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# 11 Lessons Learned from EPPIC 2021:

## Leveraging Sustainable Business Ecosystem in Marine Waste Management in Indonesia



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# Executive Summary

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Marine waste is an especially huge concern for Indonesia, being an archipelagic state and, therefore, surrounded by water. The topic of marine waste is often discussed with regards to reducing plastic pollution and the search is constantly on for ways to tackle this issue.

The millions of tons of plastics that enter the ocean every year are not only unsightly, there are also tremendous environmental, economic and social costs. Indonesia aims to reduce marine plastic litter by 70% by 2025 and there are various government agencies set up solely to deal with this issue.

It's crucial to understand that plastic pollution will not end by just cleaning up the ocean. Solutions encompass getting to the source of marine waste and revolutionising current habits and systems. This includes changing the way items are disposed and improving wastewater filtering.

The Ending Plastic Pollution Innovation Challenge (EPPIC) is an ASEAN-wide competition that invites innovators to share their ideas for tackling plastic pollution with the world. It is spearheaded by the United Nations Development Programme (UNDP), with support from the Norwegian Ministry of Foreign Affairs and the Norwegian Agency for Development Cooperation (Norad).

While finding ground-breaking innovation in this area is one of the main goals, it's also essential to provide support and visibility to put them in place and grow. The opportunities that EPPIC provides include receiving seed funding and incubation training, so that innovators can maximise their chances of success.

EPPIC 2021 attracted a variety of participants from diverse backgrounds. Finalists were put through a two-month incubation program, which consisted of classes and coaching sessions. The most critical stage of this journey was final pitching, when participants pitched their ideas.

This report summarises what took place at EPPIC 2021 and the lessons that were uncovered during the sessions. It explores the background of the marine waste issue and suggests a multi-disciplinary approach as well as multi-stakeholder collaboration.



# Discover the Indonesia EPPIC 2021 Finalists

<p><b>ASEAN Member</b></p>	<p><b>Sampangan (Singapore)</b> </p>
	<p>Sampangan created “The Magic Box”: an innovative waste machine with zero-emission that processes unsorted waste and transforms them into its original pure forms, to be used as high-value products. Their waste processing machine is a modular system that can process 10 tons of waste per day. It requires a low cost of operation in terms of workforce, maintenance and electricity</p>
<p><b>ASEAN Member</b></p>	<p><b>Alterpacks (Indonesia)</b> </p>
	<p>Alterpacks uses food waste – homogeneous food by-products thrown out in food manufacturing – spent barley grains or Brewers Spent Grains (BSG) from beer brewing and malt processing to create a new biodegradable and compostable home material that can replace plastic.</p>
<p><b>ASEAN Member</b></p>	<p><b>Bintang Sejahtera NTB (Indonesia)</b> </p>
	<p>Bintang Sejahtera provides capacity building for human resources, business assistance, equipment assistance and waste management business capital to community groups who are highly committed to building a Waste Management System with a Waste Bank scheme as a collection center.</p>
<p><b>ASEAN Member</b></p>	<p><b>Plepah (Indonesia)</b> </p>
	<p>Their solution is enabling the value creation of under-used agricultural resource materials available locally, and providing technology to support the production in a decentralized, micro-manufacturing approach. They also put forward a community-development scheme providing village-owned enterprises/corporations with a sustainable business model where the impact will resonate in the village's livelihood.</p>

## Discover the Indonesia EPPIC 2021 Finalists

<p><b>ASEAN Member</b></p>	<p><b>Rekosistem (Indonesia)</b> </p>
	<p>Rekosistem is a one-stop solution platform that aims to ease the existing process of plastic and waste collection.</p>
<p><b>ASEAN Member</b></p>	<p><b>Siklus (Indonesia)</b> </p>
	<p>Siklus delivers refills of consumer products to your door – without any plastic waste. Siklus' mission is to reduce plastic waste and make everyday necessities more affordable to low-income customers. Siklus uses technology to optimize its supply chain and allow brands to interact with their customers.</p>
<p><b>ASEAN Member</b></p>	<p><b>Ocean Purpose Project (Singapore)</b> </p>
	<p>Ocean Purpose Project has developed technology that can be integrated with a plastic pyrolysis plant and convert syngas (and excess oil) into carbon nanotubes (CNTs) and hydrogen-enriched gas. From there, it is able to produce pure-hydrogen gas.</p>
<p><b>ASEAN Member</b></p>	<p><b>EQUO (Vietnam)</b> </p>
	<p>EQUO aims to make plastic alternatives widely available, firstly with disposable drinking straws and utensils, to force production of single-use plastics to slow down and eventually be eliminated.</p>
<p><b>ASEAN Member</b></p>	<p><b>Gringgo (Indonesia)</b> </p>
	<p>As a start-up, Gringgo develops technology based on mobile apps and web apps to handle waste, especially plastic waste. This application has waste transactions that will benefit the waste collector and households. Households can sell waste or used goods at a reasonable price and reduce the market's price game.</p>
<p><b>ASEAN Member</b></p>	<p><b>Gringgo (Indonesia)</b> </p>
	<p>Evo &amp; Co is a socially responsible start-up that aims to be a one-stop solution for eco-friendly packaging, to reduce global plastic waste issues and to support businesses to be sustainable. It also promotes circular living to global citizens through its three brands – Evoware sells seaweed-based packaging; Evoworld sells sustainable materials other than seaweed packaging such as bamboo, cassava, sugarcane, rice straw; and the Rethink Campaign is a social and collaborative movement.</p>

# Lessons Learned: Pre-challenge

## 1. Understanding the Issue and Setting the Right Objectives

Plastic waste and marine debris are significant problems in archipelagic countries such as Indonesia. Indonesia generates approximately 7.8 million tons of plastic waste annually and 4.9 million tons of this plastic waste is mismanaged e.g. uncollected, disposed of in open dumpsites, leaked from improperly-managed landfills, or ended up as marine waste. We have come a long way in addressing both issues. Competitions have been held to find the best solution to this problem, yet it still needs to be worked on. EPPIC comes in with a new model of competition where the applicants need to come up with a solution that can address a selected area in Indonesia: Lombok, Mandalika.

In 2021, EPPIC, with the objective to strengthen the circular economy of plastic products and increase knowledge, cooperation and networking opportunities in ASEAN countries on the topic of prevention and reduction of plastic waste in nature, was to answer the problem of plastic waste on the coast of Indonesia, especially in Mandalika. This activity has indirectly contributed to the better management of plastic waste in Indonesia, or it can be said that it was designed to answer the problem from the beginning.



The 2021 EPPIC project in Indonesia targets the plastic waste management problems in one of the special economic zones (SEZ) – an area designated as a special economic priority zone to promote its economic growth through tourism – Mandalika. It is located in Pujut District, Central Lombok Regency, West Nusa Tenggara Province, Indonesia, with an area of approximately 1,250 ha. Mandalika, one of Indonesia's super-priority tourism destinations, was chosen as the location for holding the Motorcycle Grand Prix (MotoGP) in 2022, which increased the amount of waste generated. In contrast, we floundered to find data on waste generated in Central Lombok in 2020, indicating a problem with the region's waste management data.

Therefore, referring to the data-driven impact spirit, the first activity conducted was a detailed baseline assessment to map out more specific problems and identify the root causes that need to be resolved. The baseline assessment worked on household and plastic waste generation, including the plastic waste generated from households and beaches – a total of 11.21 tons of waste generated per year in the Mandalika SEZ coastal area.



## 2. Outstretch Global Problems, in line with National Targets

In 2015, Indonesia was astonished by research from Jenna Jambeck that Indonesia is the world's second-largest ocean plastic polluter. It was obviously a bitter result but it has, fortunately, opened many eyes, not only around the world but also in Indonesia. Since then, plastic has become a global issue that has received a lot of attention. It more than doubled from 2000 to 2019 to 353 million tonnes in total.

More detailed regulations regarding plastic waste are regulated by the Government of Indonesia (GoI) through Presidential Regulation 83/2018 on Handling Marine Waste. Indonesia declared a National Plan of Action to combat marine debris from 2018 to 2025.

The Regulation involves 18 ministries, local governments, private sectors and NGOs with a planned budget of US\$1 billion. The government has moved to seek innovation and improve inter-agency coordination to tackle the problem of marine debris, especially those caused mostly by plastic.

EPPIC was designed to accord with both global and national targets on handling marine waste. EPPIC's selection criteria covered viability, local innovativeness, sustainability, impact, diversity inclusion and skills of the team.



***It cannot be right to manufacture billions of objects that are used for a matter of minutes, and then are with us for centuries.***

***- Roy Savage***

### 3. Long-term Impact Circular Programs

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Aligned with the outcome of EPPIC 2021 in Indonesia, promoting and strengthening the circular economy (CE) has also become a goal that the Indonesian government is currently developing. The circular economy is considered one of the best entry points to solve business supply chain problems. Based on research from the Ministry of National Planning and Development of Indonesia, **implementing a circular economy in Indonesia has the potential to increase economic value to reach IDR 593 - 638 trillion in 2030. In addition, the application of CE also has the potential to reduce waste by 18-52% and reduce emissions of 126 million tonnes of CO<sub>2</sub>e in 2030.**

In connection with this research, the integration of the CE concept in the outcomes and program goals of EPPIC Indonesia 2021 itself has shown that the direction of EPPIC's movement will contribute to the implementation of a circular economy in Indonesia. This is designed to have both a short-term and long-term impact.

The innovations presented through EPPIC in Indonesia will bring up sustainable business actors who are currently still developing and not in much demand. We must continuously be echoing narratives that are good for the environment until, in the end, it is no longer just a narrative but turns into action.

## Lessons Learned: During the Challenge

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### 4. Engaged with a Wide Array of Ideas

Although the time available during the challenge was relatively short, EPPIC 2021 in Indonesia managed to reach a wide variety of participants from diverse backgrounds and ideas. Individuals, business entities, research institutions/academics, government and non-profit organizations have contributed ideas to overcome the problem of plastic waste in Indonesia. All innovations are well received from activities that are still in the early stages to those that are more established. In addition, we received proposals with various solutions from upstream to downstream management of plastic waste and marine debris. With more than 140 registrants and 93 proposals submitted, this indicates that solutions for plastic waste management in Indonesia are urgently needed and EPPIC has become a bridge for that.







The sheer number of ideas that come in also enables us to expand our thoughts beyond our current range of thinking. The fact that we received a number of proposals from various countries across ASEAN such as Singapore, Vietnam and the Philippines – and not just from Indonesia – indicates that the problem of plastic waste in one country can draw the attention of other countries to come up with solutions. We can also understand the extent to which innovators in the ASEAN region are capable of dealing with the problem of plastic waste, whether the available innovations are sufficient because many people have been exposed to adequate information and knowledge, or it turns out that we still lack information on waste problems and management.

## 5. At the Core of Multi-Stakeholders Collaboration

One key factor when looking for solutions for the waste problem is the collaboration between all actors. Since the implementation of EPPIC Phase II in Indonesia, all stakeholders have been involved - both the central and local governments participated in providing input on the ideas obtained. This multi-stakeholders participation and collaboration effectively provide a more realistic and targeted perspective on waste management in Lombok, Indonesia.

According to stakeholders, EPPIC not only provides a platform for innovators but also empowers the local community of Mandalika, Lombok, through the application of the three main frameworks of the Sustainable Development Goals: economic, social and environmental perspective.

**“To make progress, we have to build a multi-stakeholder process, harnessing the appropriate energies”**  
-Mary Robinson

# Lessons Learned: Incubation Programme

## 6. More than just a Process: Reflecting on The Nature of Design



The incubation aims to educate and upskill participants on issues in sustainable business ecosystems – and we believe in design thinking as a framework to deliver the objectives of this phase. Implementing design thinking in the incubation phase at EPPIC allows all involved – not only participants – to partake in thinking about the existing problems, empathize with these problems, define and challenge assumptions, ideate, and develop small-scale prototypes to be tested directly. Although relatively uncomplicated, applying a systematic way of thinking in finding solutions to problems – especially to find economically-viable products – will make a team’s system thinking more efficient and effective.

The incubation phase ran with activities including classes and coaching sessions. Classes covered the early entrepreneurs’ steps to have an impactful business cycle. Finalists learned about technical market expansion by knowing the global market’s complexity dimensions (market, operational and regulatory); Indonesia’s market complexity; the key to the success of upstream Paddler group’s market complexity; and the way to reach it by “the four fits model”. They also learned the steps to set company objectives by using collaborative goal-setting tools to set ambitious goals with measurable results using the OKRs framework. They also learned how to manage human resources effectively – team coordination by discovering team problems based on the Cynefin Framework and how to deal with them via different approaches. The key point of having the business in Indonesia was the legality of its business; the finalists were informed by the legal advisors about the legal license procedure for the deed of the company by the Ministry of Law, tax id number issued by the national tax office and company identity number (NIB) issued by the board of investment.

The design-thinking process fosters creativity, innovation and user-centricity, which are needed at this stage. Implementing a design-thinking process in the EPPIC incubation program accelerated the goals met – goals that prioritize the needs and requirements of users first of all. We believe actionable solutions that are desirable for the user, viable for business and technologically feasible are cross-sectoral solutions that are principal in managing plastic waste and marine debris. By applying design thinking, the participants can unleash their potential as design thinking supported by broad knowledge exposure can stimulate critical points of innovation.

## 7. To Foster Coherence, Equipped with Extensive Knowledge

The selected participants in the incubation program are equipped with knowledge not limited to environmental issues but also about markets, human resources, legal advisory for business, preparation for getting investors and circular economy issues. With extensive knowledge shared during the two months of this incubation program, the aim is that all participants will be able to continue their innovation wherever they are.

The problem of marine plastic waste is a complex, multi-dimensional expertise and involves human behavior that is arduous to change in a short period of time. Therefore, instilling fundamental knowledge of plastic waste causes is essential to all participants – extensive knowledge and not limited to one niche area only. The implementation of this broad knowledge exposure is reflected in Alterpacks' efforts to obtain halal certification for the products it designs. For a business that has just started, the desire to comply with regulations reflects that EPPIC participants are equipped with knowledge which includes the need to comply with regulations so that the products designed are accepted by the community and prove that sustainability is not just a theory.



## 8. No One Left Behind: Embracing Different Perspectives and Level of Knowledge

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Throughout the incubation process, EPPIC always values multiple perspectives. In this regard, the perspectives of the national and local governments are beneficial for participants to gain insight and stimulants for the assumptions and hypotheses they had when they first entered the incubation program.

Furthermore, receiving multiple perspectives from the indigenous people in Lombok, local government, environment activists, waste infrastructure facilitators, communities and sustainable businesses that already exist in Lombok including the field visits, also reflects the stage of empathy in design thinking. At this stage, our initial assumptions can be set aside as we look at the reality on the ground and see the difficulty of coordination between institutions and other non-technical issues that give an insight into how complex the challenges will be in the future when implementing the designed solutions.

Working within the waste management scope means working with the human dynamics in it. What is happening today is the result of prior policies and how society responds to these: some obey, some violate and some are indifferent. The sustainability of waste management innovations is independent from how great the invention is and how flexible it is in dealing with changes and human dynamics. Therefore, various human perspectives help the design process to be better.

At this stage, participants are given the opportunity to present their ideas in front of the local government to get feedback. Local government and researchers on the initial conditions of Mandalika also participated in exchanging information. Sharing is caring is not just a slogan – UNDP is driven by inclusive innovation, which includes input from various parties.

## 9. Setting Strategy and Sustainable Mindset through Comprehensive Coaching

During the incubation stage, participants received several coaching sessions with experts. Expert coaching is designed to empower individuals to find their own answers within themselves and in each team role. In this context, coaching will not only help the participants (indirectly) to find their inner passion for delivering the project until the end, but also maximize their impact in more detail because it is done face-to-face.

Establishing short-term and long-term strategies that are inclusive and affirming a sustainable mindset to participants help them understand the primary meaning of this competition, which is internally to develop themselves and externally to achieve a sustainable business ecosystem, especially marine waste management innovation. So, the function of coaching is to keep the two significant meanings of EPPIC imprinted in every participant's mindset. Experiences from experts and participants will also enrich networking and knowledge in a sustainable business ecosystem, which means that EPPIC directly contributes to developing a sustainable business ecosystem in Indonesia. The existence of a growing network will gradually produce an indirect impact that is getting bigger on the environment in Indonesia.

# Lessons Learned: Acceleration Program and Exit Strategy

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## 10. Final Pitching: The Critical Point of A Journey

Final pitching is one of the most critical stages of the entire program because, at this stage, all previously-received lessons and journeys are tested through 15 minutes of pitching ideas. However, participants also learned how to communicate ideas that have been compiled comprehensively, clearly and concisely; how to gain the trust of potential investors; and prove that these ideas are worthy of funding.

At this stage, we also learn how we only need to focus on our targets and goals without comparing them to other initiatives. We have to ask ourselves why what we are doing deserves funding, why investors need to spend their funds on our ideas and why stakeholders need to consider our beliefs in policy-making, if necessary. From here, we learn the art of understanding the character of others who do not know anything about the ideas we bring.

**We learned that the EPPIC program is not only trying to find solutions to overcome marine waste problems. It is growing seeds that are ready to compete in sustainable business competitions,** which are still low on enthusiasts in Indonesia. From this pitching activity, many heads will learn about their strengths and weaknesses and many new leaders will grow up to survive in sustainable business. It is also possible that all EPPIC participants will be sustainable business pioneers for the next several decades.



## 11. Not Just an Idea: More Precise target, Wider Service and Greater Impact

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In the acceleration phase, ideas are no longer just ideas. Innovative and creative ideas have turned into a sustainable business ecosystem that needs to be scaled up regarding targets, services and impacts. Conducting direct field testing of the products and services of EPPIC winners will provide new knowledge and experience for innovators. Testing was carried out on a number of stakeholders, local communities and residents were involved too. In addition to experience and knowledge, new problems will arise due to the assumptions being challenged. However, innovators learn quickly – be agile and solve solutions simultaneously. This behavior is the proof stage of the previously-acquired knowledge and when the innovators will be challenged in a more complex manner than before.

At this stage, assistance from the EPPIC team continues to be given so that the EPPIC process remains in accordance with the values and ethics valued by UNDP: integrity, accountability, professionalism, mutual respect and results in orientation. These values are also applied during EPPIC and will be maintained for the next EPPIC competition.

## Conclusion

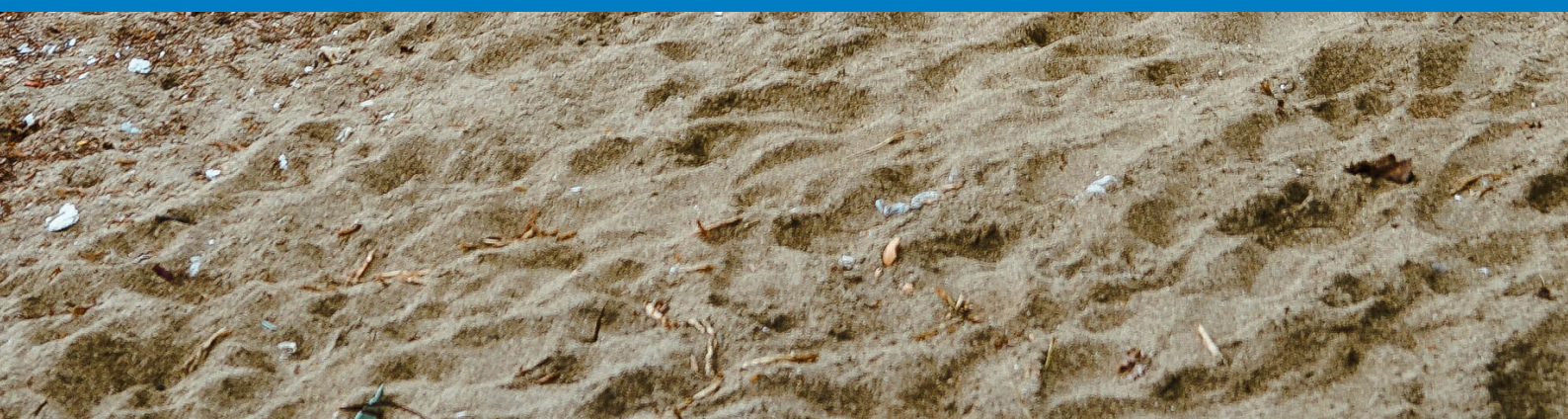
Solving marine waste problems requires a multi-disciplinary approach, flexibility and agility in dealing with human dynamics, as well as multi-stakeholder collaboration. Although it looks complex, the results of a long journey to solve this problem will be useful for generations to come. Also, the impact of business activities is more livable, with local empowerment and the creation of a sustainable business ecosystem.

EPPIC's journey will not stop here. Powered by UNDP, it will continue to create a sustainable ecosystem impact that is getting better, as well as more measurable, transparent and accountable.



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