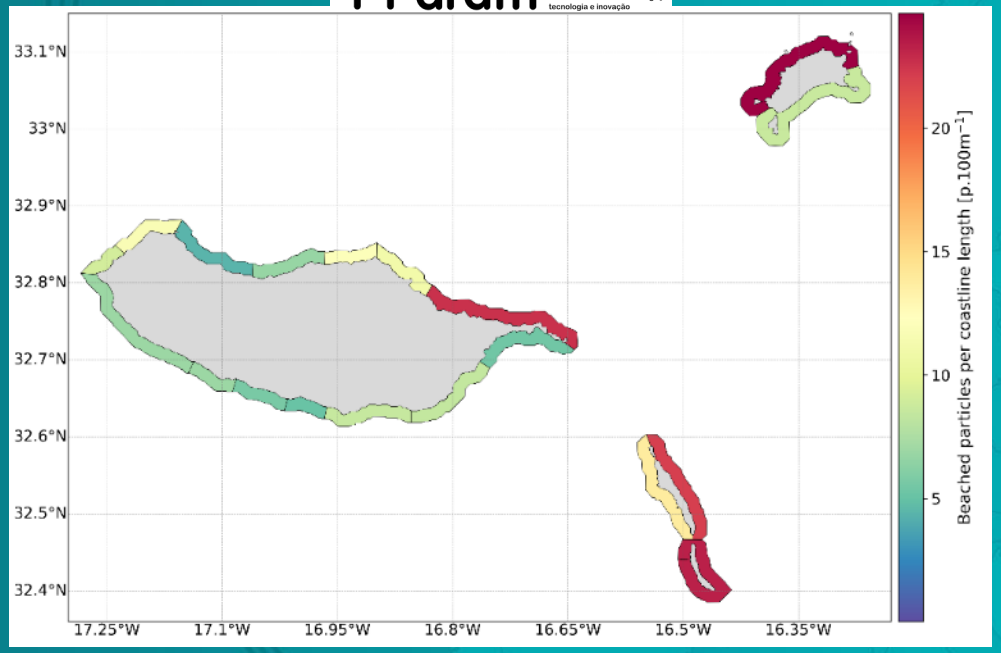
- **Scientific studies shown accumulation sites:**
  - Remote and inacessible areas
- **Specific clean-up campaigns:**
  - 1 event
  - 20 man/hour
  - 600 Kg
  - 30 cubic meters
  - 90% shipping or fishing



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Single Use Plastics Directive:

- Ambitious measures to reduce plastic waste
- Increase collection
- Increase recycling

- Insufficient incentives to return these fishing gears to the coast for collection and treatment
- Plastic components of fishing gear have a high potential for recycling
- Member States will have to establish by 31st December 2024 Extended Producer Responsibility (EPR) schemes for fishing gear and components of fishing gear containing plastic

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Accounting for the consumption of products and the production of waste makes it possible to define more efficient strategies in economic and environmental terms for their management

Knowing and accounting the waste being produced allows the assessment of possible destinations, avoiding landfilling

Knowing and accounting for the products being purchased today allows us to scale up waste management systems and investigate new ways to keep materials circulating in the economy after the end of life of the products they are part of

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To minimize the potential impact of fishing gear on marine ecosystems, it is necessary to implement public policies, which requires evaluating:

- Quantities involved
- Their origins (activity source, geographical source)
- Potential end of life destinations

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How much is produced locally?







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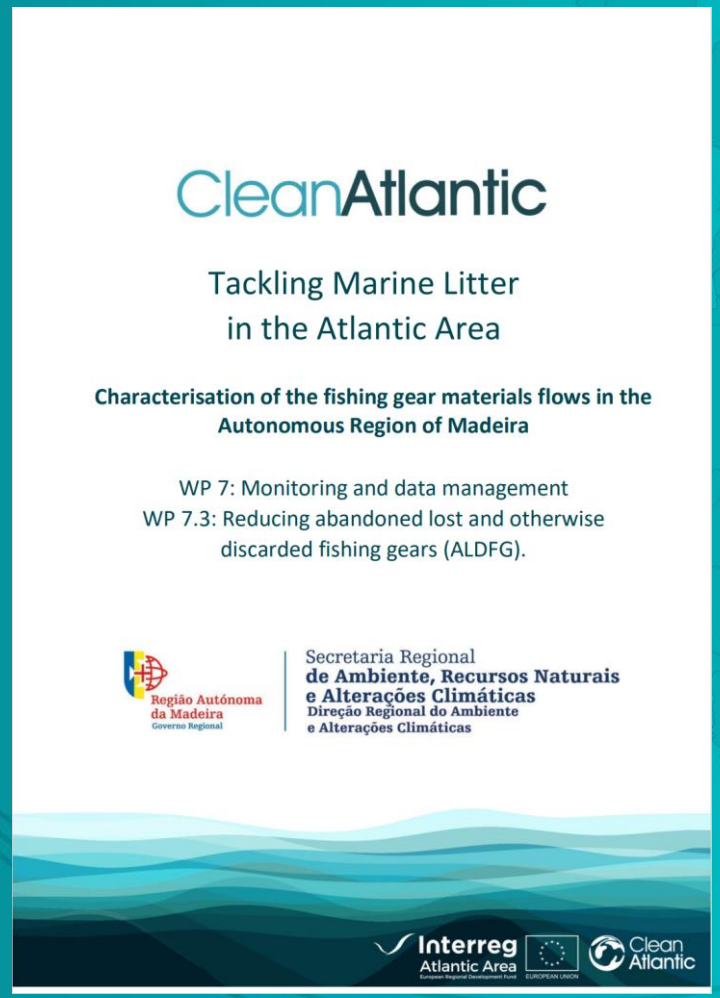
- **Evaluate the flow of fishing gear materials in Madeira**
  - Professional fishing and aquaculture (2021)
  - Coastal leisure fishing (2022)
  - Identifying quantities
  - Types
  - Origins and end of life destinations

- **Produce recommendations relating to the management of fishing gear, regarding prevention and management of the waste produced**

- **Contribute to the development of a more sustainable and circular model for fishing gear in Madeira**



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MATERIAL FLOW MODEL

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- **FISHERIES**

→ What type of fisheries?

→ Fishing gear composition?

Type of fishery		Equipment	Composition
Angling	LLD (drifting longline)	Snoods	Polyamide (Nylon), Polyethylene
		Streamer Lines	Nylon
		Hooks	Steel
		Buoys	Polyethylene, Polyurethane, Expanded Polystyrene (filler)
	LLS (depth longline)	Snoods	Nylon, Polyethylene
		Streamer Lines	Nylon
		Hooks	Steel
		Buoys	Polyethylene, Polyurethane, Expanded Polystyrene (filler)
	LHP (Leap and Pole)	Lines	Nylon
		Hooks	Steel
		Buoys	Polyethylene, Polyurethane, Expanded Polystyrene (filler)
	LHP (Hand Line Cane)	Lines	Nylon
		Hooks	Steel
		Buoys	Polyethylene, Polyurethane, Expanded Polystyrene (filler)
Seine (encircling)		Nets	Nylon
		Ropes	Polyethylene, Polypropylene
		Buoys	Polyethylene, Polyurethane, Expanded Polystyrene (filler)

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- **FISHERIES**

→ What type of fisheries?
→ Fishing gear composition?
→ Size of fishing fleet?

Type of fishery		Size	Fleet number per size	Total fleet per fishery
Angling	LLD (drifting longline)	I	56	88
		II	25	
		III	4	
		IV	3	
	LLS (depth longline)	I	50	64
		II	12	
		III	2	
	LHP (leap and pole)	I	35	52
		II	9	
		III	3	
		IV	5	
	LHP (hand line cane)	I	63	86
		II	17	
		III	3	
		IV	3	
Seine (encircling)		I	1	5
		II	1	
		III	3	

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- **FISHERIES**

→ What type of fisheries?
→ Fishing gear composition?
→ Size of fishing fleet?
→ Statistic analysis of median gear used per type of fisheries

Type of fishery		Ship size	Average number of appliances * per vessel	Average length of the snoods (m)	Average number of monofilament per snoods	Average length of monofilament (m)
Longline	LLD (drifting longline)	I	10	4000	90	500
		II	20	8000	90	500
		III	35	8000	90	500
		IV	40	16000	90	500
	LLS (depth longline)	I	1	3000	120	25
		II	1	6000	250	25
		III	2	10000	400	25

Type of fishery	Ship size	Average number of nets per vessel	Average net size (L x H)		
Seine (encircling)	I, II, III	1	400x100		



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- **AQUACULTURE**

→Number of aquaculture companies

→Size of fishing farms

Company	Cage type	Number	Perimeter (m)	Maximum Cage Depth (m)	Maximum area per net (m^2)	Total area (m^2)
#1	Pre-fattening	6	35	8	276	1659
	Fattening	14	63	17	1068	14954
#2	Fattening	12	80	10	800	9600

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- **AQUACULTURE**

→Number of aquaculture companies
→ Size of fishing farms
→ Gear composition

Equipment	Composition
Floating structures	HDPE, PVC
Cables	Polyethylene, Polypropylene
Nets	Polyethylene, Nylon
Buoys	Polyethylene, Polyurethane, Expanded Polystyrene (filler)

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- **CONCLUSIONS**

→ Fisheries (seine and angling):

- **Nylon stock: 33.5 to 132.5 tons**
- **20 thousand buoys (Polyethylene, Polyurethane, Expanded Polystyrene (filling))**

→ Aquaculture:

- **Nets: 26200 m^2**
- **Associated components - floating structures (polyethylene and PVC), cables and buoys**

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- **CONCLUSIONS**

→ 4600 Kg of nylon entering the system (sold) per year
→ Same amount of nylon should be waste (inferred)
→ High economic valued material – easier end of life management
→ Costs of transportation from Madeira to mainland can be a limitating factor

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- **CONCLUSIONS**

→ Polyethylene and polypropylene
→ Aquaculture equipment that include algaecide impregnating agents
→ Mixture of ALDFG collected on beaches
→ Low economic valued material
→ Small waste amounts, from the industry perspective, generated each year

→ Will most likely constitute a charge for which compensation needs to be provided under a future EPR scheme

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- **RECOMMENDATIONS (2021)**

→ Improve the knowledge on waste production
- **Specific waste containers in fishing ports**
- **Periodic characterization and analysis**
- **Awareness raising among fishers**

→ Establishment of EPR schemes
- **Improve data streams on imported and sold fishing gear**

→ Development of high value chain for end of life fishing gear
- **Establish contacts with recycling companies**
- **Develop local circular economy models**

oceanlit gestión de espacios costeros protegidos en archipiélagos afectados por basuras marinas

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PORTOS DA MADEIRA

Parditi agência regional para o desenvolvimento da investigação tecnologia e inovação

ARM - Águas e Resíduos da Madeira, S.A.

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- **CURRENT/FUTURE WORKSTREAMS**

→ Improve the knowledge on waste production

- **Maintain the regional beach-litter monitoring program**

10 sites
4 times/year
Trends
GES evaluation
SUP/SEA analysis

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- **CURRENT/FUTURE WORKSTREAMS**

→ Improve the knowledge on waste production

- **Maintain the regional beach-litter monitoring program**
- **Regular beach clean-up program in accumulation sites**

Annual contracts
10+ events/year
>4 tons removed
Activity likeliness analysis
Increase location numbers

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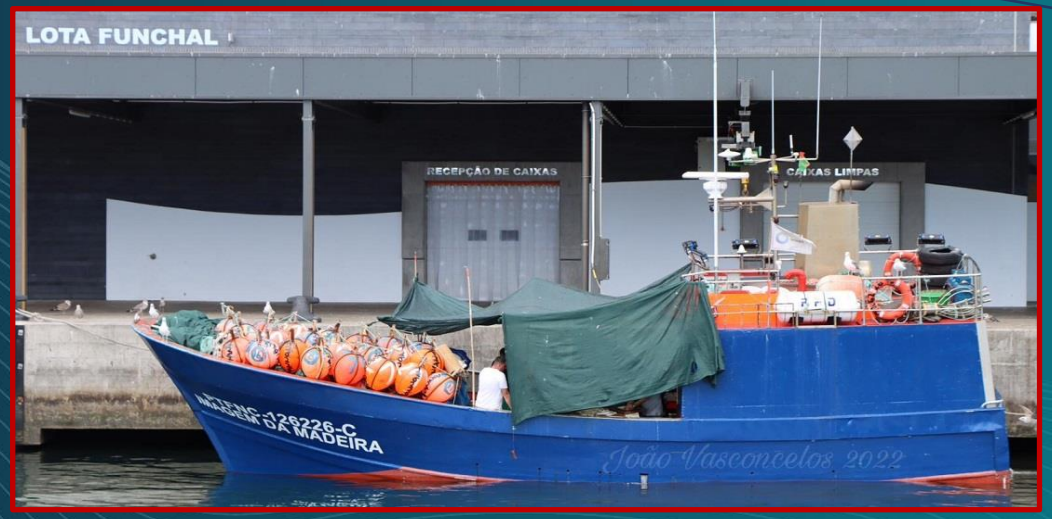
- **CURRENT/FUTURE WORKSTREAMS**

→ Improve the knowledge on waste production

- **Maintain the regional beach-litter monitoring program**
- **Regular beach clean-up program in accumulation sites**
- **Fishing for Litter Schemes**

10% of the fleet engaged (since 2022)
End-of-life: 1000Kg
Passively fished: 3000Kg
Specific awareness raising activities



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- **CURRENT/FUTURE WORKSTREAMS**

→ Improve the knowledge

- **Maintain the regional beach-litter monitoring program**
- **Regular beach clean-up program in accumulation sites**
- **Fishing for Litter Schemes**
- **Geographical source likeliness analisys**

→ Circular economy models

- **Study of leisure boat fisheries material flows**
- **Periodic characterization of regular waste streams**
- **Create data streams on imported and sold fishing gear**
- **Evaluate possible circular economy models**

→Awareness raising

- **Environmental Programs (Eco-schools, GreenKey, Blue Flag)**

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Global problems: coordinated efforts
Importance of cooperation
We must keep our efforts aligned…

Thank you ☺

If you need any further clarification:
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Photo credits: Virgílio Gomes - DRAAC