



## D.4.6 Conclusions and Recommendations for stakeholders

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<b>Project Title</b>	Technological approaches for circular economy solutions in terms of prevention, recover, re-use and recycle of fishing gears to obtain added-value products in the textile industry			
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	PU	Public		X
	PP	Restricted to other programme participants (including the Commission Services)		
	RE	Restricted to a group specified by the Consortium (including the Commission Services)		



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## Overview

Within the Task 4.2 Study of the sustainability of project results assigned to the University of Vigo, this deliverable includes the Conclusions and Recommendations for stakeholders.

The study has shown the existence of 4 fundamental areas in which actions can be proposed in an organized manner, and in which the main stakeholders involved can be identified.

The four areas into which the 25 identified actions have been structured are as follows:

- Raw materials supply, since the business model is strongly limited by the existence in time and place of used fishing nets that can serve as inputs. Proposed actions could improve the stable supply of nets and improve the existing management systems.
- Industrial transformation: the limitations in the selling price of the final product (in the high range accepted by the market), and the difficulties in obtaining economies of scale due to the availability of raw materials, mean that gross margin growth can only come from cost control and improved process efficiency. Proposed actions allow scaling up the business in a decentralized way, and the R&D development.
- Market: The dynamics of market behaviour are strongly determined by the general environment in which the business activity is developed. This means that, in addition to the socio-economic development itself, which conditions the final consumer's purchasing decisions, there are also initiatives and legislation promoted by the Public Administrations that can condition the behaviour of fashion brands. Proposed actions are to reinforce the sustainability narrative so that it connects with the end consumer in the protection of the oceans, and that Oceanets can be the strategic partner of fashion brands to improve their sustainability.
- Regulation and Legislation: as it may condition the previous points; availability, costs, or incentives on raw materials; and modify consumption behaviour. Proposed actions are focused on the availability of raw materials, and on improving garment labelling systems to differentiate the origin of the materials and their composition.

## Description and objectives

The deliverable D4.6 is part of the Task 4.2 Study of the sustainability of project results assigned to the University of Vigo and it includes the Sustainability plan for all project results.

The task 4.2 aims to study the sustainability of the project results after the Work Packages (WP1, WP2, WP3, and WP4 – marketing) have developed their main tasks. With this purpose, all the partners collaborated online and through a workshop in the development of a “Multidimensional analysis of the value chain”. The analysis considered all the aspects studied through the project, which, in one way or another, have an influence on the viability and sustainability of the proposed value chain.

Based on the conclusions emanating from the Multidimensional analysis of the value chain, a “Sustainability plan” has been prepared with a view to ensuring the future exploitation of all the project results. This plan consists in a roadmap that identifies the actions to be taken by the partners to ensure the success of the project, and recommendations for other stakeholders that could usefully benefit from the project's outcomes.

The present public document (D4.6) compiling the conclusions and recommendations has been elaborated with the objective of being disseminated among the stakeholders.

## OCEANETS' Solution

### Description

Oceanets transforms fishing gears that have reached the end of their lifetime into fabrics by extracting the polyamide of the nets. Along the process, Oceanets adds tracers that allow the consumer to be sure about the origin of the raw materials. It also incorporates a new dyeing system through the addition of masterbatches to the pellets, which reduces the use of water.

The final product is a technical circular fabric made from nylon recycled from used fishing nets (mixed with a maximum of 10% elastane) recommended for making athleisure garments that look for high elasticity and freedom of movement. Within the project two different densities (279 g/m<sup>2</sup>, and 211 g/m<sup>2</sup>), and three different colours (black, dark grey, and navy blue) have been developed.

### OCEANETS' Value Chain

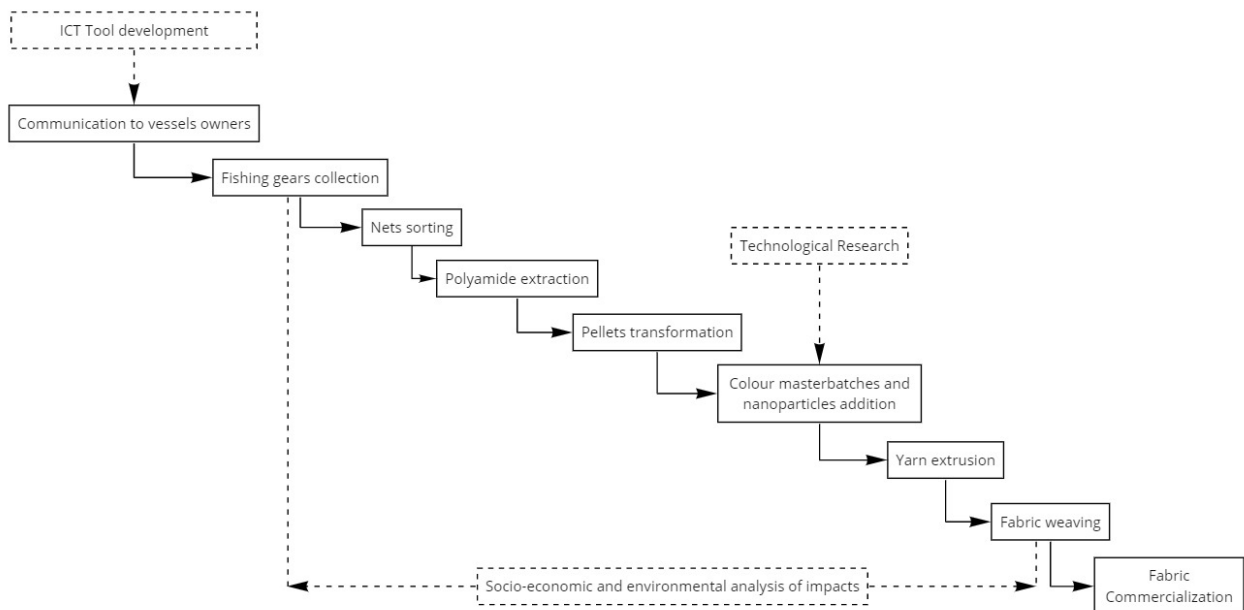


Image 1: Oceanets' Value Chain

## Main challenges and recommendations

The multidimensional analysis of the value chain shows the existence of 4 main issues to address the medium and long term viability and sustainability of the Oceanets' project:

- Stock and management of the raw material; that is the used fishing gears.
- The industrial and technological process necessary to carry out the transformation of fishing nets into yarn, obtaining a high quality final fabric.
- The demand and market conditions that guarantee the economic viability of the product, and which are determined by the fashion companies and by the requirements of the end consumer.
- Legislation developed and to be implemented, as it may condition the availability, costs, or incentives on raw materials, and modify consumption behaviours.

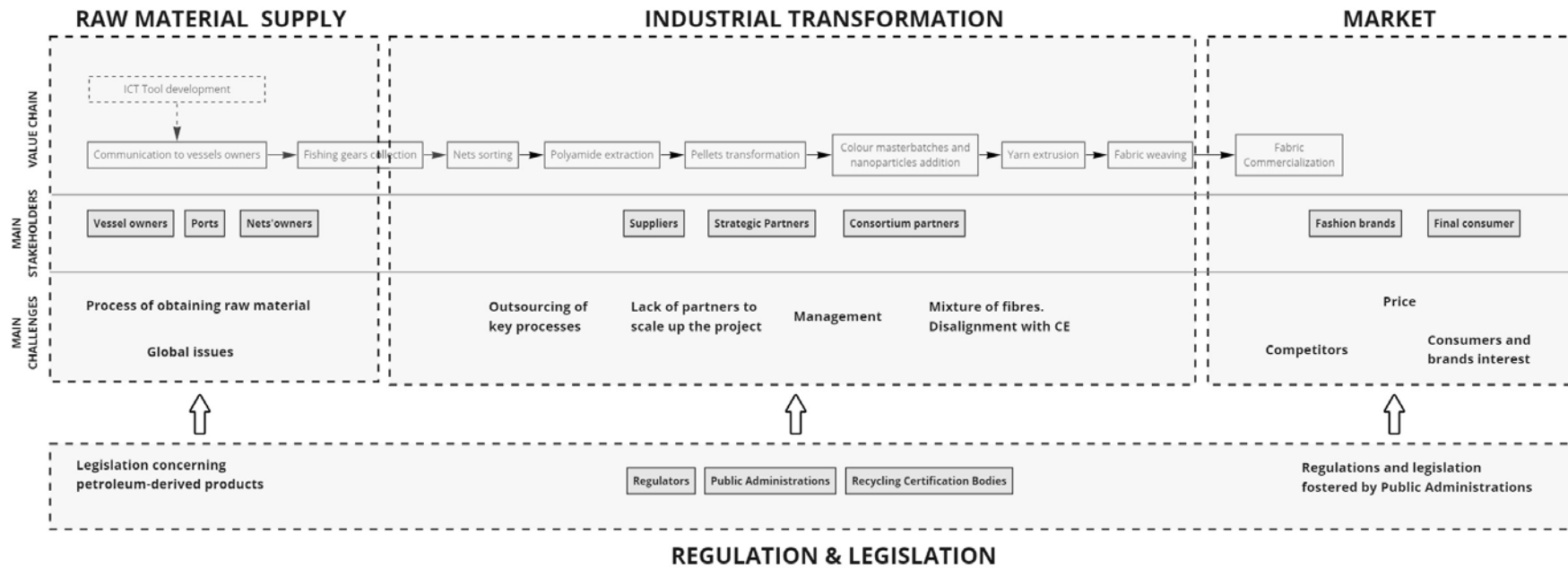


Image 2: Oceanets' value chain and Main Challenges

## Raw Materials Supply

Sustainability in this area is mainly determined by the company's capacity to obtain raw materials, i.e., fishing gear used.

The main difficulty is the current management system itself, which is currently unregulated. Added to this, it is the lack of reliable data on the number of nets discarded annually, as well as the geographical dispersion of fishing activity.

This lack of knowledge of the quantity and locations can hinder the company's production forecast, make it unstable, and therefore hinder the business model itself.

In this sense, it seems recommendable that the companies that want to develop this activity consider:

- The negotiation of stable supply agreements in the different locations where fishing activity is intense, which will set the maximum limit that can be produced in a given period of time. (A1)
- The replication of this "hub" type model in different geographical areas with intense fishing activity in order to increase production and increase the level of sales. (A2)

On the other hand, in view of current collection systems, it seems interesting that:

- The way in which used fishing gears should be managed should be structured and unified, and the necessary infrastructures should be available in the port areas. In this sense, it might be interesting to study the homogenization within specific managing entities, for example, Puertos del Estado (Spain), Puertos de Galicia, etc. (A3)
- Improve the processes for identifying the origin of the nets (marine debris or discarded in port because reaching the end-of-life), establishing segregation in harbour to facilitate subsequent treatment. (A4)
- A system should be established to quantify the use of fishing gears, their longevity, composition, so that there can be an estimation of the quantities that can be obtained in a geographic area and a year. (A5)
- Promote responsibility in the sustainable management of fishing nets, and their treatment through the appropriate procedures when their parts reach the end of their service life. (A6)

In this sense, it seems that legislation can be a good driver for behavioural change, and legislators need to make progress on it.

Regarding the fishermen's performance, it seems interesting to collaborate in the development of useful tools to help them in the fishing gears management process. In this sense:

- Incentivize the use of the ICT geolocation tool to help reduce the loss of networks due to entanglements. (A7)



## Industrial Transformation

The industrial transformation of fishing nets into fabric is the essential productive activity needed to develop the business model.

This has two main constraints: the selling price to make it viable is at the top that the market can allow, because the production costs are high, and at the same time, scale economies are limited by raw materials. So, reducing costs is the only way to increase gross margin, and it implies being more efficient.

In this sense, it seems reasonable that the company that wants to boost this business:

- Develop a business structure that minimizes fixed costs. (A8)
- Follow-up of technological improvements derived from Industry 4.0 that could increase efficiency.(A9)

Meanwhile, the proposed corporate strategy is based on the development of a disaggregated organizational structure. However, it is recommended to try to maintain a balance between outsourcing and not losing the know-how of the process as a whole. To this end, it is proposed:

- Partnerships that allow the scaling of the project in a decentralized model. (A10)
- Search for stable partners. (A11)
- Develop know-how to achieve efficiencies of scale in a decentralized model. (A12)

In relation to improving the environmental impact, which is consistent with the foundations of the initiative and with the positioning of differentiation based on sustainable performance, it is appropriate to contribute to the development of a fabric that is aligned with the criteria of the circular economy, and therefore can be 100% recyclable. In this sense, and related to the mixture of fibers in its composition, it is proposed:

- Continue R&D to improve technical attributes and use less than 5% of elastane maintaining the performance of the fabric. (A13)
- Contribute to the development of recycling systems for garments with blended fibers. (A14)

## Market

The dynamics of market behaviour are strongly determined by the general environment in which the business activity is developed. This means that, in addition to the socio-economic development itself, which conditions the final consumer's purchasing decisions, there are also initiatives and legislation promoted by the Public Administrations that can condition the behaviour of fashion brands.

This makes it necessary to consider how the actors at this end of the value chain are related to each other in order to ensure Oceanets' long-term sustainability.

At present, in which there is a clear commitment of European public administrations to make an ecological transition, and that the degree of awareness of citizens in relation to environmental issues is increasing, it seems clear, not only to have a product aligned with these values, but also:

- Reinforce the brand storytelling based on the sustainability narrative, taking advantage of the momentum of the fight against plastic pollution in the seas and oceans. (A15)
- Promote the recognition in the medium term of Oceanets as a sustainable fabric recognized by the end consumer. This could be reinforced using a label that becomes a decisive element in the choice of purchase, following the "Gore-Tex" model. (A16)

In this sense, another action in line with this positioning is that of:

- Contribute to sustainability lobbying movements by joining initiatives that are already underway and that help to reinforce social change towards a lower-impact ecological model. (A17)

The Oceanets product (and its narrative) can thus become a very interesting asset for fashion brands, allowing them to align themselves with the latest market trends without having to make radical changes in their business model. In this way, it is possible to:

- Promote the collaboration and the development of alliances with fashion brands so that Oceanets can be a strategic partner to help them to improve their sustainability performance. (A18)
- Complement the collaboration indicated in the previous point, which is more oriented to the strategic positioning of the brand and is usually the responsibility of the C-Suite, with the technical promotion of the product attributes to the purchasing decision-makers: designers, purchasing departments, etc. (A19)

Although the business analysis of other products that could be developed from the rest of the materials that make up the fishing nets has not been the subject of this project, it seems interesting to propose:

- The study of the valorization of the rest of the materials that make up the fishing gear, so that complementary lines of business can be created in addition to the use of polyamide. (A20)

## Regulation and Legislation

Legislation and regulations constitute a transversal axis that influences the three areas discussed above, and which, despite being embedded in each of them, deserve a separate space because they can determine the sustainability of the project in the long term.

Currently, there is important legislation being developed from Europe and that should be applied in EU countries. It is not easy to really understand how is going to affect the Oceanets' value chain and the business model.

It may condition the previous points: availability, costs, or incentives on raw materials supply (and eventually the reduction of PA volumes if new substitute materials in nets composition are developed in the medium term); and it can modify consumption behaviour.

In relation to the influence that legislation could have on the procurement of raw materials, it could be of interest to:

- Promote a system of incentives/punishments to limit the amount of nets that are not adequately managed. In this sense, measures such as those that are beginning to be implemented for Extended Producer Responsibility (EPR) seem appropriate. (A21)
- Monitor the influence of current legislation on the use of plastic as it may have an impact on the development of new materials for the manufacture of fishing nets, and could lead to a decrease in the amount of polyamide in their composition. (A22)

It is also worth noting the importance that legislation can have on the behaviour of the end consumer. In this sense, it could be an element that could help in the sustainability of the business model:

- Promote the differentiation between the different types of recycling and the impact of the processes. (A23)
- Improve certification systems for products from recycled raw materials, including the inclusion of the origin and % of recycled raw material, so as to differentiate between pre-consumer and post-consumer recycling. (A24)
- Promote labelling of garments to help end consumers make their purchasing decision and to know the origin of the raw material and its impact. (A25)

## Risks

- Highly changing, complex and interconnected environment, with evolving legislation that may affect the behavior of the different stakeholders along the value chain.
- The business model requires seeking balance in production to try to reduce costs by developing economies of scale within the limits of available raw materials.
- Production costs are high, which means that the selling price is at the upper end of the market, making it necessary to develop a competitive differentiation strategy.
- The material origin narrative has to face other competitors' proposals that also offer, in the consumer's eyes, sustainable fabrics (pre-consumer recycling).



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## Overview of proposed actions and stakeholders

		<b>PROPOSED ACTION</b>	<b>MAIN STAKEHOLDERS INVOLVED</b>
RAW MATERIAL SUPPLY	A1	Negotiation of stable supply agreements.	Business developer
	A2	Replication of "hub" model in different areas with intense fishing activity.	Business developer
	A3	Unification of collection and nets management systems in port areas.	Port Authorities
	A4	Improve the processes for identifying the origin of the nets and segregation in port.	Port Authorities; Nets' owners
	A5	Implementation of systems for quantifying the forecast of nets to be discarded.	Port Authorities; Nets' owners
	A6	Promote responsibility in the sustainable management of fishing nets.	Port Authorities; Nets' owners
	A7	Incentivize the use of the ICT geolocation tool to help reduce the loss of nets.	Vessels' owners
INDUSTRIAL TRANSFORMATION	A8	Develop a business structure that minimizes fixed costs.	Business developer
	A9	Follow-up of technological improvements derived from Industry 4.0	Business developer
	A10	Partnerships that allow the scaling of the project in a decentralized model.	Strategic partners; Business developer
	A11	Search for stable partners.	Strategic partners; Business developer
	A12	Develop know-how to achieve efficiencies of scale in a decentralized model.	Business developer
	A13	Continue R&D to improve technical attributes and use less than 5% of elastane.	Business developer
MARKET	A14	Contribute in the development of recycling systems for garments with blended fibers.	Business developer
	A15	Reinforce the brand storytelling based on the sustainability narrative.	Business developer; Final consumers; Fashion brands
	A16	Promote the recognition in the medium term of Oceanets as a sustainable fabric recognized by the end consumer.	Business developer; Final consumers; Fashion brands
	A17	Contribute to sustainability lobbying movements.	Business developer
	A18	Promote the collaboration and the development of alliances with fashion brands.	Business developer; Fashion brands
	A19	Engage decision-makers in fashion brands: designers, purchasing managers, etc.	Business developer; Fashion brands
	A20	Study the valorisation of the rest of the materials that make up the fishing gear.	Business developer



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REGULATION AND LEGISLATION	A21	Promote a system of incentives/punishments to limit the amount of nets that are not adequately managed.	Legislators; Public Administrations; Vessels' owners; Nets' owners
	A22	Monitor the influence of current legislation on the use of plastics. PA in nets.	Business developer
	A23	Promote the differentiation between the different types of recycling.	Public Administrations; Recycling certification Bodies
	A24	Improve certification systems for products from recycled raw materials.	Public Administrations; Recycling certification Bodies
	A25	Promote labelling of garments to help end consumers make their purchasing decision.	Public Administrations; Recycling certification Bodies; Fashion Brands; Final consumers

Table 1: Overview of proposed actions and main stakeholders involved

## Conclusions

The multidimensional analysis of the value chain reveals the relationships between the different parts, and the global and complex context that conditions the sustainability of the business in the medium and long term. To be able to establish a proposal for actions to be carried out, four main areas have been identified on which it makes sense to act.

The management of raw materials strongly conditions the business model due to the existence in time and place of used fishing nets that can serve as inputs. It is necessary to work in areas of high fishing activity on the development of strategic alliances with net owners, so that a stable supply can be guaranteed. An improvement and standardisation of the systems for the collection and management of used nets is also desirable, so that it would also be possible to forecast the quantity of nets that can be used as input in a given period of time.

Regarding industrial transformation, the limitations on the selling price of the final product (in the high range accepted by the market), and the difficulties in obtaining economies of scale due to the availability of raw materials, mean that gross margin growth can only be achieved by controlling costs and improving the efficiency of the processes. Light and disaggregated organisational structures are proposed, balancing between control of know-how and outsourcing of key activities through strategic alliances. The commitment must also be to maintain product R&D in order to continue improving the technical characteristics of the fabric. In this aspect, the development of systems that allow the fabric to be better aligned with the circular economy and to be 100% recyclable stands out.

In relation to market issues, it is interesting to take advantage of the momentum of social awareness on environmental protection concerns, especially in the fight against oceans' plastics, to reinforce the brand narrative and position itself as a sustainable fabric in the eyes of the end consumer. This can also help to improve the performance of fashion brands, whose decision-makers need to be engaged. It also seems important to maintain business coherence and to be active in initiatives that propose environmental protection, as well as to study the valorisation of other components of the fishing gears.

Regulation and legislation is a transversal axis that is related to the previous points, and which can strongly condition the long-term sustainability of the activity. In this respect, the influence it could have on the amount of raw material available needs to be monitored (there could be legislation that would lead to the development of materials that replace the current composition of the nets); the way it is managed (Extended Producer Responsibility); to incentivize recovery, etc. It can also indirectly influence end-consumer purchasing decisions, for example, through the development of labelling systems that differentiate the origin of materials or be more comprehensive on the composition of clothing and its impact on the environment.

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