

***BioMarine Innovation Workshop:
“Renewable marine resources as building blocks for
bioplastics”***

March 24th, 2019

Full report



Introduction

Today the issue of ocean plastic pollution is well known. For environmentalists and greenwashers alike, the cleaning of the oceans has become a fashionable and esteemed endeavour. As such, most large brands have committed themselves to recycling these plastic materials in their products. These projects however tend to focus on the symptoms of this environmental scourge, being undoubtedly an important task, but fail to address the root causes of the problem. What we should really be asking ourselves is “how can we prevent this problem from happening in the first place?” and “how can this environmental externality create socio-economic opportunities?” There is no evidently simple solution to one of the world’s most complex environmental issues. Nevertheless, we should begin to envisage several long-term sustainable solutions involving the use of bio or water-soluble plastics.

The BioMarine community is strongly committed to improving the sustainable use of marine ingredients to develop innovative end-user products that will shape future societies. Our Blue BioPlastics Innovation workshop brought together 40 CEOs, investors, technology providers and entrepreneurs. From this intensive brainstorming some very good ideas emerged and I wanted to congratulate the participants for their productive presence and the moderators for their dedication. In the coming weeks we will continue building the industry partnerships to develop blue solutions that we will present in Cascais on the occasion of the next BioMarine convention.

In parallel we will build a strong communication toward the public to explain what the blue bio plastic concept represents in the plastic mix today. For the coming years regular plastic, bio plastic and blue bio plastics will share the grounds. It is our responsibility to explain why blue bio plastic offers a better carbon footprint. Yet consumers are ultimately responsible for signalling technology providers what they wish to buy and consume. Stronger bonds between blue bio-industries and regular industries will help solve most of today’s global commons issues, but only education and awareness-raising campaigns will steer consumers towards a more sustainable and responsible society. We have no time to waste in endless discussions to determine who is responsible! We all are! It is now time to act in a coordinated manner and unleash the blue potential.

Pierre Erwes,
BioMarine Chairman

[LINK / pictures of the workshop](#)

GROUP 1: from the angle of technology providers

MODERATOR: Ana Ferreira



“Sustainability is the base of every successful action in life and business“

Experience: Ana is a Biologist specialized in Conservation Biology (MSc) and in Business and Administration (MBA) with 8 years of experience in project management and scientific consulting for public and private entities in the areas of innovation and sustainability. After working in CIIMAR Research Centre, coordinating projects related to citizen-science and scientific consulting for the urban water management, she started collaborating with BioMarine, where she manages current projects, events and the BioMarine Community.

Specialties: project management, scientific consulting, sustainability, circular economy, innovation, business development, technology transference, nature-based solutions, science communication, biodiversity monitoring.

PARTICIPANTS:

- Haydar Al Sahtout, Saudi Aquaculture Society (Kingdom of Saudi Arabia)
- Mederic Brunet, Nuevapescanova (France)
- Edel Maria Brynjulfsen, Polar Algae (Norway)
- David Coty, Algopack (France)
- Olivier Mercoli, Biarritz Ocean (France)
- Mariann Nõlvak, Tartu tech Park (Estonia)
- Andreea Strachinescu, EU Commission (Belgium)
- Francisco Solis Marin, Universidad Nacional Autónoma de México (Mexico)

QUESTIONS WERE:

Q1: How to design an affordable technology?

There are different technologies being developed to provide the market with (blue) bioplastics to progressively replace plastics in the long-run. However, one of the main problems resides in the cost competitiveness with the current plastic alternatives, and this is what we want to discuss here: How to ultimately offer new solutions/technologies that are affordable (having in mind short and long-term returns).

Q2. What are the best models to structure the partnership between raw material producers, technology providers and industry?

For a successful implementation of technologies in the market, there needs to be a strong connection between technology providers, raw material producers and the industry. Here we aim to discuss what would be the best model for the implementation of such structure.

REPORT:

Q1 How to design an affordable technology?

- **High volumes** - Be able to guarantee provision of high volumes, to guarantee greater opportunities and a more affordable price for the industry (maybe here the priority needs to be directed to bioplastics for greater quantities markets, such as the disposables/medical disposables);
- **Easily integrated technologies** - The technologies need to be able to provide alternative solutions that are not only very similar to the plastics characteristics, but also (and ideally) need to be easily integrated in the current production process for plastics (ex. make use of the same machinery, removing the need for further higher investment in new machinery for upscaling of technologies). This would also facilitate their integration;
- **Previous benchmarking with alternative solutions** - It's important that technologies, during their development do a proper benchmarking with current solutions and prices, so that they are developed having these values into consideration for further and easier integration and acceptance in the market;

- **Make use of local raw materials** - to decrease the need for transportation and processing costs and have an easier access to these raw materials (and to their information such as quantities and price);
- **Availability of raw materials** - These raw materials need to be readily available in the needed quantities, regularly and with certified quality. The current instability in the provision of raw materials is also leading to higher prices;
- **Make use of waste** - The priority should be using the existing waste material, such as seaweeds, decreasing the costs of collecting/producing and buying raw materials;
- **Collaboration between sectors** - its crucial, as well as collaboration between different levels (R&D, Finance, Governments, Industries, etc) for partnerships to leverage on existing resources and decreasing unnecessary costs in the technology transference (to the market) process;
- **Political participation and financing support mechanisms** - are also needed to support the technology development and its transference to the market. Also, it's important for these actors to properly identify the needs and that the technology providers have complete knowledge of all the opportunities available.

CHALLENGES:

- **A whole new concept** – Blue bioplastics bring a whole new concept to the market that needs to be accepted and implemented by the actors in the market, which is difficult due to the low collaborative environment;
- **Matching prices** – Bioplastics need to achieve approximate current plastic prices;
- **Favourable legislation** - Although regulation and financing mechanisms are pushing for these solutions in the market, there needs to be more/stronger UN favourable legislation and setting of standards for the use of (blue) bioplastics;
- **Info, uniformization and availability of raw materials** - Raw materials are still available in small and inconstant quantities and quality, and processing values are still very high (ex. seaweed wet material is very expensive to transport, and the process for water extraction is expensive), there needs to be better regulation of availability, quality and optimization of processing and transportation;
- **Companies are looking for ready prototypes to test**, and most of the times the technology providers don't have the possibility to do prototypes yet due to funding restrictions;
- **Customer centric approach** - The new solutions/technologies need to be customer centric, as a way of getting customer interest to make the change to blue bioplastics (here again, highlighted the challenges with the collaboration between entities).

OPPORTUNITIES:

- **The momentum for Blue bioplastics is now** – different initiatives (ex. Mission Healthy Ocean, UN Ocean Conference in Lisbon, Portugal) and Legal & Finance support grants from the EU to support blue solutions;
- **Circular economy is becoming the norm** - New trends and opportunities to support and promote circular economy for the use of available waste to increase sourcing opportunities (ex. sargassum that is invasive, is creating health and business problems) – Using “pollution” to solve the plastic pollution;
- **Capitalize on high demand items** – to guarantee the needed volumes for more affordable technologies (economies of scale);
- **Customers are demanding** companies to develop new solutions for plastics – Marketing opportunity for companies as well;
- **Companies are becoming more open** to establish collaborations and co-development, through positive communication;

STRATEGIES:

- **Communication improvement** – Its crucial to establish communication between all actors, and guarantee the participation of politics as a way to unlock more financial incentives to the use of bioplastics;

- **A collaborative platform** - to connect all the actors and their needs and to identify sources of wastes and raw material, to ease all transactions between the actors and availability of existing information (on prices, volumes, availabilities) that is currently completely scattered;
- **Involve the media, politics and governments** – These actors need to be highly involved in all these processes and platforms to ease all processes;
- **Economic benefits** - Both the R&D and technology providers need to show the economic benefits (both in the short and long-term) of the use of the technologies developed (blue bioplastics) for an easier acceptance by the market and investment analysis by the companies;
- **Practical initiatives** – Occasionally guarantee that all actors get together to ease communication and brainstorming of systemic solutions that can answer everyone’s problems in a successful and sustainable way;

Q2 What are the best models to structure the partnership between raw material producers, technology providers and industry?

- **BioMarine** collaborative model;
- **Cooperative models** - with a super-cooperative hosting smaller local and adapted cooperatives (in a “glocal” model, where transnational collaboration is achieved through digital technologies such as a collaborative platform with possibilities for local adaptations, learning, engagement and impacts);
- **Blue Detectives** - this collaborative platform should aggregate existing clusters (ex. BioMarine, others) that function as “Blue detectives” to identify business opportunities and match needs in the market;
- **Bring the governments** – into the platforms for a more active role;
- **Win-win** – there must be a clear win-win situation for all actors involved, that need to be clearly shown;
- **Capitalism + Coop** – The business dimension (an economic based balance) is crucial to the sustainability of the Cooperative models (economic, social, health, etc);
- **Shareholding approach** – to guarantee sustainability of relationships, more participation and possibly more control of the supply chain is needed for the industry (including the tech providers) as a way for ownership and a more active role.

CHALLENGES:

- **Profitability** – all implemented models must be profitable to be sustainable;
- **Global and local management – the management** between global action and local action, guaranteeing crossed participation, it’s complex and difficult to manage;
- **Investment** - heavy investments are needed;
- **Engaging stakeholders** – it’s difficult to engage all stakeholders;
- **Keep the momentum** – After engaging, it’s crucial to guarantee a constant environment of support/activity among the actors involved to boost the development of blue bioplastics;
- **Communication going** - Guarantee proper communication among all actors;
- **Multidisciplinarity** - Guarantee different sources of competencies;
- **Scarce raw-material providers** - raw material providers (sourcing) are still scarce and difficult to involve;
- **Sharing of information** – Companies don’t share information easily, so a middle man is here crucial;
- **Crucial information to feed the platform** - Finding useful information/ contacts from so much information scattered.

OPPORTUNITIES:

- **Increasing need for systemic solutions** - There is an increasing need to provide health solutions (ex. related to the sargassum), to solve waste issues and other complex problems, that require the collaboration among all actors in the market, so there is an environment pushing for a global need for collaboration;
- **Emerging industry** - This is an emerging industry, which means that “everything is possible” and a new model for collaboration can be established from scratch;
- **Funding and benefits** - Growing funding opportunities and benefits for collaborations.

STRATEGIES:

- **Collaborative platform:** Establishment of a collaborative platform to boost public/private partnerships, visibility for investments, planning of common activities, share technology calls/innovative solutions and sharing of other crucial information;
 - **Glocal and profitable:** Follow the glocal model, from a profitability perspective to guarantee sustainability.
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GROUP 2: From the angle of industry and end-users

MODERATOR: Meredith Lloyd-Evans



Experience: Life Science industrialist since 1977 - SmithKline Corporation, British Technology Group, PA Consulting, BioBridge (founder 1989); clientele includes individuals, universities, government and para-government organisations, multinational companies, regional companies, SMEs and investors/financial organisations, publishers of scientific industry and academic journals.

Goals: assist individuals, companies and organisations to understand and overcome the barriers to productive commercialisation of bioscience innovations

Specialties: active in regulatory strategy, business development strategy, knowledge transfer, innovation flow; involved in human health, animal health, biotechnology, biomaterials, life science innovations.

PARTICIPANTS:

- Nuno Coelho, A4F, Algae for the Future (Portugal)
- Jeremy Cosnefroy, Algapack (France)
- Raoul Garcia SPEGC (Spain)
- Nasser Kahil, Lyreco (France)
- Philippe Lavoisier, Eranova (France)
- Guy Maurice, B'Zeos (Norway)
- Delia Simental, Pacific bioculture (Mexico)
- Antoine Simon, VINCI Construction, France
- Maria Stewart, BO-SENS, Switzerland

QUESTIONS WERE:

Q1: What products are needed? Some products have already been developed. Are these the most suitable, and what else do we need to do to get the right products for the market, or innovations that will drive demand for new products? Will products be marine-derived, from biomass, or marine-degradable, or both?

Q2: How to ensure the best interfaces between Industry and technology providers, economic development support, end-users and regulatory-policy? Even in the presence of market pull for more environmentally-positive plastics, there are entrenched positions that can only be overcome by integrated action. Development and establishment costs may also make products more expensive for end-users than their perceived value. How can these challenges be answered productively?

Supplementary Q: What are the gaps, levers and pressure points in the supply chain?

REPORT:

This is a complex network:



TECHNOLOGY PROVIDERS interlink with RAW MATERIAL SUPPLY & PROCUREMENT and with RAW MATERIAL PROCESSING, who are also linked. There is the potential for integrated use of marine bioresources as biomass and as tools for processing (enzymes etc).

PRIVATE INVESTMENT will support processing companies, product companies, but probably not support the supply & procurement activities. These may require PUBLIC ECONOMIC DEVELOPMENT support.

INDUSTRY produces polymer pellets, packaging materials and end-packaged products, as well as the products that are packaged. How to integrate new sources of polymer into their businesses?

DISTRIBUTORS are involved in decisions on what packaging to use and need to be consulted.

LOCAL AUTHORITIES and NGOs are also influential in POLICY & REGULATION and in PUBLIC OPINION.

CONSUMER DYNAMICS (opinions, needs, prejudices, drivers) definitely need to be taken into account.

RECYCLING COMPANIES and END-OF-LIFE REQUIREMENTS will also have inescapable impacts on what kinds of polymers are needed.

Q1: What products are needed and why, and what needs doing?

General issues were discussed, not specific products that might pave the way for acceptance or blaze a trail. These should be considered as a next step. The immediate goals are:

- Understand where to get biomass from
- Ensure processing is compatible with current processes
- Substitute existing plastic/polymer products by blue bio-polymers and plastics
- Establish the markets
- Then look to develop process and product innovations.

CHALLENGES

• **Supply**

- Availability of biomass has to be reliable; speed of renewal of biomass volume should be quick; sustainability of procurement is essential
- Total statistics knowledge is poor, lots of gaps, wrt biomass availability (volume, geography), total life-cycle analyses, market values, players interested in blue bio-materials

• **Processing**

- Product and processing skills and knowledge on blue bio-materials are not in good supply
- Integration of new processes or process steps into established manufacturing may be difficult

• **Products (plastics, polymer pellets, films, extruded etc)**

- Price is going to be high versus existing polymers and plastic materials eg film, but market will ask for equal or lower prices of the polymers and products
- Performance and “quality” need to be at least as good as current – too many stories of ‘bio-based’ plastic bags ripping and falling apart on first use.
- Functional flexibility of marine-origin materials is untested as yet – can the inherent characteristics and the ‘bio’ image be maintained yet market’s performance requirements can be met.
- If not, innovation in product and performance is needed (an opportunity)
- Blue-origin biopolymers will need to be suitable for food-contact packaging
- At the same time, will need flexibility of use for packaging or durables (moulded or extruded plastics; healthtech plastics etc), with challenges of longevity of function; utility for single-use versus long-term use; use in new approaches eg construction materials.
- End-of-life challenges of recyclable versus biodegradable/compostable; recyclability of bio-origin plastics may be difficult eg problem with starch-based biopolymers and browning

- **Markets**
 - Lobbying is needed to establish markets/need/rationale
 - There may be an adverse impact on price of finished packaged products (foods, cosmetics, shipped products etc)
 - Establishment of a price premium or price-value concept may be needed, but is difficult
 - Reducing environmental footprint of final product is a challenge (also an opportunity)
- **Context**
 - Naming is an issue for market acceptance – NOT “bioplastics” but maybe blue bio-materials or blue bio-polymers
 - Education of public is needed for pull-through
 - Obtaining Government tax incentives will be a key to progress
 - Establishing carbon credits or bonds is also important but will be difficult to get going

OPPORTUNITIES

- **Supply**
Developing strong, reliable, sustainable biomass production generates:
 - Support for local production
 - Support for marine conservation
 - Support for local economies
- **Processing**
 - Building diversified economies on biomass, using circular bioeconomy models
 - Developing programmes of feasibility studies for new processing and process integration new products
 - Stimulating public funding for these
- **Products**
 - Get case studies, success stories of existing products
 - Developing programmes of feasibility studies for new products
 - Look at biomedical uses where additional functionality eg antimicrobial may be plus point
 - Stimulating public funding for new products including healthcare
 - Build on specific characteristics, performance of blue-origin materials for new functionalities of plastics
- **Markets**
 - Build on blue circular economy vision
 - Highlight specific favourable technical challenges that marine biomass polymers can answer (if they can)
 - Make use of consumer power in favouring origin, uses, end-of-life benefits – not using land, not competing with food production etc
- **Context**
 - Take advantage of increasing constraints on traditional chemical industry (carbon footprint, greenness, reduce petrochemical dependence)
 - Build a media presence (conventional and social) that reinforces the ‘Blue’ message
 - Involving producers and processors in developing world

Q2: How to ensure the best interfaces between Industry and technology providers, economic development support, end-users and regulatory-policy?

Over-riding questions

- Do we need a structure: YES/NO? – the consensus was YES
- What type: able to validate environmental-friendliness of the end-products; contains expert people; represents each element of the chain; includes enough breadth in each element.

- How to fund: subscription? Public funding also important, to lubricate the establishment of a platform.
- Bioplastics alone? – No, broaden remit beyond bioplastics to any marine-origin biobased product or material.

CHALLENGES

- **Structure**
 - Recruitment of enough number and enough-breadth stakeholders
 - How to include end-of-life companies involved in recycling, waste management
 - Reaching the large companies that use but don't make plastic
 - Taking account of role of wholesalers in food distributors/supermarkets in making decisions on plastics
 - Decisions on right levels of people to involve
 - Taking account of countries with biggest environmental problems that not necessarily producers of plastics
- **Function & Outputs**
 - Production of international standards for shared understanding, activities, production – this will be a difficult challenge
 - Slowness of developing standardisation may repress development of sector
 - Establishing certification may be too ambitious
- **Impact**
 - Creation of credibility and transparency across platform is vital
 - Optimising the chain value with respect to size of companies is a challenge (also opportunity) - can a platform help capture or expand opportunities for the smaller companies and retain more value?
 - Influencing distributors to accept items packed in or consisting of blue bio-materials
 - Not damaging the concept of the value of plastics as a whole.

OPPORTUNITIES

- **Structure**
 - International scope
- **Function & Outputs**
 - Understand and provide solutions for consumers
 - Getting accurate information on whole sector
 - Help provide and improve consistent quality/performance
 - Promote systems for validating sector activities and outputs – certification may be too complex or difficult, at least a traceable blue biobased label
 - Transmission of good practice & best practice
 - Encouraging increase in local production and economic growth programmes based on marine biomass
 - Coop can assist with marine biomass harvesting sustainability plans or develop standard approach, that would be lever for public support
 - Providing access to big buyers for smaller companies
 - Communication
 - Allows industry, markets, public to be better coordinated as move over time
 - Building resources and funding to allow growth from small-scale to large-scale organisation (also a challenge)
- **Impact**
 - Global vision
 - Consumer information and education
 - Creating a critical mass for processors/producers
 - Better management of large customers for SMEs
 - More effective lobbying for sector values
 - More effective lobbying for public funding

OTHER COMMENTS

- Procurement needs to consider both volume available and unit price
 - Production must be sustainable
 - Price comparability is paramount
 - Single-use, short-term use versus multiple use, long-term use
 - A major requirement seems to be reliable recyclability for functional plastics
 - Complex decisions on biodegradable, water-degradable, industrially-compostable, home-compostable, stable, recyclable, 100% homogeneous type of plastic; 100% plastic not mixed-composition, 100% processable through one disposal route.
 - Validation and evidence are needed urgently for environmental footprint of marine-origin biomass polymers
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GROUP 3: From the angle of finance

MODERATOR: Alexandra Mosch



Experience: Over 20 years of professional experience in supporting SMEs with innovative technologies and products in the Health, Biotechnology and Life Sciences industries. Holding a master's degree in business administration contributing mainly in the areas of strategy, management, (venture capital) financing, business development and pursuing growth strategies. Founder of an organic Chlorella production company in Germany in 2014, now since 2019 as Head of Algae Division at Abar United, Kuwait building the algae business unit including a considerable production site in Oman. As Vice President of the European Algae Biomass Association (EABA) actively promoting the algae sector and increasing awareness for application of algae cross-industry.

PARTICIPANTS:

- Patricia Aymà Maldonado, VEnvirotech Biotechnology (Spain)
- Gwenola Deguerre, Natixis (France)
- Pedram Dehdari, Ensymm (Germany)
- Eya Domergi, enoil bioenergies (Switzerland)
- Craig Fleener, Alaska Ocean Cluster(USA)
- Oyvind Fylling-Jensen, Nofima (Norway)
- Anna Kamenskaya, Core technology For Life Science (France)
- Stephanie Lesage, ATR - Airbus aerospace (France)

QUESTIONS WERE:

Q1:

What are the requirements for establishing a profitable business model?

To progressively replace plastics by bioplastics in the long-run, technologies and products have to be developed providing for sustainable solutions/applications at industrial scale and competitive costs. To reach this aim, some research, development and large-scale production have to be financed.

Q2:

How to structure the deal between industry, governments, banks and private equity?

For a successful implementation of financing strategies it may be best to approach different business partners or work with a strong connection between players from the industry, research organisations, financial and governmental institutions. We aim to discuss what would be the best structure for financing biomarine bioplastics.

REPORT:

Q1: What are the requirements for establishing a profitable business model?

MAIN QUESTIONS, ANALYSIS, INPUTS and SHARING OF CASE-STUDIES



What is really building the basis, what is the absolute “MUST” for successfully financing the development and application of Marine Building Blocks as resources for Bio Plastics in sufficient volume: INNOVATION, DEMAND for innovation/products and services, stability of product – MARKET PROOF and reliability, ECOLOGICAL, ECONOMICAL and SOCIAL SUSTAINABILITY (Is bioplastics based on marine resources really sustainable in respect to environment, economy and social parameters?), VISIBILITY – interest from industry and end users, WILLINGNESS TO PAY (price sensitivity, COSTS of INNOVATION), Availability of PILOT SCALE FACILITIES, UPSCALING POTENTIAL (to capture market share, meet demand), regulatory framework which does not hinder, better facilitate, REGULATORY SUPPORT particularly in the start and growth phase of the industry (segment) 1) incentives (taxes on non-bio plastic, ban on non-bio plastic products for certain applications) 2) funding for R&D on Marine-based bioplastics 3) Information/Education in Brussels on “What are Bio Plastics based on Marine Building Blocks“ (potential) „When is a plastic material “Bio“? (renewable resources, biodegradable, xx%)

Many different aspects have been discussed, criteria

- Inside the companies dealing with marine resources for Bio Plastics
- Between companies with different know how w/r to technologies or product development
- Market situation: positioning in comparison to competing technologies and products which are not based on marine resources
- Market situation: creating demand, achieve visibility and understanding for complex subject
- Challenges in proposing a profitable business model while developing innovative technologies and products

CASE STUDY BIOPLASTICS

- Reduce plastics utilization, reduce plastic waste ⇔ common understanding, but
- In public controversial discussion about “is “Bio“- Plastic better?” – Need for clear definition and separation of Bioplastics based on renewable marine resources
- Are you able to move to biodegradable packaging material based on marine building blocks?
- If “no”: What is still required? If “yes”: At which costs?
- Is the market ready to pay higher price related with this innovation?
- Which regulatory support can be achieved? At which speed?

CHALLENGES / BOTTLENECKS

- **Inside Blue Bio Plastics Companies**
 - Innovation to be stable and sustainable (ecologically and economically)
 - (Sustainable) Raw material sourcing – market need and fulfilment
 - Scalability (“scalable is investable”, secure the supply)
 - Human Capital (particularly Bus. Dev. Expertise)

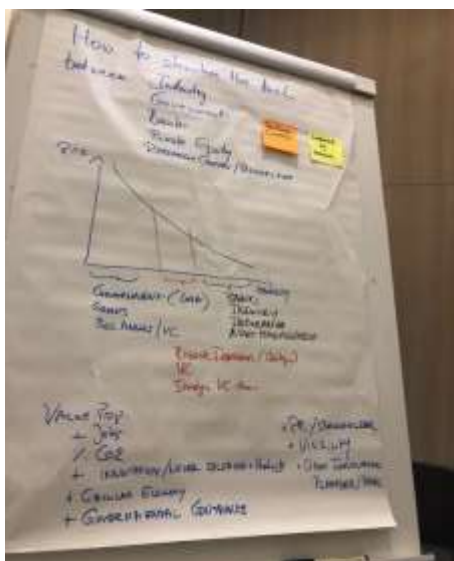
- Business (Costs vs. profit, demand)
- Distribution
- **Market (Financing, Competition and Demand)**
 - Is the market ready to pay higher price related with this innovation – proof of demand to attract growth financing
 - Is the Blue Bio Plastics sufficiently visible and understood
 - Fragmented knowledge base
 - Many initiatives without proof of concept
 - Many initiatives - maybe some should collaborate / join forces
 - Finding sufficient financing for development and growth
 - Entrance barrier (IP)
- **Regulatory**
 - Regulatory issues (acceptance of novel products under standardized certificates (example: Grüner Punkt); ⇔ different national legislation in European countries but international sales)
 - Political support (Financial, PR)
 - Slow government

OPPORTUNITIES

- Right Timing, first technologies and products developed for growth
- Right timing – public awareness putting pressure on players (industry, politics, consumers)
- Increasingly replacement of products with more sustainable products
⇔ Packaging and Biocomposite industry must see the business potential
- Establish partnerships between R&D and Industry
- New markets
- High potential growth – financially attractive
- Focus on some areas where benefit is perceived to be largest
- Good reputation – beneficial for PR
- Support from strategic partners
- Political support

Q2: How to structure the deal between industry, governments, banks and private equity?

MAIN QUESTIONS, ANALYSIS, INPUTS and SHARING OF CASE-STUDIES



- Players involved INDUSTRY, GOVERNMENT, BANKS, PRIVATE EQUITY, RESEARCH CENTERS / UNIVERSITIES
- Active depending on maturity of product/services/company, different risk profiles
- Value proposition:
+jobs ./CO2,
innovation & novel solutions, circular economy, Governmental contracts,
visibility, PR,
open innovation platform

CHALLENGES / BOTTLENECKS

• **Inside Blue Bio Plastics companies**

- Many activities ⇔ companies should be building clusters to join forces
- Management required with expertise to search right partners and structure deal from inside
- Supported by lobbying activities
- Production of international standards for shared understanding of activities and production – this will be a difficult challenge
- Slowness of developing standardisation may repress development of sector
- Establishing certification may be too ambitious

• **Financial Market**

- In the beginning, financing through government loans, grants and business angels or venture capital, taking high risks
- At medium maturity stage of business bigger (strategic) investors, VCs and strategic VC arms start being active,
- At later stage for financing banks, industrial partners, insurances and asset management are potential partners;
 - ⇔ All such partners have different (financing) goals and exit strategies which may differ from the internal business / value creation proposition but have to be considered
- Pay-back period
- Clearly show benefit
- Bottlenecks: costs of technology development and production, scalability

• **Regulatory**

- Companies need to pursue lobbying activities
- Communication and continuous exchange important for understanding and creating an environment which is promoting industry and its growth, setting right incentives
- Regulatory framework also to support industry to become also competitive in international business environment

OPPORTUNITIES

• **Inside the companies**

- Understanding that to increase time to market by gaining critical mass through partnering models is helpful.
 - => Building clusters to gain strength
- Seeking cross-border expertise to support growth.
- Joint functions like PR and lobbying

• **Market**

- Increasing focus on biodegradable materials.
- Willingness of consumers to pay a “fair” price supporting business models.
- Companies to create visibility and understanding of “real” Bio Plastic approach using renewable marine resources.
- High market potential is making investments in Blue Bio Plastics attractive

• **Regulatory & Governmental**

- Understanding the great market potential and customer pressure leading to support for Blue Bio Plastics companies through financing and other means to increase time to market in a world-wide competitive way and for a considerable number of businesses.
- Governmental ban on plastic materials which are not bio-degradable and/or from marine resources. Taxes on non-bio plastics.

GROUP 4: From the angle of the raw material providers

MODERATOR: Alessandro Pititto



Experience: 10-year experience in data management and socio-economic studies on fisheries and maritime policy issues. Alessandro has managed several projects carried out for the EU Commission – DG MARE. In 2010 he contributed to design and develop what is now known as the European Market Observatory for Fisheries and Aquaculture Products (EUMOFA). He participated in the first Blue Growth studies in the Mediterranean and in the Baltic Sea. In 2017 he coordinated the group of experts who developed a method to quantify the size of the EU blue economy in terms of value added and employment. In 2018, he delivered a Market Study on Ocean Energy which aimed to forecast the evolution of the sector and to design the structure of an investment support fund. Since 2013 he's been the coordinator of EMODnet Human Activities, an initiative funded by the EU Commission, which is building an interactive map of human activity in the oceans

PARTICIPANTS:

- Lucile Courtial, FPA2 (Monaco)
- Erik de Laurens, Scale Vision (France)
- Tom Lesage, Children for the Oceans (France)
- John van Leeuwen, Seaweed Harvest Holland (Netherlands)
- Noelia Márquez, VEnvirotech Biotechnology (Spain)
- Corina Moya-Falcón, Spanish Bank of Algae, GC (Spain)
- Karen Scofield Seal, Oceanium (UK)
- Justin Sternberg, Alaska Ocean Cluster (USA)
- Maris Stulgis, European Commission (Belgium)

QUESTIONS WERE:

Q1:

How to build a sustainable and scalable market?

One of the main challenges is the difficulty to access harvestable biomass. There is limited wild material available, with problems of degradation and complex licensing permits. Proposals to wild-harvest, even in areas of abundant seaweeds may not be seen as environmentally-desirable. This forces a move from wild-harvest to cultivation; or a drive to sea-reforestation for macroalgae – both of these require technological, environmental, funding and policy actions to achieve them successfully.

Q2:

Industry relationship and contracting: global vs regional approach?

Small-scale production capabilities may not match large industry needs; hence the need for increased cooperation between SMEs, large enterprises, investors and governments. Question is how? Connecting local actors can provide an excellent platform for bringing together community leadership, researchers, policy makers, industry and investment for sound development and long-term sustainable well-being of rural and remote regions. The challenge is how to upscale this approach to the global level to answer to the increasing demand for raw material. How to connect all these actors for a local-to-global approach?

REPORT:

Q1 How to build a sustainable and scalable market?

- Education and knowledge about bioplastics and its uses are of vital importance.
- Overall, there is a need for information on production of feedstock and characteristic selection. Wild population surveys would be needed.
- Another fundamental issue is due diligence on sustainability of the resource used, be it from wild harvesting or cultivation.
- Strictly connected with the previous point, it is important to fully understand the interaction between wild and cultivated resources, especially in the coming years.
- A global “stamp of approval” would benefit the industry, in that it would clearly label sustainable resources as such.

CHALLENGES



- Current quantities produced are insufficient to keep up with an increasing demand.
- The added value to bioplastics is still too low to make the industry profitable.
- There is a general lack of coordination between the actors involved in the value chain.
- Competition from Asia, often based on low price and low quality, is a challenge for European as well as other global producers.
- Different countries have different rules, which complicate access to markets.
- As a nascent industry characterised by a numerous group of small producers, there are still problems connected with technology transfer.
- A global seaweed blue biomass protocol is missing. More information would be needed on genetic taxonomy.

OPPORTUNITIES

- 100% cascading of seaweed.
- Alternative sustainable green products are in high demand.
- The level of customer demand suggests it is the perfect time to develop new products based on sustainable blue bioresources.
- Education and advocacy might help drive up demand even faster
- There is a great opportunity for workforce training.
- Harvesting/cultivating seaweed sustainably may foster community development especially in small and remote communities. Several synergies could be exploited.
- EU funding sources are supporting R&D.

STRATEGIES

- The time is ripe to foster inter-industry cooperation at global level and develop a platform that, amongst other things could be used to:
 - Carry out research and screening of biomass
 - Share information on research, knowledge and data. Member companies might be willing to share otherwise confidential information, if there's something in it for them.
 - Raise awareness about sustainable production and its uses
 - Lobbying
- Wording is important: what is that we want to produce? 100% fully bio-degradable plastics? That may convey the wrong message to the public. Better choose another definition: "marine-safe" or "non-deleterious" bio-packaging/bio-material have been suggested.
- A common "bank of biomass" could be made available by federated industries to producers down the value chain.
- Connecting with coastal and remote communities.
- Develop common rules for labelling.
- Develop a common protocol for validation of biomass.

Q2: Industry relationship and contracting: global vs regional approach?

- While bioplastics or bio-based packaging may currently be a niche market, biomass is not. In a sense, it can be viewed as a commodity. This is fundamental to understand the revenue model of its producers.
- As of today, the only strategy that makes sense is to "think globally".

CHALLENGES

- Now, demand is higher than supply and we're not producing enough biomass. While this may easily be seen as an opportunity, as of today it remains a challenge because it hampers the full development of the sector, barring new solutions.
- There are still considerable technology barriers before transforming biomass into a final product that can be marketed at an industrial scale. It has been reported that R&D costs may account for up to 50% of CAPEX.
- Lack of harmonisation between different legislations is also hampering the growth of the sector. Diverging standards are a barrier to scaling up production.
- Environmental concerns make it difficult to allocate new space to cultivation.

OPPORTUNITIES

- Demand is particularly high, although a solution should be found to increase production, lest the market might prefer cheaper alternatives.
- There is a lot of space available for cultivation.
- There are multiple sale channels that could be exploited to ensure revenue.
- Carbon and nitrogen credits may also support the sector.
- Securing food resources in the developing world may also be an incentive to dedicate new marine space to cultivation.
- "Building with nature" is another approach that might help tackle environmental concerns. Best practices from the Netherlands (wind mills made more efficient) and Alaska (protection from storm damages) have been mentioned.
- There is an increasing groundswell of public and policy opinion towards sustainable, green resources.

STRATEGIES

- Sharing best practices between small and medium enterprises may help producers face the challenges of dealing with large corporations with higher bargaining power.
- The platform mentioned in Q1 could be an excellent way to create critical mass and increase bargaining power. The platform could easily become a powerful tool for matchmaking.
- Simplifying the rules to access public funds would help reducing R&D costs and keep balance sheets clean.
- However, government action at global level is needed.
- Another way to increase bargaining power could be to foster inter-industry cooperation. Synergies could be established with the bioremediation sector (e.g. in Scotland) and with the fisheries sector (e.g. in Alaska).
- Public/private partnerships would strengthen the position of small producers.

End of the report

Next meeting: Nov 4th, Hotel Miragem Cascais (BioMarine 2019)