

## Concept note:

### *A Local Circular Plastic Waste-to-Fuel Business Model to upgrade Mobility in Emerging Markets.*

## Main Objectives

1. Build a low-tech and decentralized 'industrial & business' model that is profitable, sustainable, scalable and resilient.
2. Accelerate R&D on waste-to-fuel to release viable small scale & low-tech pyrolysis units
3. End plastic pollution and regenerate nature and biodiversity,
4. Include communities, opportunities for local entrepreneurs and viable jobs.
5. Enable a high level of measurable impacts on climate and biodiversity and community inclusion
6. Support human and waste mobility through local units to transform plastic waste into fuel for underserved communities.

## 1. Context

Many emerging markets and countries are facing issues at multiple levels related to plastic pollution, but also the cost increase and scarcity to access fuels, that remain one of the only available energy sources to operate their local economy and consequently their mobility.

On top of that, the plastic pollution acts as an additional stress to the marine biodiversity in these areas with rich ecosystems (South-East Asia, Pacific, Africa and South America) damaging the Ocean that is a major climate regulator. The destruction of marine ecosystems is a direct threat for local communities whose livelihoods depend on the Ocean (food, hygiene) as well as businesses.

High-value plastics like PET bottles are usually collected, even sometimes in the most remote areas, because they have a value in traditional recycling markets. However, all the remaining plastic bags, multilayers, sachets, wrappers and cups for instance (qualified as non-recyclables) end up at best in the landfill and often in the environment (open burning, waterways, ocean) because they have no market value. Building a system to value these plastics is a necessity to incentivise waste collection.

This is why there is a huge need for plastic transformation units that can handle that kind of low-plastic waste.

Giving value to waste can be envisioned here through two processes:

- pyrolysis structures to enable the transformation of low-value plastics into fuel locally.
- thermo-mechanical transformation where plastic waste is shredded, melted and molded to make semi-finished or finished products like tiles, chairs, paving blocks, etc.

In addition, the technology should remain simple, easy to operate and to maintain while completing properly and sustainably the transformation.

The core processes must rely on frugal solutions, ideally locally developed. This includes the development of low tech metrology methodologies to insure the quality and so the value of the final products.

The plastic waste transportation cost from remote areas will always be a major obstacle to a profitable business model, especially for low-value and low density plastics that most recycling technologies cannot handle. That is why the entire process should be more local and circular, fully integrated in the local community life and practices. Therefore, it appears that local units can be considered as a solution.

Considering plastic-waste-to-fuel solutions, they are either large-scale facilities or very small-scale -rather unreliable or dangerous- units. Industrialized and complex ones, require large amounts of waste and have a continuous process - which lead to a massive plastic feedstock collection challenge (e.g. Plastic Energy's technology and model). Small-scale solutions are cheap but produce non-satisfactory quantities and qualities of fuel so far. This is a major bottleneck for the viability of the solution so far.

This is why we are focusing on decentralized semi-industrial solutions (an average of 1 tonne of plastic transformation daily) with a reliable and qualitative production, so that they remain both local and profitable.

## **2. The Movin'On community of interest:**

### **2.1. Movin'on**

Created and inspired by Michelin in 2017, **Movin'On** - <https://www.movinonconnect.com> is a worldwide ecosystem in strategic anticipation and co-innovation for sustainable mobility.

Movin'On has expressed an interest to explore the opportunity to set up a community of interest to gather all the stakeholders, corporates, non-profit organizations, social businesses, tech developers, academics and more on a local circular plastic-waste-to-fuel business model to upgrade mobility in Africa. Moreover, as underlined above, one of the key factors of success in ending plastic pollution in emerging markets is the cost of transportation for low value plastic. Therefore, local units of transformation appear as a solution for this issue.

We are convinced that both pyrolysis and mechanical transformation of plastic waste must be co-developed to better serve communities depending on local constraints.

## 2.2. Nomad Plastic Business case

Nomad Plastic is an innovative social business and engineering consultancy with a main focus to develop projects to end plastic pollution and regenerate nature in biodiversity hotspots. Nomad Plastic's **first flagship project** "Regenerative and plastic-powered cruises in Indonesia" is transforming low-value plastics, collected from remote coastal areas and islands in Flores, into fuel, powering cruising boats visiting marine parks and protected areas, bringing revenue for local communities as well as for the protection of these pristine waters. The model can be extended to other areas and other business cases with stakeholders such as liveaboards, resorts, corporates, conservation NGOs and other conglomerates with the help of partners.

See more details in the appendix.

## 3. Stakeholders

### 3.1. Project leader

Plastic Odyssey is a company developing low technology solutions for plastic waste recycling (including pyrolysis) and promote alternatives to plastics (especially single-use plastics) - <https://plasticodyssey.org/en/>

Plastic Odyssey acts as the leader and sponsor for the community of interest.

### 3.2 Key contributors

- **Movin'On** provides the Community of Interest with:
  - its methodology on how to animate the community of stakeholders, share knowledge, share expertise, seek for contributors
  - coordination of contributors
  - communication (with a focus on a B2B)
  - access to its members network

<https://www.movinonconnect.com/>

- **Nomad Plastic Limited** is a purpose-driven business and engineering consultancy, with the specificity of developing a collaborative business model to end plastic pollution and regenerate nature at once. On top of its model, NP offers consulting services for plastic waste management projects (feasibility study, project management as well as development of project

financing solutions). NP is also responsible for the deployment of the program in the Asian region.

<https://nomadplastic.com/>

- **Blunomy (former ENEA Consulting)** is a consulting firm specialized in energy transition and decarbonation - <https://www.bluno.my/> (<https://www.enea-consulting.com/en/>)
- **Solar Impulse Foundation** is documenting and supporting sustainable and profitable solutions to protect the environment - <https://solarimpulse.com/> - *Nomad Plastic has submitted its application for the label accreditation by Solar Impulse Foundation. The process is on-going.*
- **JOGL** helps sync humanity onto solving our most important social & environmental problems using open science, responsible innovation & continuous learning. JOGL is providing an open source platform dedicated to R&D on solutions for recycling plastic from pollution and waste with a focus on pyrolysis - <https://jogl.io/>

Other contributors are likely to join during the development of the project.

## 4. Geographical scope and local partners

The Community of Interest will cover:

- **West Africa and Maghreb** in regards to the potential in Morocco and Tunisia where we could benefit from strong support of local corporate and institutions such **OCP Foundation, University Mohamed VI and CDC.**

In Senegal, the project will also benefit from a strong local political and private sector support (AMS - Association des Maires du Sénégal, 360° Conseil, Association CRAC, CETUD...)

- **South-East Asia** - with a first focus on Indonesia - where the initial project piloted by **Nomad Plastic**, on track and still under development, will also be considered. African projects must then be considered as a benchmark for a future Community of Interest focusing on Asian development. The potential for replication is significant and the pilot project from Nomad Plastic will benefit from a high interest from corporate and institutions from Singapore such as Temasek Foundation, NUS, GITI Group and more. In addition, **Solar Impulse Foundation** is willing to leverage the initiative in the Asian region. To be noted: Solar Impulse Foundation has signed a MOU with Movin'On.

**In both regions, plastic pollution is a serious and complex issue that could only be tackled by a mass replication of local and adapted solutions.**

## 5. R&D stakes

We consider that there are two major pillars in terms of R&D:

- technological: the objective is to develop a process that is as low-tech, affordable and as easy to operate and maintain as possible by local communities. Developing a reliable process for waste to fuel transformation is a major stake that will rely on unprecedented development of frugal quality control.
- social we will focus on the social and societal science and impact of local micro-factories
- environmental: we will focus on the environmental impact of the solutions and verify how it compares to mainstream alternatives.

## 6. Financing solutions for projects & entrepreneurs

A task force from the Community of Interest will work on the development of financing solutions for projects and entrepreneurs led mainly by Nomad Plastic, Blunomy, Plastic Odyssey and JOGL (through its JOGL Plastic Waste program).

JOGL through its JOGL Plastic Waste program will be able to provide 800k euros to R&D of open source projects done in Africa.

## 7. Timeline and achievements

The objective is to deliver at least two containerized micro factories in Africa in 2023. The Community of Interest will be considered as achieving its goals when:

- the micro factories will be operational and accepted by the entrepreneurs
- the impact criteria (economical, social, social, ...) are defined and measured. They prove that the project deliver more than financial value
- the way to value the plastic credits created on the market is shared and defined

## 8. Sum up and main drivers

- Sourcing projects
- Develop a community platform to facilitate collaboration on R&D for plastic recycling with a focus on pyrolysis and local-based solutions in collaboration with local foundations and academia,
- Support local entrepreneurs in the waste-to-fuel business and energy access for local populations.
- Design and set up adapted funding mechanisms

- Design and set up a scalable operating model for this type of project
- Build an advocacy capacity on plastic waste management and waste-to-fuel acceptance.

The purpose is to create an international framework to develop local capacities with the support of international and local corporations and institutions.

## 9. What we are looking for

The community of interest is **looking for corporate companies** mainly operating in Africa and in South East Asia to **support technically and financially** the projects identified by them or by Plastic Odyssey and its partners to fit the proposed business model.

Discussions are actually on-going with Rogers, Michelin, Deme Group and Kirene. As the initiative is getting traction, we do expect more interest to come from the private sector.

Plastic Odyssey has already identified some potential projects in Cameroon, Guinea, Morocco, Senegal, Togo and Cape Verde.

There is a strong interest from OCP foundation and University Mohamed VI from Marrakech to support technically and financially the project.

Meetings with Temasek Foundation are planned at the end of the month for further discussion.

## 10. Appendix

### 10.1. Persons involved

Pascal Goumault - Movin'On Michelin - Senior Leader

Charlene Kouassi - Movin'On Michelin - Leader for Africa

Pierre Rousseau: Nomad Plastic Ltd & Turbilhao Nomada Lda - Co-founder/Senior Advisor

Jean-Baptiste Grassin - Nomad Plastic Ltd - Managing Director & Global Recycling Projects Coordinator for Plastic Odyssey

Simon Bernard - Plastic Odyssey - Co-Founder & CEO

Benoit Blancher - Plastic Odyssey - Head of Local Factories

Jeremy Lovey - Solar Impulse Foundation - Head of Digital & APAC

Thomas Landrain - JOGL - Founder and CEO

Laurent Blaisonneau - Blunomy - Managing Director

Vincent Kientz - ENEA Consulting - Blunomy - Founder and CEO

Ines Galichon - ENEA Consulting - Blunomy - Managing Director - Head of APAC  
Hassan BA - OCP Foundation - University Mohamed VI - Senior Advisor  
Mactar Yade - Kirene Group - Head of CSR

## 10.2. The pilot case in Indonesia by Nomad Plastic

### Background:

Nomad Plastic has evolved over 4 years from its creation as a sustainable cruising operation to an innovative social business to fight plastic pollution and regenerate nature and biodiversity while developing a profitable tourism activity of cruising to explore some remote areas of the Indonesian Archipelago.

You can watch [The Nomad Plastic Story](#) - explaining their story.

### What has been accomplished so far:

Build and implement a full circular integrated business model

- Build **Nomad Archipelago**: a cruising operation to explore the remote and unspoilt islands of East of Sulawesi: Sea Nomad Archipelago. We pay a lot of attention to upgrade our boat and provide the most sustainable services possible to limit our impact on climate, nature and biodiversity: No single-use plastic, renewable energy, water recycling,...
- Set up **Nomad Community**: a Yayasan (NGO) to educate the local community on plastic issues, reduce its consumption and collect the plastic waste in the remote and unspoiled areas where we are operating.
- Set up a partnership with Plastic Odyssey - to identify recycling solutions for plastic waste with a strong focus on pyrolysis. In addition, we did implement **Nomad Energy** a local partnership with GTM, an Indonesian based pyrolysis operator to produce out of plastic waste collected by Nomad Community fuel to operate the Nomad Archipelago Boats.
- Set up a cooperation agreement with **Blue Finance** to support technically and financially the creation of Marine Protected Areas in the Sea Nomad Archipelago where we are operating (Tompotika and Bunggai Islands).

### What are the immediate priorities:

Test (Pilot) our circular integrated business model: external funding, implementation and consolidation of the partnerships.

- Nomad Archipelago (NA): deploy the marketing and sales and maintain and consolidate the quality of our offer.
- Nomad Community (NC): deepen the relationship with the existing communities and expand the program to more islands. This will require donations and grant from other donors or CSR contributors than Nomad plastic.: Target USD 100K

- Nomad Energy (NE): to design, fund and implement our joint operation on pyrolysis. Target USD 400K. To co-develop with Plastic Odyssey and GTM upgraded technology for the pyrolysis.
- To reinforce the cooperation with Blue Finance (BF) for better integration - BF will acquire one of the 2 boats supported by an agreement for NA and NE to contribute to financing the MPA's developed by BF.

### **10.3. JOGL Plastic Waste program**

The JOGL Foundation has developed an ambitious program to support large scale collaboration for the advancement of open source solutions to fight plastic waste in Africa first and all LMIC then. It is based on its previous successful community-based science and innovation programs. It provides a digital community platform, funding for projects under the form of additive fast microgrants and community management support services to develop the most healthy and smart community around plastic waste. It has a 2.2M euros budget over 4 years and is co-funded by AFD, FFEM, Plastic Odyssey and AXA Research Fund. 300k euros is still missing to enable the launch of the program.

The main goals of the program are:

- Creating a universal library of evaluated solutions at all maturity stages to deal with plastic waste
- Supporting collaborative R&D and entrepreneurship
- Fostering cooperation between organizations and communities on the creation of scientific and Technological commons to fight plastic waste

The measurable goals of the programs are:

- Mobilizing and connecting 3000+ scientists, engineers, makers, designers and entrepreneurs
- Supporting 100+ solutions (R&D and implementation) with 800k euros of direct funding
- Fostering 50+ local implementation by local entrepreneurs