



THE FUTURE IS CIRCULAR

**UNCOVERING
CIRCULAR ECONOMY
INITIATIVES IN INDONESIA**



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FOREWORD

**Minister of National Development Planning Agency/
Head of Bappenas**

Indonesia has committed to implementing a circular economy under the umbrella of low-carbon development and a green economy as part of its national economic transformation strategy. The implementation of a circular economy has the potential to provide positive economic, social, and environmental benefits, such as increasing GDP, creating green jobs, reducing waste generation, and reducing greenhouse gas emissions.

The circular economy aims to minimize the use of materials and resources while at the same time encouraging a product to be as useful as possible by returning the rest of the production and consumption processes into the production cycle. Thus, the concept of a circular economy is not just better waste management but includes a series of holistic interventions from upstream to downstream by increasing the efficiency of resource use in every value chain of economic activity.

In 2021, Bappenas together with UNDP (United Nations Development Programme) and supported by The Kingdom of Denmark launched a Study on Economic, Social, and Environmental Benefits of a Circular Economy in Indonesia, which shows the potential and benefits of implementing a circular economy in 5 (five) industrial sectors, namely food and beverage, construction, electronics, textiles, and plastics.

To strengthen the findings of the study, the book **“The Future is Circular: Uncovering Circular Economy Initiatives in Indonesia”** has identified and documented circular economy practices that have been implemented in Indonesia, particularly in these 5 (five) priority sectors. The initiatives carried out by 36 agencies, companies, and organizations in this book have shown that the circular economy in Indonesia today is not only at the conceptual level, but has also been implemented and provides tangible benefits.

The release of this book cannot be separated from the support and collaboration of various parties. We express our appreciation to UNDP and The Kingdom of Denmark for their partnership and support to develop circular economy policies in Indonesia and all those who have made this book available for all of us to read. Hopefully, this book can provide inspiration and motivation for the community and business actors in replicating the wider application of the circular economy, as well as supporting the government's agenda and policies in the circular economy transition in Indonesia.

Regards,

Suharso Monoarfa

Minister of National Development Planning/
Head of National Development Planning Agency (Bappenas)



FOREWORD

Resident Representative, UNDP Indonesia

I am delighted to present you with a book titled 'The Future is Circular: Uncovering Circular Economy Initiatives in Indonesia,' which highlights innovative sustainable business practices that can inspire more stakeholders to adopt the circular economy business model. The adoption of a circular economy in Indonesia will pave the way for stronger enforcement of sustainable management of resources and energy with the potential to boost Indonesia's economy by an additional USD 42-45 billion by 2030. Against this positive potential, it pleases me to learn that the Government of Indonesia is already on the right path to pursue a circular economy strategy by formulating its first circular economy roadmap to be mainstreamed in the next National Medium Term Development Plan. This step advancement is consistent with the government's priorities to fast-track the achievement of the Sustainable Development Goals.

Recognizing the critical importance of a circular economy to Indonesia's transition towards inclusive and green economic growth, UNDP has been working in partnership with the Ministry of National Development Planning (Bappenas) on the country's first circular economy roadmap. The roadmap will serve as a key reference point for the government and key business players including large cooperation and Micro Small and Medium Enterprises (MSMEs) who will reap the most benefits from this more cost-efficient model. The application of an inclusive circular economy will create more opportunities for the most disadvantaged groups, including women and people with disability.

This book serves as a prelude to the circular economy roadmap, and it contains examples of best practices ranging from a large farming corporation that distributes its goods internationally, to a small-owned business that relies on a handful of close-knit communities to produce their products. Government initiatives are also included in this publication. Despite differences in size and background, all parties in this book share one common thread: a commitment to applying resources efficiently, and a business strategy that produces less waste and fewer greenhouse gas emissions. We hope that these experiences will persuade other businesses in Indonesia to start making the switch by concentrating on the answers that this model can provide.

I'd like to thank the Bappenas and our donor and steadfast ally in the circular economy, the Government of Denmark, for their strong support, as this publication would not have been possible without it.

I hope this book can inspire all stakeholders to ramp up collaborative action to create a greener, more inclusive, and truly prosperous Indonesia.

Regards,

Norimasa Shimomura

Resident Representative, UNDP Indonesia



FOREWORD

Ambassador of Denmark to Indonesia

Since 2020, the Danish embassy has cooperated with BAPPENAS and UNDP and has published a study on circular economy in Indonesia, published as “The Economic, Social and Environmental Benefits of A Circular Economy in Indonesia” that helped introduce the concept of circular economy in Indonesia. I am therefore delighted to present this book, which can be seen as the next step along the path of a green transition in Indonesia, and shows some of the best practices in circular economy carried out by some of Indonesia’s entrepreneurs.

This compilation of best practices comes at a crucial time. In Indonesia, Europe, and indeed all over the world, people are starting to realize that we do not live in a world of infinite resources, that we cannot eat plastic, and that our current consumption and production patterns are not sustainable and need to be changed. A circular economy is a vital part of the green transition the whole world is facing, and we need

all stakeholders from policy makers, investors, established companies, and entrepreneurs to come together to find the solutions that can ensure us a more sustainable way forward. This collection of best practices serves as inspiration and shows how a circular economy can be integrated into modern business model.

With this report, stakeholders and companies can access valuable and differentiated knowledge that not only presents ways on how to implement the circular economy concept, but also provides a comprehensive network of key stakeholders to learn from. I, therefore, have no doubt that the report will be a great tool for stakeholders that wish to advance their existing knowledge, but hopefully, it will also familiarize the concept to the general public and make the knowledge available for peers not fully involved yet.

A circular economy is still a relatively new concept, but I believe that by cooperating and learning from each other, we will succeed in making circular economy a common and widespread concept in Indonesia. I invite peers to share and contribute to the existing and continually expanding knowledge base that is in Indonesia.

I am very pleased that Denmark has been able to join the journey towards a more circular use of the resources as a part of the long-term Danish-Indonesian environmental cooperation. And from the Danish side, we are very eager to follow the next steps in the circular transition in Indonesia.

Finally, let me end by thanking BAPPENAS and UNDP for their outstanding engagement in this very important part of the green transition. It is my hope that for the future stakeholders in both the public and private sectors will join hands to promote and work towards a circular economy in Indonesia.

Regards,

Lars Bo Larsen

Ambassador of Denmark to Indonesia

WORD FROM THE AUTHORS

To deal with climate change, what we need most right now is a solution. Based on the latest Assessment Report 6/AR6 published by the Intergovernmental Panel on Climate Change (IPCC) of the United Nations (UN), the researchers reiterated that we need more effective efforts to deal with climate change.^{1,2} This is important because the impact of climate change in Indonesia has been demonstrated by the increase in the number of disaster events, which are dominated by hydrometeorological disasters. The Bappenas study shows that the impact of climate change in Indonesia has the potential to reduce Gross Domestic Product (GDP) by up to 544 trillion during 2020–2024 if it still uses a business-as-usual approach.

Indonesia has a target to become the country with the fifth largest economic growth in the world by 2045. For this reason, we need to jointly develop ways to deal with the challenges of climate change, and use them as opportunities for significant economic growth to achieve prosperity in the long term while conserving the environment. Low-carbon development and implementation of a circular economy are important strategies for this.

Following the Sustainable Development Goals (SDGs) in Indonesia 2030 Roadmap³, Indonesia has established a low-carbon development policy which is then aligned with the 2020–2024 National Medium-Term Development Plan (RPJMN). One of the concrete forms of low-carbon development efforts carried out by Indonesia is setting a national target of 27.3% emission reduction in 2024, which one of the strategies is through circular economy intervention⁴ from the 22.5% target in 2018. To achieve these targets, Indonesia needs to change old systems that are no longer effective and even risk damaging the environment. In terms of the government as a policy maker and facilitator, several policies have been formulated to support the achievement of these targets. For example, starting from establishing an urban mass public transportation system in Jakarta, Surabaya, Bandung, Medan, Semarang, and Makassar to building power plants that are no longer dominated by fossil energy.

Apart from infrastructure procurement by the government, economic actors also have a stake in realizing a low-carbon circular economy. In principle, a circular economy system refers to efforts to maintain the value of products, materials, and resources in the economy as long as possible, while still generating economic growth. By striking a balance between profit and product longevity, the social and environmental damage of a linear economic approach can be minimized.

¹ https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_FinalDraft_FullReport.pdf

² https://report.ipcc.ch/ar6/wg3/pdf/IPCC_AR6_WGIII_FinalDraft_FullReport.pdf

³ https://sdgs.bappenas.go.id/wp-content/uploads/2021/02/Roadmap_Bahasa-Indonesia_File-Upload.pdf

⁴ http://www.wantiknas.go.id/index.php/wantiknas-storage/file/img/materi/2020/Maret/10%20Maret%202020-Pembahasan%20Arsitektur%20SPBE%20Nasional-KemenPAN%20RB/Robi-Bappenas-Draft%20Bahan%20Sosialisasi%20RPJMN%202020-2024_ver4.pdf diakses 24 Mei 2022

What sectors have the potential to implement a circular economy? In 2021, 5 (five) sectors have been identified that have the largest potential for implementing a circular economy in Indonesia, as well as having high economic leverage and an adequate level of stakeholder support. The five sectors are food and beverage, construction, electronics, textiles, and retail in the form of plastic packaging. The impact of reducing CO₂ emissions from these five sectors is estimated at 11–15% in 2030 if they continue to consistently implement circular economy practices.⁵ This is because circular practices can reduce the number of Greenhouse Gases (GHG) released through:

- 1 a decrease in the amount of waste that is wasted in the landfill, for example, a decrease in the amount of food waste due to increased consumer awareness;
- 2 the use of alternative raw materials that are more energy efficient, for example, a larger volume of wood use and more wood-based construction than concrete⁶;
- 3 extension of the life of the resource, for example, more clothes that can be used again if the system is rented, exchanged, bought second, or recycled; as well as
- 4 reduction of new resources used.

We cannot fully feel the implementation and impact of the circular economy. However, in the longer term, the results of circular practices can have an impact on our daily lives as well as other living beings. Therefore, it is not only the government that needs to practice circular efforts, but also all stakeholders such as academics, non-governmental organizations (NGOs), the private sector, and all levels of society, including us who are reading this book. The good news is that the practice of circularity in economic activities is not impossible and has been carried out by business activities in Indonesia on various scales.

According to the International Business Report survey by Grant Thornton International, 68% of business people in Indonesia have or have started to develop this strategy, you know! The UNDP survey with the Ministry of Cooperatives and SMEs, as well as Indosat Ooredoo in 2021 involving around 3,000 Micro, Small, and Medium Enterprises (MSMEs) also showed that around 95% of MSMEs expressed interest in environmentally friendly business practices, with women-owned businesses. show a stronger interest. In addition, as many as 90% of MSMEs also showed their interest in implementing inclusive business practices, which is one of the important components of the SDGs⁷. From 2010-2019, 44 companies in Indonesia won green industry awards. These circular initiatives are not only large-scale but also small and medium-sized.

This book was created to share the inspirational stories of these entrepreneurs. All information in this book was collected through research, interviews with initiators, and filling out questionnaires to support its accuracy. From the stories and examples of practices carried out by the initiators, we hope that this collection of stories about circular economy initiatives can inspire more people to replicate and adapt circular economy initiatives, both in their business activities and in their daily lives.

Thus, we dedicate this book to all our beloved Indonesian people. A deep thanks to the Bappenas and UNDP team for the opportunity to be involved in this project. Hopefully, this book can provide many benefits, both for now and in the future.

Jakarta, 2022

Cleanomic Writer Team

⁵The Economic, Social, and Environmental Benefits of a Circular Economy in Indonesia, Summary For Policymakers. Bappenas, Kedutaan Besar Denmark, UNDP, Januari 2021, halaman 20<https://docs.google.com/document/d/1-2bVQvT9Fd9dAJslhyARMRg547kH0-kl/edit>

⁶<https://www2.gov.bc.ca/assets/gov/environment/climate-change/cng/resources/lcm-public-sector-guide.pdf>

⁷<https://katadata.co.id/doddyrosadi/berita/61681c66c21c2/survei-undp-95-persen-umkm-berminat-terapkan-usaha-ramah-lingkungan>, accessed on April 2022.

OVERVIEW

IMPLEMENTATION OF A CIRCULAR ECONOMY PROVIDES ECONOMIC, SOCIAL, AND ENVIRONMENTAL BENEFITS IN INDONESIA

This book contains the stories of 36 initiators from various economic sectors and various actors (government, business actors, and NGOs) who applied the circular economy model in Indonesia. Referring to the data submitted by the initiator in the process of writing this book, the application of the circular economy principle in 36 initiatives shows that there are benefits to the environment, economy, and society as follows:



OPERATIONAL COST SAVINGS

MORE THAN
431.91 BILLION RUPIAH



JOB CREATION

14,270 PEOPLE



EMISSION REDUCTION

MORE THAN
1.4 MILLION TONS OF CO₂E



ENERGY SAVING

MORE THAN
4.8 MILLION MWH



DECREASED WATER CONSUMPTION

MORE THAN
252 THOUSAND M³



WASTE REDUCTION

MORE THAN
827 THOUSAND TONS

Notes:

The data presented in this summary and book include absolute data submitted through questionnaires, interviews, social media, and websites by the initiators who participated in the process of compiling this book. Impact-related data collected from each initiative spans various timescales.



CHAPTER 01

LOW CARBON DEVELOPMENT AND CIRCULAR ECONOMY: WHAT IS IT?



CIRCULAR ECONOMY

The term Circular Economy have been around for more than 30 years. However, to date, there is no globally agreed definition of a 'circular economy', although many international organizations have provided an understanding of this economic model. In 2019, the United Nations Environment Assembly defined a circular economy as an economic model that involves all products and materials that are designed to be reused, remanufactured, recycled, or recovered, and maintained in economic activity for as long as possible.

The circular economy model is designed to replace the linear economic model, where products are designed to be made, used, and disposed of (the take-make-dispose principle) so those producers will continue to take natural resources to produce new products, assuming that natural resources are not limited. In a circular economy, the value of the benefits of a product can continue to be utilized in a cycle so that it can extend the life of the product.

Another definition of a circular economy is provided by The Ellen MacArthur Foundation, an international organization that aims to accelerate the transition of the old model of the economy into a circular economy. In her narrative, the Ellen MacArthur Foundation stated that the circular economy is a framework that produces systemic solutions to tackle global

challenges, such as climate change, reduced biodiversity, waste, and pollution. This framework has principles that are all directed by design, namely eliminating waste and pollution, rotating products and materials of the highest value, and regenerating nature.

In Indonesia, the Minister of National Development Planning/Head of Bappenas, Suharso Monoarfa in The Economic, Social, and Environmental Benefits of a Circular Economy in Indonesia (2021) stated, the circular economy is a closed circular economy system approach, by maximizing the use and value of raw materials, components, as well as products to reduce the amount of waste material that is not reused and disposed of in landfills. This economic model is also used as a driving tool to realize Indonesia's economic transformation, especially by supporting a green economy through a low-carbon and climate-resilient development strategy as the backbone.

From some of the definitions above, we can see the core of a circular economy, namely, an economic model that uses a systems approach in production to consumption activities, which minimizes the use of resources and waste generation, maintains material usability, and is regenerative.

HIGHLIGHT OF CIRCULAR ECONOMY



economic model



maintain materials in the production cycle as long as possible at the highest possible value



save the number of natural resources and focus on renewable (regenerative) natural resources

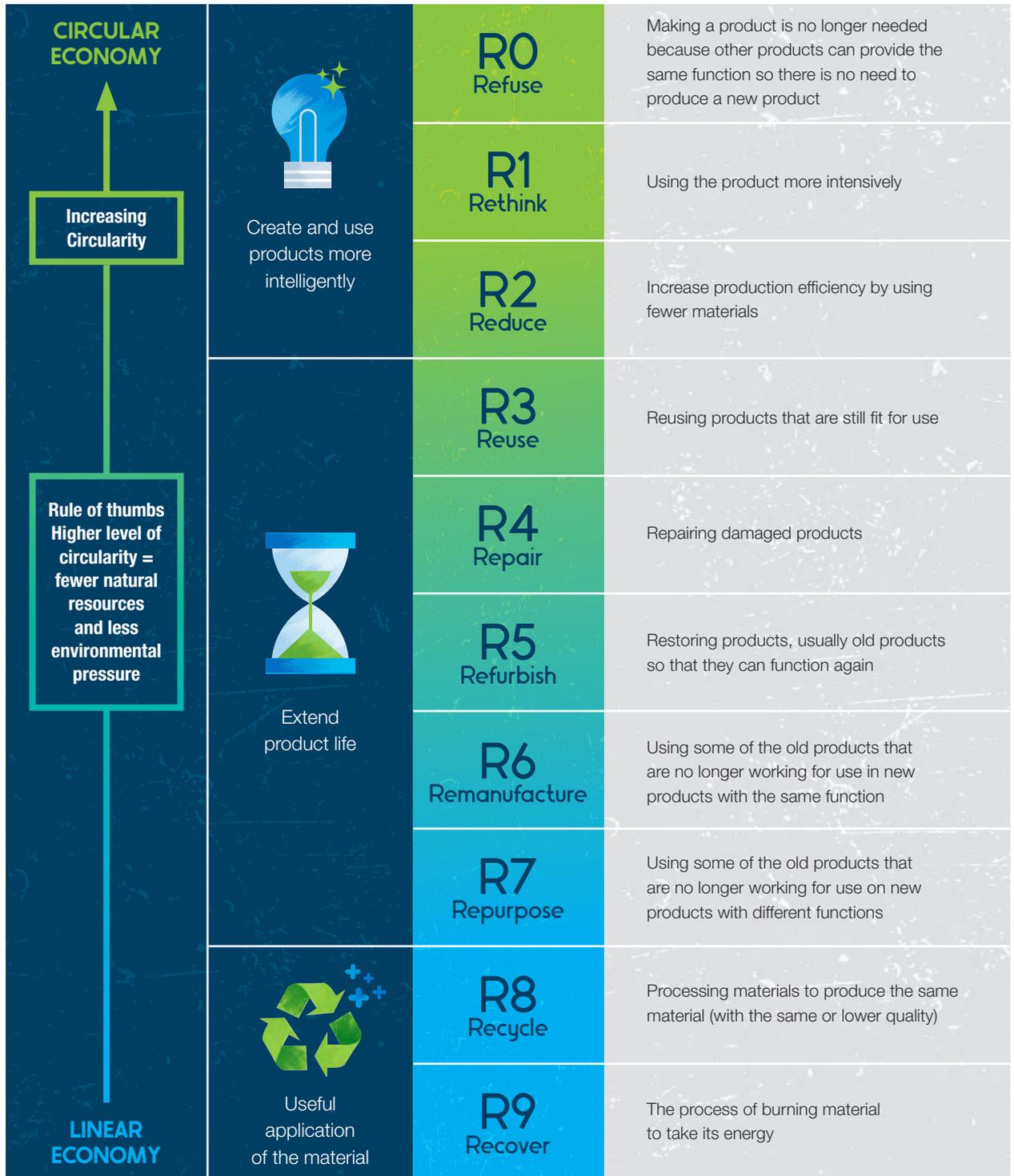


reduce waste



low GHG emissions

Thus, the circular economy is more than just waste management. The circular economy principles that focus on reducing the consumption of resources and materials in the production chain are summarized in the 9R framework. The 9R framework consists of 10 principles of circular economy in order from 0 to d. 9, and is divided into 3 major sections, namely (1) making and using products more intelligently; (2) extending product life; and (3) taking advantage of the material. The numbering of the 10 principles in the 9R framework illustrates the level of circularity in supporting a circular economy, where the smaller the R number, the higher the circularity value⁸, and the larger the R number, the closer the practice to the linear economy is (see illustration).



⁸ Circular Economy: Measuring Innovation in the Product Chain, Potting *et al*, PBL Netherlands Environmental Assessment Agency, The Hague, 2017

Currently, there are five circular business models aimed at maximizing the benefits of resources, production cycles, and materials. These five business models can be applied in different forms according to the context of the region, business and industry activities, and products produced in all parts of the supply chain. When used together, these models have the potential to generate greater impact than when used alone. The five circular business models are:⁹



Circular Inputs

using renewable energy, biologically based materials, or materials that can be recycled



Sharing Platforms

seek to increase product use through a collaborative usage model



Product as a Service

also known as the Product Service System, offers complete products and services for long-term maintenance



Product Use/ Life Extension

efforts to extend product life through repair, reprocessing, upgrading, and resale



Resource Recovery

namely the recovery of resources or energy from waste or by-products into secondary raw materials

⁹ Peter Lacy, Jessica Long, and Wesley Spindler, *The Circular Economy Handbook: Realizing the Circular Advantage* (London: Palgrave Macmillan, 2020), excerpt from the Circular Economy Workshop and Capacity Building: Strengthening Circular Economy Implementation in Indonesia, Teaching Module 2: Circular Economy Concept and Business Model, Bappenas *et al*, March 2022

FIVE PRIORITY SECTORS OF CIRCULAR ECONOMY IN INDONESIA

Currently, the government is focusing on implementing circular economy practices in five priority sectors in Indonesia, which include food and beverage (F&B), textiles (textile), construction (construction), wholesale and retail trade (wholesale and retail), and electronic equipment. The five sectors were chosen because, in 2019, these five sectors contributed as much as Indonesia's GDP and employed more than 43 million people.

The implementation of a circular economy is believed to be able to provide great benefits for Indonesia in 2030, viewed from the aspect of the 3P approach: Profit (economy), namely in the form of an additional GDP of IDR 593–638 trillion; Planet (environment), namely by reducing waste up to 52% in 5 potential sectors and reducing emissions by up to 126 million tons or equivalent to 9% of the current level of emission output; and People by creating 4.4 million new jobs (net), including 75% of them for women.¹⁰

5 PRIORITY SECTORS



Food & Beverage/ F&B



Textile



Construction



Wholesale & Retail



Electronic Equipment

¹⁰ The Economic, Social, and Environmental Benefits of a Circular Economy in Indonesia, Summary For Policymakers. Bappenas, Kedutaan Besar Denmark, UNDP. January 2021, page 45, 49, and 52

LOW CARBON DEVELOPMENT IN INDONESIA

According to the Organization for Economic Co-operation and Development (OECD), International Energy Agency (IEA) in 2010 and quoted again on the United Nations SDG Knowledge Platform website, low-carbon development is a future-oriented national economic development plan or strategy that includes economic growth, and accompanied by a low amount of carbon emissions and climate resilience. In Indonesia, low-carbon development policies have been integrated into the National Medium-Term Development Plan (RPJMN 2020–2024). In the National Medium-Term Development Plan, Low Carbon Development is one of the priority programs in the 6th National Priority, namely Building the Environment, Increasing Disaster Resilience, and Climate Change. The five priority sectors in low-carbon development include sustainable energy development, integrated waste management, green industry development, sustainable land restoration, and low carbon in coastal and marine.

In the context of implementing low-carbon development, a study has been conducted that predicts the potential and benefits if Indonesia continues to prioritize reducing carbon emissions, even reaching net-zero emissions (NZE). According to the study, this NZE scenario can



encourage economic growth that is higher than the baseline to an average of 6.1–6.5% per year in 2021–2050, creating additional jobs in the energy sector, electric vehicle technology, land use interventions, and improved waste management for up to 1.8 million people, as well as wider social benefits, such as reducing air pollution that can save 40 thousand people from the adverse effects of poor quality air. Net-zero emission is a condition when GHG emissions resulting from all human activities are balanced with GHG emissions absorbed.

There are several ways that Indonesia needs to do to achieve the net-zero emission condition that was proclaimed around the middle of this

century.¹¹ First, is the replacement of fossil fuels with clean energy or renewable energy, including nuclear. Furthermore, the reduction of energy intensity from the economy on a large scale and the elimination of subsidies on fossil raw materials by 2030. Likewise, pricing the carbon produced and implementing land transportation electrification practices that can take advantage of the role of biofuels gradually. In addition, it also maintains and restores forests, peat, and mangroves, and adopts sustainable practices in agriculture, forestry, fisheries, and aquaculture. Last, but not least, improve the quality of the waste management system and make the industry's work practices as a whole more efficient.

¹¹ A Green Economy for a Net-Zero Future: How Indonesia can build back better after COVID-19 with the Low Carbon Development Initiative (LCDI), Bappenas, 2021

CIRCULAR ECONOMY IN SUPPORTING LOW CARBON DEVELOPMENT

Circle Economy states that the circular economy principles applied in seven sectors of human needs, namely housing, nutrition, mobility, daily products, services, health services, and communications, can reduce GHG emissions by 39% or around 22.8 billion tons.¹² From this, we can see that there is a very good relationship between a circular economy and low-carbon development.

Based on the IPCC report, Global Warming on 1.5°C (2022), the increase in earth's temperature due to human activities has reached an average of 1°C since the industrial revolution. Temperatures could continue to rise to 1.5°C between 2030–2052 if there are no behavioral changes that can contribute to increased global warming. Although it seems minimal, this 1.5°C increase in temperature is a big problem and has a negative impact. If the human body can convulse when a high fever (between a normal temperature of 37°C to 39°C is already very noticeable, right?) if the earth has a high fever it can trigger the potential for increased heat waves and irregular seasonal changes.

If the increase is up to 2°C, extreme heat will occur more often so that it disrupts the activities of human life as a whole, for example, disruption to the agriculture and health sectors, crop failures that disrupt food security, increased risk of disasters and disease outbreaks, rising sea levels, and many others.¹³ As an archipelagic country, Indonesia needs to anticipate the negative impacts of these risks. Because if not, the potential losses arising from climate change are large and of course, can disrupt economic and social stability.

In order to reduce the risk of climate change impacts, the implementation of a circular economy in the development agenda is synergistic with the implementation plan for low-carbon development. We can see the direct relationship between these two things through several strategies in the NATIONAL MEDIUM-TERM DEVELOPMENT PLAN and examples of activities that support low-carbon development and the principles of a circular economy, including:

- 1 Process and technology modification. This is inseparable from the mindset of entrepreneurs. Every entrepreneur must have a mindset to reuse the products produced after their useful life is up. Now, with the advancement of science and technology today, this mindset can be more easily realized.
- 2 Waste management, both household solid waste, and industrial waste. If the residual waste from production or public consumption can be reprocessed into new products, the amount of use of raw materials can be reduced. Greenhouse gas (GHG) emissions will also be reduced because, in addition to reducing the risk of waste accumulation in the landfill, the use of recycled materials requires more efficient resources than raw materials.

Greenhouse gases (GHG) are gases in the earth's atmosphere that trap the sun's heat on the earth so that the earth's temperature increases. The United Nations Framework Convention on Climate Change (UNFCCC) stipulates six types of GHGs produced by humans, namely carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆). Among them, the largest proportion of GHGs is carbon dioxide (CO₂).

- 3 The use of clean and renewable energy can reduce the amount of GHG emissions produced.

¹² Circularity Gap Report 2021. Circle Economy is an international non-profit organization that publishes the annual report since 2018.

¹³ <http://ditjenppi.menlhk.go.id/kcpi/index.php/info-iklim/dampak-fenomena-perubahan-iklim/229-perubahan-iklim-di-indonesia>, accessed on April 5, 2022.

If we take the example of the implementation of the above activities in certain sectors, for example, the 4 main industrial sectors (cement, steel, plastic, and aluminum), the implementation of a circular economy strategy in this industrial sector can contribute to a 40% reduction in carbon emissions by 2050, while for the food sector, carbon emission reductions can even reach 49%.¹⁴

By looking at the intersection of objectives, activities, as well as evidence from existing studies, the

circular economy is in line with the Low Carbon Development (LCD) mission which strives to reduce the amount of GHG emissions to a minimum. In addition, the LCD and the circular economy both require multi-sectoral cooperation and the whole community, from the producers, consumers, and regulators alike. This common need for cooperation can be seen as an indirect relationship between the circular economy and the CRP.

THE INTERLINKAGE BETWEEN CIRCULAR ECONOMY AND LOW CARBON DEVELOPMENT



Although the big goal of low-carbon development is the reduction of GHG emissions, the reduction of waste, conservation of natural resources, as well as increased innovation, business opportunities, and green jobs are also seen as advantages of implementing low-carbon development. With the same impact/benefits, the principle of a circular economy can be said to play a role as a driving force for the achievement of the low-carbon development vision.

Aspects of low-carbon development are not only limited to the goal of reducing GHGs.

¹⁴ <https://ellenmacarthurfoundation.org/completing-the-picture>, accessed April 23, 2022.

INDONESIA'S GHG EMISSION REDUCTION TARGET

Indonesia targets a 27.3% reduction in GHG emissions compared to business as usual in 2024 to reach 29% by 2030, as referred to in the Paris Agreement.¹⁵

Under the concept of 'business as usual (BAU)' or conventional business, the annual absolute GHG value will be calculated in the same period in 4 (four) categories of emission sources, namely:



This BAU scenario is an estimate of emission levels and GHG projections based on previous data and trends, without any policy intervention in the future. The point is a scenario that assumes conditions like this, aka go with the flow, without any policy changes or special priorities on the issue of GHG emissions.

From the BAU scenario, it will be seen what additional interventions can be carried out in each sector to reduce GHG emissions. With these additional interventions, the amount of GHG emissions that can be reduced is calculated, taking into account several things, including funding efficiency, the impact of macroeconomic interventions, social feasibility, as well as data availability and quality. This intervention plan also looks at the compatibility of the total GHG emission reductions from each intervention with the GHG reduction target scenario in 2030.

Three core programs in the energy sector, namely renewable energy, energy efficiency, and fuel oil substitution, have shown some positive results. The use of B20 biofuel as a substitute for fuel has contributed to state savings of USD 385.9 million in the 2018–2019 period. The Ministry of Energy and Mineral Resources and the Ministry of Industry also recorded a decrease in energy intensity (energy consumption per billion GDP) by an average of 2% per year. In addition, in 2018, the highest reduction in GHG emissions resulted from the forest moratorium policy, forest fire control, and forest rehabilitation efforts. The potential for reducing GHG emissions also arises from the provision of waste management infrastructure (construction of Final Disposal Sites and construction of TPS3R/ Integrated Waste Processing Sites).¹⁶

¹⁵ https://perpustakaan.bappenas.go.id/e-library/file_upload/koleksi/migrasi-data-publikasi/file/FP_RKP/Dokumen%20RPJMN%202020-2024/Lampiran%201.%20Narasi%20RPJMN%202020-2024.pdf, accessed on 17 May 2022.

¹⁶ <http://ditjenppi.menlhk.go.id/reddplus/images/adminppi/dokumen/igrk/lapigrkmrv2019.pdf>

INDONESIA'S CLIMATE POLICY AND COMMITMENT

To understand more about the principles of a circular economy and low-carbon development, we need to look at what Indonesia's commitments to climate are and the translation of these commitments into national development policies.

A INDONESIA'S CLIMATE COMMITMENT

As the country with the largest economy in Southeast Asia¹⁷, Indonesia is currently trying to implement the principles of a sustainable green economy, which is also a strategy for Indonesia's economic transformation after the COVID-19 pandemic.¹⁸ At the national level, sustainable development is driven by (i) the 2030 Agenda for Sustainable Development (SDGs) which has been translated and used as a reference in the NATIONAL MEDIUM-TERM DEVELOPMENT

PLAN; and (ii) the Paris Agreement, which was ratified by Law no. 16 of 2016 concerning the Paris Agreement on the United Nations Framework Convention on Climate Change.

The NATIONAL MEDIUM-TERM DEVELOPMENT PLAN for the period 2020–2024 is the last phase of the long-term plan from 2005 to 2025, which is also a path towards a long-term vision (Vision for Indonesia 2045). One of its missions is to be consistent with national commitments toward

low-carbon development and climate resilience in the hope of supporting economic, social, and livelihood security.

In this five-year plan prepared by the Ministry of National Development Planning Agency (Bappenas), the Government places the climate and circular economy agendas as part of the 7 National Priority agendas. Both are explicitly located in the first and sixth national priorities and are supported by other national priorities.

B National Priority 1 Strengthening Economic Resilience for Quality and Equitable Growth

National Priority Agenda 1 puts forward the concept of economic development that will be driven to grow taller, inclusive, and competitive through:

1. **Management of economic resources** which includes the fulfillment of food and agriculture as well as management of maritime, marine, and fishery, water resources, energy resources, and forestry based on the principle of sustainability.

¹⁷ <https://kemenperin.go.id/artikel/22780/Unggul-di-ASEAN,-Indonesia-Fokus-Tingkatkan-Nilai-Tambah-Manufaktur>

¹⁸ <https://www.kemenkeu.go.id/publikasi/artikel-dan-opini/pandemi-momentum-transformasi-green-economy>

2. The acceleration of **increasing economic value** added includes agriculture and fisheries, maritime, energy, industry, tourism, as well as the creative and digital economy. The policy direction taken by the government is to strengthen economic competitiveness by strengthening business actors (entrepreneurship, Micro, Small, and Medium Enterprises (MSMEs), and cooperatives), growing investment, employment, export value, and industrialization.¹⁹

Several Priority Programs in National Priority 1 directly support the application of circular economy principles such as increasing New and Renewable Energy (NRE) to meet energy needs and also increasing water security through, among others, conservation of water resources and sustainable forest management.

b **National Priority 6**
Building the Environment,
Improving Disaster
Resilience, and Climate
Change

In this sixth national priority, the three policies adopted are improving the quality of the environment, increasing disaster resilience and climate change, and implementing a low-carbon development approach.



In the **Environmental Quality Improvement Priority Program**, the government formulates strategies related to environmental pollution and damage, namely by preventing, tackling, and restoring, as well as strengthening management and related law enforcement. The scope of objects of this Priority Program is quite broad, ranging from preventing loss of biodiversity and ecosystem damage, restoration and restoration of peatlands, restoration of ex-mining land, to increasing populations of endangered wild plant and animal species.

¹⁹ https://bappeda.bondowosokab.go.id/uploads/image/Lampiran_1__Narasi_RPJMN_2020-2024.pdf accessed on 27 May 2022.

For the Priority Program for **Improving Disaster Resilience and Climate**, two strategies have been developed, namely disaster management and improvement of climate resilience. Disaster management strategies include efforts to strengthen data and information, systems, and management in dealing with disasters, as well as planning at the national and regional levels in reducing disaster risk, while strategies to increase climate resilience are implemented through the implementation of the Climate Resilience Development policy in priority sectors, such as marine and coastal areas, water security, food security, and public health and the environment.

The last Priority Program is **Low Carbon Development**. This Priority Program is carried out with five strategies, namely sustainable energy development, sustainable land restoration, waste management, green industry development, and low carbon coastal and marine. The efforts made in the five strategies are very diverse, including increasing the supply of biofuels from low-carbon raw materials, reducing the rate of deforestation, managing household waste, modifying processes and technology toward a green industry, and rehabilitating coastal and marine ecosystems.²⁰



Low-carbon development in National Priority 6 is based on sustainability values, including green industry which is closely related to the implementation of a circular economy.

These two National Priorities in Indonesia's development are interrelated and emphasize that in order to realize economic development, policies or steps taken in development must be in line with improving environmental quality, climate resilience, and low-carbon development.

Climate change and the decline in the carrying capacity of the environment can have a negative impact on the achievement of the economic growth targets that have been set. The carrying capacity of the environment consists of the carrying capacity of Natural Resources and the carrying capacity of the Environment. In essence, the limits of nature's ability to support the

life of living things and the ability to absorb substances, energy, and/or other components. Therefore, future development is directed at maintaining a balance between (i) economic growth, (ii) emission reduction targets and intensity, and (iii) the current and future capacity and limitations of the carrying capacity of natural resources and the carrying capacity of the environment.

²⁰ https://bappeda.bondowosokab.go.id/uploads/image/Lampiran_1__Narasi_RPJMN_2020-2024.pdf accessed on 27 May 2022.

B EXAMPLES OF INDONESIAN GOVERNMENT POLICY ON CIRCULAR ECONOMY

Several policies related to the circular economy in Indonesia that have been initiated by government ministries and agencies are as follows:

1 Green Industry Standard (GIS)

Green Industry Standards are described in Law Number 3 of 2014. The Green Industry Standards Policy is contained in Article 79 Paragraph 1 which explains that green industry standards are part of standardization in realizing a green industry. Article 79 Paragraph 2 explains the provisions in the Green Industry Standard, namely regarding Raw Materials, Auxiliary Materials, Energy, Production Processes, Products, Business Management, and Waste Management. In detail, the Green Industry Certification Procedure is regulated in the Regulation of the Minister of Industry of the Republic of Indonesia No. 39 of 2018.

In addition, the green industry is also encouraged by Government Regulation Number 28 of 2021 concerning the Implementation of the Industrial Sector. Article 2 explains the scope of regulation regarding Raw Materials and/or Auxiliary Materials.

Article 3 Paragraph 1 explains that Industrial Companies must use Raw Materials and/or Auxiliary Materials in the production process in an efficient, environmentally friendly, and sustainable manner. Article 3 Paragraph 2 describes the types of Raw Materials and/or Auxiliary Materials that can be used by Industrial Companies such as materials from nature, from production, by-products, and recycling.

Until now, the Ministry of Industry has launched Green Industry Standards for 31 (thirty-one) industries and 3 (three) standards will be published in 2022 which are compiled based on the Indonesian Standard Classification of Business Fields which is expected to be a guideline for companies to run efficient and environmentally friendly production process. From 2017 - 2021 the Green Industry Center has certified 44 industrial companies.

To obtain Green Industry Standards certification, a company must meet the qualifications set by the Green Industry Certification Institute according to their respective industry categories. This Green Industry Certificate has a close relationship with PROPER (Company Performance Rating Program). If a company has obtained a Green Industry Certificate, automatically the company has been categorized as at least getting a Blue PROPER. In addition, in order to promote the principles of the green industry, the Green Industry Center gives awards to the manufacturing industry that has implemented the principles of the green industry. During the 2010-2021 period, the Ministry of Industry awarded 1034 industrial companies. Based on the results of the 2021 green industry award program, energy savings of IDR 3.2 trillion were recorded, and water savings of IDR 169 billion.²¹

2 Waste Reduction Roadmap by Producers

The Ministry of Environment and Forestry has issued regulation no. P.75/MENLHK/SETJEN/KUM.1/10/2019 concerning Roadmap for Waste Reduction by Producers. The regulation regulates

a roadmap to reduce the waste generated by producers during the 2020–2029 period, up to 30% of the total waste generated in 2029. The roadmap is made to address various issues, such as (i) waste

classification and producer subject to the waste reduction roadmap; (ii) implementation of waste reduction activities; (iii) implementation of the waste reduction roadmap; and (iv) the existing incentives and barriers.

²¹ <https://kemenperin.go.id/artikel/22572/Wujudkan-Daya-Saing-Global,-Kemenperin-Akselerasi-Penerapan-Industri-Hijau>

Generally, waste reduction is carried out in relation to every product, product packaging, and/or container that is non-biodegradable (not biodegradable), non-recyclable (cannot be recycled), and/or non-reusable (cannot be used). back), including plastic, aluminum

cans, glass, and paper. Single-use plastics, including plastic straws and cutlery, Styrofoam containers, and single-use plastic bags will also be officially banned on January 1, 2030.

Producers who make these efforts can be given incentives in

the form of awards, performance publications, and other forms. Likewise, if they do not do so, producers can be given disincentives in the form of publication of their bad waste reduction performance and administrative sanctions.

Producers in question include business actors and/or activities in the following fields:



Manufacturing (food and beverage industry); **consumer goods** (consumer goods); and **cosmetics and personal care**



Food and beverage services, including restaurants, cafes, restaurants, catering services, and hotels



Retail, including shopping centers, modern shops, and people's markets

In the regulation, the food and beverage industry is one of the producers who are required to reduce the amount of plastic waste originating from products, product packaging, and/or containers by 30% by 2029 by limiting waste generation, recycling waste, and reusing waste.

One of the important principles in the circular economy is to eliminate products and product packaging that cannot be included in the circular economy system, namely single-use and disposable items. In this regard, Indonesia has set out in its waste reduction roadmap by producers as stipulated in the Minister of Environment and Forestry Regulation P.75/2019, several products, product packaging, and containers will be banned from use

in stages (phase out) on December 31, 2029, including plastic shopping bags, plastic straws, plastic foam containers, and disposable eating/drinking utensils. As a form of support for accelerating the phase-out process, currently, there are 2 provincial governments and 75 district/city governments that have issued regional policies regarding single-use plastic restrictions such as plastic shopping bags, plastic straws, and plastic foam containers.

The most important thing that needs to be understood in the circular economy principle is that managing waste that produces economic benefits (in the form of money or profit) is not identical to a circular economy if the waste material (renewable material: food and plant

waste or finite material: plastic, paper, metal, and glass) is not maintained its functions and benefits as long as possible in a cycle that moves continuously (circularly) through reuse, repair to be renewed (repair/refurbish), taken part or all of its components to make new ones (remanufacture), recycled into the same product (closed-loop recycling), recycled into other products (open-loop recycling), and composted. If these principles are not met, then it is not a circular economy, but a linear economy. Therefore, waste that is burned to be used as an energy source or waste that is processed into refuse-derived fuel is not a circular economy, but a linear economy because there is no circular material cycle so it does not meet the principle of saving natural resources.

resource efficiency), both renewable resources and finite resources, and the principle of pollution prevention (design out of waste and pollution). Recycling finite materials in just one round to produce new products that cannot be recycled (downcycle) is not called a circular economy, but a recycling economy.

In the transition process towards full implementation of the circular economy, Indonesia is ready because, in the daily life of Indonesians, circular economy practices have long been implemented, including making compost, donating used goods, buying and selling used goods (flea markets), buying and selling without packaging/containers (bulk shops), and recycling built by the informal sector. Currently, the circular economy practice is transforming into a new lifestyle for millennials that is built in a sustainable business format and utilizes the digital ecosystem. So now there are contemporary business practices such as selling goods without packaging (bulk store), selling goods by refill, buying

and selling used goods based on applications, buying and selling waste suitable for recycling based on applications, application-based waste collection, and transportation services and digitization of waste bank practices.

How is the implementation of the circular economy in waste management in Indonesia? The answer is in the Minister of Environment and Forestry Regulation P.75/2019 because the Ministerial Regulation as a whole contains the legal framework and technical framework for implementing the circular economy in waste management. Operationally, Minister of Environment and Forestry Regulation P.75/2019 requires producers to implement circular economy practices in their business by implementing the principles of limiting waste generation (R1), recycling waste (R2), and recycling waste (R3). The product and packaging elimination scheme that cannot enter the circular economy system is fulfilled by the R1 principle (design out of

waste and pollution), the closed/open-loop recycling scheme is fulfilled by the R2 principle, and the reuse, repair, refurbish, and remanufacture packaging schemes are met by the R3 principle. In the context of implementing the R2 principle, the issuance of the Minister of Environment and Forestry Regulation No. 14/2021 further strengthens the process of withdrawing and re-collecting post-consumer packaging through the Main Waste Bank for recycling. The position of the waste bank is important to strengthen and complement the existing collection system whose conditions are not yet optimal. The position of the waste bank, especially the main waste bank, along with other collection subsystems such as the informal sector, 3R, PDU, dropbox, and business actors in waste collection services have a very important role in efforts to increase the collection rate, which is currently still relatively low, which in turn can increase the level of packaging reuse/repair/refurbish/remanufacture (reuse rate) and recycling rate (recycling rate).

3 Green Building Policy

Concerning the circular economy in the construction sector, the Ministry of Public Works and Housing has issued regulations related to the development of environmentally friendly infrastructure (green building) to minimize the number of carbon emissions generated from the construction sector. There are 2 interrelated regulations, namely Regulation of the Minister of Public Works and Public Housing Number 9 of 2021 concerning Guidelines for the Implementation of Sustainable Construction and Regulation of the Minister of Public Works and

Public Housing Number 21 of 2021 concerning Performance Assessment of Green Buildings (BGH).

Sustainable Construction refers to an approach to carrying out a series of activities needed to create a physical facility that meets economic, social, and environmental goals at present and in the future, based on the Regulation of the Minister of Public Works and Public Housing Number 9 of 2021. Three basic pillars need to be considered in building sustainable construction, which is economically feasible and can improve community welfare, maintain

environmental conservation, and reduce social disparities in society.

In line with the principles of sustainable construction, there is a Green Building which is defined by the Regulation of the Minister of Public Works and Public Housing Number 21 of 2021 as a building that meets building requirements and has significantly measurable performance in saving energy, water, and other resources through the application of the principle green building following the function and classification in each stage of its implementation.

In Indonesia, there are already several green buildings that are certified by a non-profit organization called the Green Building Council Indonesia (GBCI) with an assessment system called Greenship. As of June 2022, it was recorded on the GBCI official website that there were 33 certified green buildings in 6 cities, namely Jakarta, Medan, Bandung, Semarang, Surabaya, and Makassar. These buildings include office buildings, hotels, as well as airports, and terminals that have met the 6 assessment criteria, which are as follows:



Appropriate site development

Includes access to public facilities, reducing motorized vehicles and being replaced by bicycles, green plant landscapes, reducing the volume of rainwater runoff, and paying attention to surrounding buildings or facilities.



Energy efficiency and conservation

Includes all forms of optimizing the efficiency of energy use in buildings, such as energy savings in lighting systems and air conditioning, recording and monitoring of energy use, operation and maintenance of air conditioning, as well as the use of renewable energy and reduction of energy emissions.



Material resources and cycle

This includes the use of environmentally friendly materials, waste management and sorting, waste management of Toxic Hazardous Materials, and distribution of used goods.



Indoor health and comfort

Includes room air quality and its measurement, environmental regulation of cigarette smoke, monitoring of carbon dioxide and monoxide gases, measurement of visual comfort, sound level, and building comfort.



Water conservation

This includes measuring water consumption, testing water quality, using recycled water, using a filtration system to produce drinking water, maintaining and inspecting plumbing systems, efficient use of clean water, reducing water use from deep wells, and using auto-stop faucets.



Building environment management

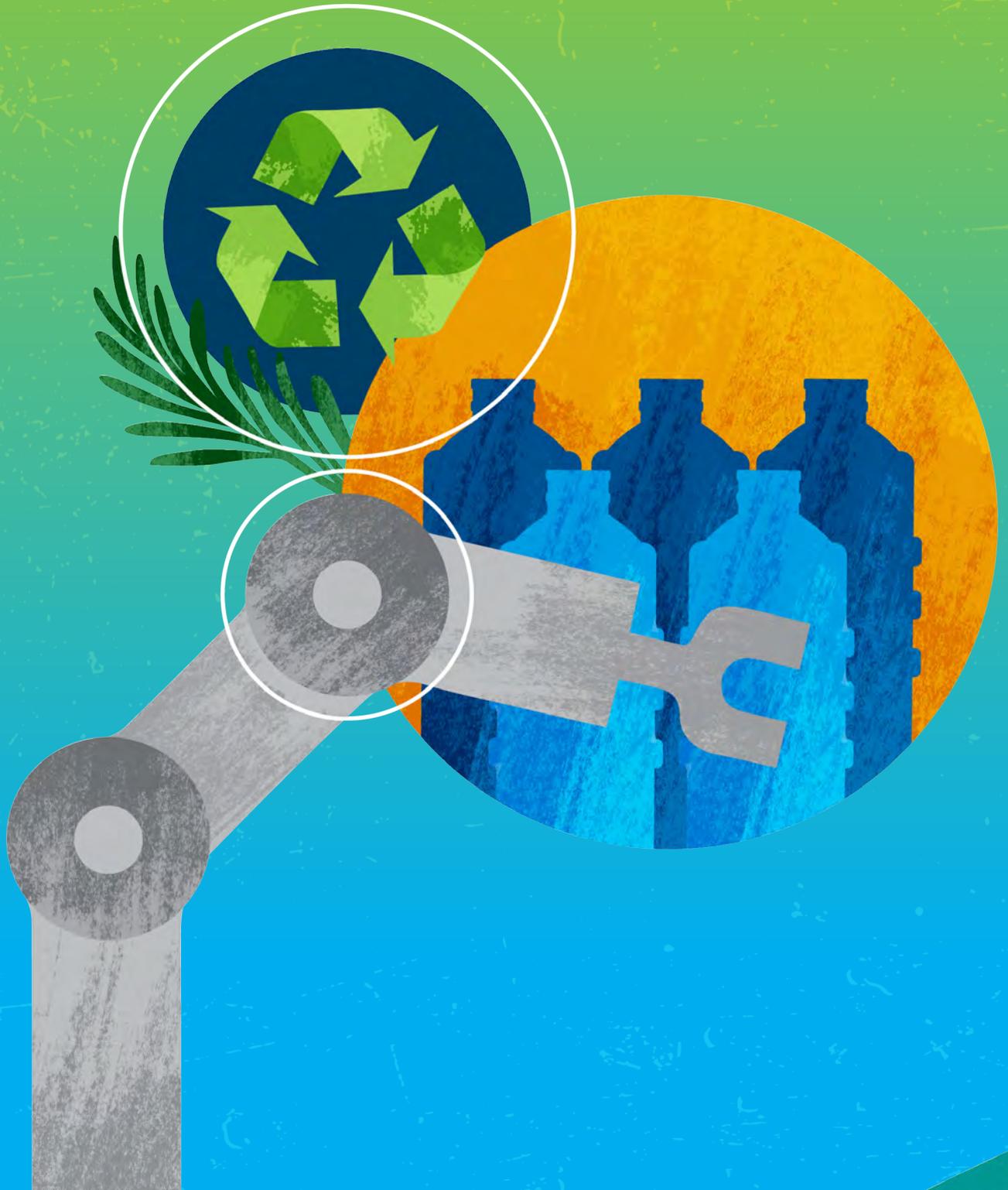
Includes innovations to improve the quality of buildings, the availability of complete building documents, as well as the existence of a team that maintains the implementation of green buildings as well as training in the operation and maintenance of complete aspects of green buildings.

As of November 2020, the green building certification carried out by GBCI calculated the reduction in greenhouse gas emissions to reach 13,789 tons of CO₂e. The target is that by 2030, these certified green buildings can save 2,785 GWh of electrical energy or the equivalent power to illuminate more than 32 thousand housing units with a power of 1,300 W. In addition, this also saves water consumption of 2.4 billion liters, or equivalent to water consumption for more than 1,100 housing units. The savings in electricity and water consumption can also have an impact on reducing greenhouse gas emissions by 3.37 million tons of CO₂e, which is equivalent to a reduction in emissions by 815 thousand trees planted until 2030.²²

The policies mentioned above are the initial capital for Indonesia to pursue a circular economy and low-carbon development. The establishment of this standardized regulation indicates that realizing a circular economy and low-carbon development requires the involvement of all stakeholders involved in the development process, not only the government and its staff. Actions taken collectively through active participation will certainly have a greater impact than if only one institution could support them.

The good news is that the rapid flow of information and the sophistication of technology today allows people to be creative and innovate in practicing the principles of a circular economy by taking examples from other parties who have made their contributions earlier. The making of this book also departs from the same spirit, inspiring economic actors to follow in the footsteps of their predecessors who have implemented circular economy practices, each with its challenges.

²² Jakarta Grand Design Book, accessed on June 21, 2020.





CHAPTER 02

**BUT FIRST,
UPSTREAM**

If at any time the roof in your house leaks, how do you handle it so that your entire house is not muddy and flooded by rain? Maybe you will swiftly take a bucket to contain the leaking water. The question is, does this method solve the problem? Of course, the answer is no. Your roof is still leaking, and it's only a matter of time until the water reservoir is full, right? So, the most effective solution is to solve the problem at the source, namely by patching the leaky roof.

The analogy above also applies to the issue of sustainability. While sorting out waste and recycling paper, plastic and other materials certainly have an impact, it would be even better if we didn't produce any of that waste at all. This can be seen from the 9R Framework described at the beginning of this book, where Refuse-Rethink-Reduce (R0-R1-R2) occupies a higher position than Recycle (R8). Thus, we need to intervene from upstream, with the hope that it will have an impact on the end of the downstream process. This principle is a description of the first circular economy business model, namely **circular material inputs**. The concrete form in business activity is the use of renewable energy, the selection of biologically based materials, or the design of products that can be recycled.

Talking about renewable energy, Indonesia has the potential for renewable energy resources that are large enough to reach 417.8 gigawatts (GW). As an illustration of how big Indonesia's renewable energy potential is, 1 GW is equivalent to 1 billion watts! According to data from the Ministry of Energy and Mineral Resources (ESDM) in 2021, this potential will come from the sun (207.8 GW), followed by water (75 GW), wind (60.6 GW), bioenergy (32 GW), 6 GW), geothermal (23.9 GW),



and ocean currents (17.9 GW). With such a large number, it is believed that Indonesia's renewable energy stock will not run out for the next 100 years.²³ Promising, right?

Biological-based materials also have great potential in Indonesia. Our country has a tropical climate, rainforests, and seas that store extraordinary biodiversity. With thinking supported by research and technology, many products can be made with materials from organisms. For example, clothes made from various plant fibers and their natural color pigments, fertilizers made from animal waste, plastic made from cassava bark (Javanese: onggok) (bioplastic), and power plants using livestock waste sources (biogas). Based on data as of 2021, the Ministry of Energy and Mineral Resources noted that Indonesia's bioenergy potential reaches 32.6 GW, but only very little has been utilized, which is around 1.9 GW or 5.7%.²⁴ With biological-based materials, the product can decompose itself (biodegradable) in a relatively fast time so that the circular system can run. In addition, the use of this biological-

based material will certainly make the product manufacturing process pay more attention to the natural regenerative system, which is to provide an opportunity for nature to regenerate and not be used massively and exploitatively.

The use of recyclable materials which are also included in this circular material input business model, such as glass, plastic, paper, metal, and textiles. The understanding of recycling itself is not only limited to waste that is converted into the same product, but the recycling in question also includes the manufacture of products with the premise that when the product is no longer used, the product can be used as input for the process of making other products, either the same, similar, or different products.

Manufacture of products with biologically based materials as well as recyclable materials of course need to pay attention to quality standards and, because it is talking about economics, it is also important to pay attention to the final cost of the product.

²³ <https://databoks.katadata.co.id/datapublish/2021/03/09/berapa-potensi-energi-terbarukan-di-indonesia>, accessed on April 13, 2022

²⁴ <https://ekonomi.bisnis.com/read/20210714/44/1417851/biomassa-di-indonesia-berpotensi-jadi-sumber-energi>, accessed on April 17, 2022

1

MYCL (Mycotech Lab)

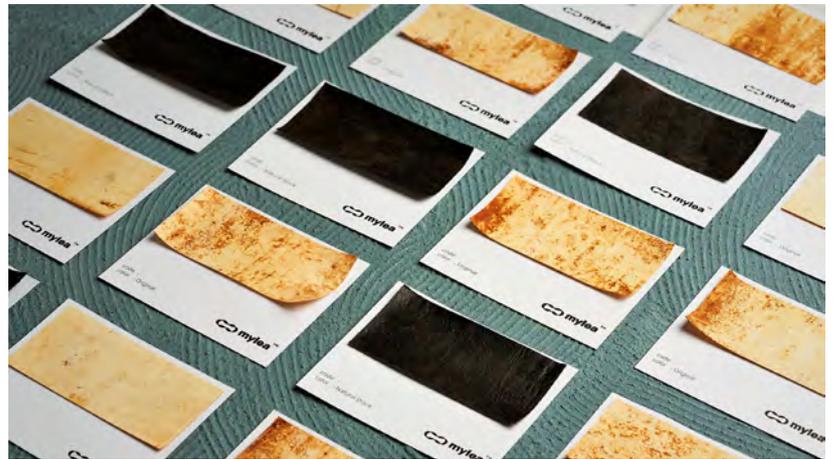
Mushrooms as a Sustainable Material

R2 Reduce

R7 Repurpose

R8 Recycle

Actor: Private
Sector: Textile



The negative connotation of mushrooms in the idiom ‘already moldy’ is reversed by MYCL (Mycotech Lab) which makes mushrooms its core business. MYCL is a biotech company that focuses on developing sustainable materials based on mushroom raw materials.

This start-up was founded in 2015 which started as a business and education business for planting portable mushrooms called Growbox. Why mushrooms? Because mushrooms are easy to grow anywhere without the need for special care.

The experiences of two of the founders of MYCL, Ronaldiaz Hartantyo and Adi Reza Nugroho participating in the Wae Rebo Power program in 2012 made them both think that since ancient times, our ancestors have lived in harmony with nature. However, nowadays people’s lifestyles are getting further away from nature. With the spirit to encourage life closer to nature as well as a solution for the waste of mushroom growing media that is widely produced, together with three other friends, they formed a start-up to develop the selling value of mushrooms while utilizing the waste.

MYCL is actually a research company, not a finished product sales business. They only supply raw materials with a business model that focuses on the

principle of regeneration. Sources of raw materials are obtained through what is planted and then harvested (in this case mushrooms) and can be replanted so that it is not something that is extracted/mined and consumes natural resources.

There are two types of MYCL products. First, Mylea, vegetable leather used as raw material for household products (shoes, wallets, bags, watches, and wireless chargers). Second, Biobo, namely decorative panels for interior wall elements, building materials, room insulators, art installations, and furniture. This product can be printed in any shape and also with an adjustable size. Even though these products are made from mushrooms, these products are very fire-resistant, in fact, when torched, they look charred, but they don’t feel hot behind them.

FUN FACTS

Fungi are not animals or plants, but organisms that have their own kind and consist of thousands of species and species.



In developing its innovations, MYCL succeeded in obtaining funding from the European Union (Horizon 2020) and the DBS Foundation Social Enterprise Grant. They also got the opportunity for laboratory tests in Singapore and Zurich (2017). They received extraordinary awards, such as Runner-Up Vogue Singapore X Taff Innovation Award 2021, SEED Low Carbon Award Winner 2019, and others. MYCL also had the opportunity to take part in international exhibitions, one of which was Living and Interior Design Osaka 2019. The opportunity to succeed in international fashion events did not go to waste. Japanese brand Doublet presents a fashion collection made from Mylea at Paris Fashion Week 2022.

MYCL applies a holistic business model so that it can solve problems that are not only related to products, but also behavior and social aspects of the lives of employees and partner farmers as a form of their social responsibility.

CIRCULAR ECONOMY PROGRAMS & INITIATIVES

All of MYCL's products are processed agricultural wastes, such as empty palm fruit bunches, sawdust, tapioca bark (Javanese: onggok), bagasse fiber, coconut waste, cassava pulp, and husks which are bound with an adhesive made from basidiomycetes. The main concept is inspired by tempeh with mushrooms as the adhesive for soybeans. This strong and environmentally friendly adhesive from this fungus is called Mycelium, a substitute for synthetic resin adhesives that contains additional chemicals. To make the color more exotic, they use sappan wood, indigo, and tingi. The agricultural waste that is processed into baglog (planting media) is obtained from around West Java. Using processed agricultural waste as raw material for products and natural dyes from plants is a form of implementing the **R7 (Repurpose)** principle.

MYCL also applies the principles of **R2 (Reduce)** as well as **R8 (Recycle)** so that almost no waste is wasted from the production process. They process solid waste into Biobo, liquid waste is used as nutrients for bioplastics (bacterial cellulose polymers), and other organic residues are

²⁵ <https://mycl.bio/sustainability>

²⁶ https://pubchem.ncbi.nlm.nih.gov/compound/1_4-Dichlorobenzene

²⁷ <https://www.atsdr.cdc.gov/>

REAL IMPACT FOR SURROUNDINGS



The recycled agricultural waste can reach 373 kg per month.



44% savings in electricity consumption from the results of production efficiency and drying conversion from electricity to gas (since 2019). Production efficiency is done by finding out the growth variables and their optimal metrics.

deposited into Plastavfall Collecting Waste to be used as compost and planting media. They also make mosaic panels from scrap scraps. MYCL seriously applies the principle of circularity in its business because they have experienced it themselves, the open dumping method that was previously carried out turned out to increase the contamination rate of the product. In addition, they also claim that the consistency of DCB (Dichlorobenzene) in Mylea is 70% lower than cowhide.²⁵ Truly the definition of 'making money while saving the world!'

Dichlorobenzene is an insoluble substance in water.²⁶ Substances that are also commonly found in pest control products, deodorants, and camphor can cause health problems and allergies (eye, nose and skin irritation, cough, shortness of breath, indigestion, headaches, and liver disorders).²⁷



81% reduction in carbon footprint from the previous period (2020–2021). The resulting carbon emission is 24.66 tCO₂e, while in the 2019–2020 period, the resulting carbon emission is 128.982 tCO₂e.²⁸ Emissions decreased dramatically during the pandemic due to reduced production activities, material deliveries from vendors, electricity and gasoline needs, as well as business travel activities.



Successfully prevented 14,595.3 kg of potential waste from being wasted in the Final Disposal Site while working with Plastavfall.²⁹



Saves time, water and carbon emissions, compared to cowhide material production. For 2.7 m² of leather (or the equivalent of 1 cow):

- Usually cows are left to live for 2 years before being slaughtered for skin, while Mylea only takes 5 days to make.
- Cowhide requires 80,000 liters of water and produces 355,500 kg of CO₂ emissions, Mylea only requires 45 liters of water and produces 0.7 kg of CO₂.³⁰



Absorb 30 workers.

IMPLEMENTATION CHALLENGES

Currently, MYCL's market share is people living abroad. MYCL considers the lack of definite benchmarks, limited funding for biotechnology, and IP protection in Indonesia which is still relatively weak as challenges in running this business. They admit that the Indonesian people may not be mature enough to assess the value of a product, so the main consideration in buying a product is price. In addition, there are still many assumptions that think that 'technology' is only related to digitalization, even though biotechnology also has great potential to be developed. So, currently MYCL continues to try to introduce products to more and more parties with the aim of educating the market.

In terms of daily operational activities, as a natural resource processing business, crop failure is also a risk in itself. They also always need to keep their production area sterile and free from contamination.

During the pandemic, the increasingly limited number of employees who can work directly and the opportunity to gain market share, which is also limited, is considered to be a point that becomes a challenge for MYCL.

STRATEGY FOR REPLICATION

The use of regenerative natural resources as one of the circular economy principles applied by MYCL is one of the lessons we can take. MYCL's foresight to take advantage of mushrooms provides inspiration to be observant in seeing the opportunities that nature has to offer with the power of research.

In addition, MYCL also relies on the strength of product design so that MYCL products can be appreciated not only because of the ingredients that come from nature or the manufacturing process that emphasizes efficiency, but also its products that have marketability and use value, without forgetting the aesthetic element.

²⁸ <https://www.mycl.bio/storage/app/media/sustain/GHG%20REPORT%202021.pdf>

²⁹ Instagram @mycl.bio (<https://www.instagram.com/p/CY-N2UuA6f7/>)

³⁰ Watch Solver Adi Reza Nugroho Pitch Mycotech (https://www.youtube.com/watch?v=A4sA_rk4KCY&ab_channel=Solve-MIT, accessed on March 2022)



2

Jakarta International Stadium (JIS)

Indonesia's First Stadium with the Green Building Concept

R1 Rethink

R2 Reduce

R3 Reuse

Actor: Government

Sector: Construction



Jakarta, as one of the world's big cities, still needs to have an iconic building. Now, the magnificent building of the Jakarta International Stadium (JIS), is the first public space in Indonesia that carries the concept of green building. JIS achieved a score of 63 greenship platinum level for design and build from the Green Building Council Indonesia (GBCI) certification body for its green initiatives. In addition, JIS is also the first FIFA standard stadium built with the first green building concept in Indonesia. The building with the slogan "Our Stadium" which is currently still under construction is managed by the DKI Jakarta Regional Government and is planned to later become the headquarters of the Jakarta football club, Persija.

The building with a capacity of 82,000 people, which costs up to IDR 4.5 trillion in construction, has been under construction since 2019. The budget for the JIS development comes from the regional capital investment of the DKI Jakarta Provincial Government and the National Economic Recovery fund.

The new pride stadium for Jakarta residents is designed to be easily accessible by pedestrians, energy efficient, uses environmentally friendly materials, and functions as a space that supports health aspects. The building will be surrounded by a facade that has a building envelope. Half the circumference of the main stadium is designed in such a way that air circulation and sunlight can enter the stadium.

CIRCULAR ECONOMY PROGRAMS & INITIATIVES

JIS uses the green building concept that is in line with the circular economy principle, one of which is by applying the **R1 (Rethink)** principle through energy efficiency by using energy-efficient LED lights and 1,080 solar panels. To save water, facilities such as sinks, wall faucets, and showers have an auto-stop feature. Later, the waste water from the facility will be used again for watering plants and grass in the field, including for water for flushing toilets. With a zero run off system, rainwater will also be stored in the Ground Water Tank after being filtered for reuse³¹ in accordance with the **R3 (Reuse)** principle.

³¹ <https://beritapers.id/2020/10/22/berkonsep-green-building-jakarta-international-stadium-bakal-manfaatkan-renewable-energy-dan-air-hujan/>, accessed on March 2022.



JIS has a CO₂ monitoring sensor to monitor emissions on a regular basis. This sensor is placed in rooms that will be quite crowded, such as the changing rooms, conference rooms, media rooms, and mix zones. To support carbon emission reduction (**R2/Reduce**), JIS also used the first certified carbon neutral exterior paint in Indonesia, Mowilex Weathercoat Supreme on the facade and interior paint for the Training Field. Mowilex paint was chosen by JIS because it is low in Volatile Organic Compound (free of formaldehyde).

Formaldehyde (or we often call it formalin) is a pungent chemical substance that is often contained in nail polish, preservatives, cleaners, resins, disinfectants, and paints, as well as a substance that can irritate the skin, throat, eyes, lungs, even cancer if exposed in the long term.³²

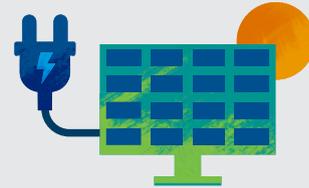
In addition to the principle of resource efficiency, JIS also applies a regenerative approach and prioritizes local products in its operational activities. First, the grass used is following FIFA standards, namely 5% synthetic grass and 95% local native grass from Boyolali, Central Java.³³ Second, pest management in the JIS field grass is carried out with the help of pied stilts (*Himantopus leucocephalus*)! These Swampbirds are natural pest eaters, so JIS does not need to use pesticides. JIS is the first stadium in Indonesia to do this.

For visitors, there will be a water station so that visitors can refill their drinking bottles, as well as segregated trash bins as well as integrated waste management. With this effort, it is hoped that the amount of waste generated will be reduced. JIS also invites all visitors later to bring prayer mats (not newspapers) if they want to pray Eid, bring their drinking bottles, and their reusable bags or goodie bags.



Pied stilts (*Himantopus leucocephalus*) usually prey on larvae and adult aquatic insects, such as beetles, mayflies, caddis flies, water fleas, dragonflies, flies, aphids, butterflies, moths, spiders, and worms.

REAL IMPACT FOR SURROUNDINGS



The JIS building uses renewable energy for its electricity source, namely using solar panels which will contribute around 5.4% of the electricity needed.³⁴ The rest of, JIS energy supply is provided by PLN, which is ready to provide REC (Renewable Energy Certificate). REC is an instrument that represents the New Renewable Energy (NRE) attribute of each megawatt-hour (MWh) of electricity produced by PLN's NRE generators. This effort will also support the evidence that JIS energy consumption comes from environmentally friendly NRE-based electricity.³⁵



Absorb 3,500 workers.

³² <https://www.cdc.gov/niosh/topics/formaldehyde/default.html>

³³ <https://www.jakarta-propertindo.com/jakarta-international-stadium-jis-gunakan-rumput-alami-tanpa-pestisida-berjenisvarietas-zoysia-matrella-asal-boyolali/>

³⁴ DKI Jakarta Provincial Government Official Twitter Account (<https://twitter.com/dkijakarta/status/1449258000544272388>)

³⁵ <https://petrominer.com/pln-siapkan-rec-untuk-jakarta-international-stadium/>

IMPLEMENTATION CHALLENGES

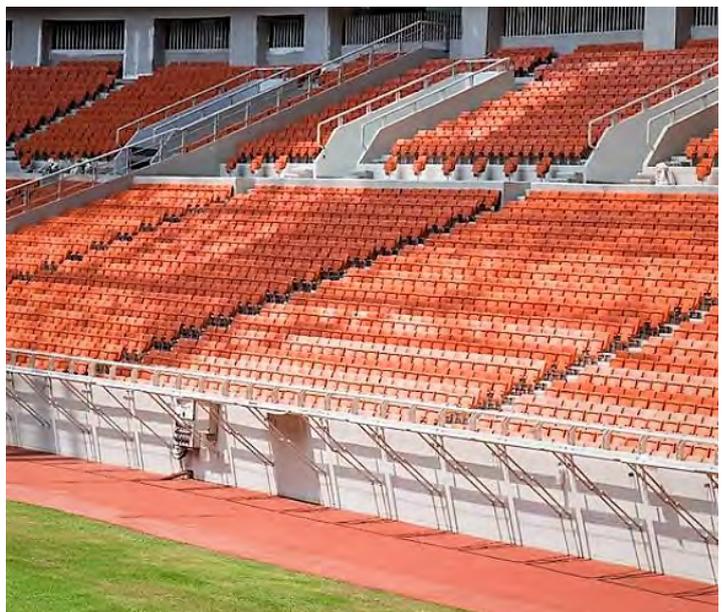
Since JIS applies the principle of green building, the selection of materials is also not an easy thing, especially how to keep the carbon footprint as small as possible, but still in accordance with FIFA standards. Therefore, most of the building materials are local or imported from Asia.

Another challenge is the construction of a stadium that is not just a stadium, but a stadium that also educates its visitors to live an environmentally friendly lifestyle. This is expected to be a challenge in the future, because, in the end, the behavior of stadium users will affect the performance of green buildings, such as waste sorting and water use. JIS is also brave enough to implement a parking space capacity that is sufficient for only 1,306 parking vehicles, while the stadium capacity reaches 82,000. This is expected to make visitors accustomed to taking integrated public transportation, then walking when getting off from there.

STRATEGY FOR REPLICATION

To build a building or place of business with an environmentally friendly concept, you can start by doing ways to save water and energy. As implemented by JIS, utilizing the principle of recycling rainwater or water used for washing hands watering plants, or flushing toilets. Save energy through the use of LED lights or create a concept room with large windows or glass doors so that sunlight can enter. This will greatly reduce the use of lights during the day. Also, put windows in several corners so that air circulation is smooth and the use of air conditioning can be reduced.

We can also emulate the courage to implement leading concepts in the environmental aspect from this JIS development. Collaboration with partners who are knowledgeable and adhere to the principles of sustainability will greatly assist our intentions. Of course, we must always upgrade our knowledge of sustainable building principles according to the focus of the sector we choose.



3

SukkhaCitta

Farm-to-Closet Concept
for Regenerative
Industries

R1 Rethink

R7 Repurpose

R8 Recycle

Actor: Private
Sector: Textile



Who would have thought, the garment industry turned out to be the second most polluting industry to the environment, after oil.³⁶ Denica Flesch, the founder of the slow fashion business SukkhaCitta, witnessed the impact of the garment industry on the environment when she visited remote parts of the archipelago while still working as an economist at the World Bank.

Rivers in remote areas change color according to the colors that are trending at a time, the same rivers where local communities bathe, and rivers that irrigate agricultural fields with the crops we all consume. Not to mention, 98% of the fashion makers that we wear every day are unable to properly support their families despite exchanging their time, energy, and skills.

Since then, Denica is determined to start a business that favors the makers of products that are

used daily without harming the environment. SukkhaCitta was born in 2016. SukkhaCitta carries the concept of a farm-to-closet supply chain, which emphasizes transparency and traceability of basic clothing materials. With the social enterprise business model, more than 50% of profits that go into SukkhaCitta are reinvested in village development programs such as finding more villages to partner with, funding a craft school, and SukkhaCitta's regenerative agriculture.

The clothes from SukkhaCitta are all handcrafted by hand by craftswomen in Medono Village, Central Java, without a digital printing process. Each outfit requires at least 30 days of manufacture involving 8 women. By emphasizing this method of making by hand, SukkhaCitta hopes to make an impact on more families and prosper the community for generations.

"I grew up in the city. Things exist in shops. I never realized before that behind something as simple as what we wear every day, are women we never meet. I just don't want to hurt them through my choices," Denica Flesch, founder of SukkhaCitta. SukkhaCitta is the first Indonesian company to be awarded the 2022 Leadership Award for Sustainable Fashion and one of the Indonesian companies that have successfully obtained B-Corp certification.

³⁶ <https://edgexpo.com/fashion-industry-waste-statistics/>, accessed on April 11, 2022

CIRCULAR ECONOMY PROGRAMS & INITIATIVES

SukkhaCitta applies the principle of a circular economy from the use of raw materials, maintaining the value of the product as long as possible (**R1/Rethink**), to recycling the remaining material production (**R8/Recycle**). SukkhaCitta uses sustainable materials from regenerative agriculture since 2020 and maintains agricultural methods that are responsible for soil function and ecosystem balance.

The beautiful colors of the clothes produced by SukkhaCitta also come from natural dyes, such as indigo for the indigo color and noni root for the reddish-brown color. There is not the slightest bit of chemical used during the manufacture of clothing. This initiative has succeeded in preventing the use of more than 1 million liters of toxic chemicals that have the potential to pollute the environment. Not to forget, the increase in income for women farmers.

Natural dyes are often obtained from logging, but SukkhaCitta has emphasized the principle of supplying zero harm which is socialized to artisans in the village. No trees will be cut down for the manufacture of SukkhaCitta products because this business chooses to utilize agricultural wastes such as banana trunks and sappan wood which are wasted due to defects or because the quality does not meet the standards.

In addition to recycling all remaining pieces of clothing according to the **R8 (Recycle)** principle, SukkhaCitta also pays attention to the smallest details in one piece of clothing, such as their buttons made of mother of pearl (**R7/Repurpose**), labels made of 100% cotton which are handcrafted in Yogyakarta, and yarn that uses 100% certified recycled polyester.

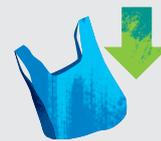
REAL IMPACT FOR SURROUNDINGS



Every single SukkhaCitta outfit sold, will support 12 families, prevent 32 liters of chemicals that will pollute the river, and plant 1 tree for a reforestation project in the village of Noemuke, West Timor.



Funded 36 scholarships for young women to escape poverty.



Avoiding the use of more than 10,000 plastics for packaging by utilizing the remaining production fabrics.



Prevent pollution of more than 1.2 million liters of water with the use of natural dyes.



Improving the livelihoods of more than 1,482 people behind the manufacture of SukkhaCitta products, from farmers to women craftsmen.



Opened 4 craft schools to pass on craft skills to the next generation as their source of livelihood in the future through the SukkhaCitta House Foundation.



Save 25 tons of CO₂ emissions by repurposing fabric waste.



Regenerate 20 hectares of land through the regenerative farming method.



Increase 60% of the income of local women craftsmen and 100% of the income of regenerative farming farmers.



Prevent more than 1.3 tons of textile waste from going to landfill.

In addition, to reduce single-use plastic waste, SukkhaCitta uses leftover packaging from the clothing manufacturing process as garment wrappers when delivered to consumers' homes, for example, unused or used fabrics from training. They also provide product repair and re-dyeing services to consumers so that clothes can be worn longer.

IMPLEMENTATION CHALLENGE

In general, the toughest challenge is pricing policy. The process of making clothes that require more craftsmen instead of machines, this is certainly reflected in the high price of SukkhaCitta clothes. The price tag is one of the main consideration factors for consumers in buying goods or services.

Industry standards that try to suppress prices to increase consumer interest are also a challenge for

SukkhaCitta to justify the prices they charge. However, with the price of SukkhaCitta clothes being relatively inexpensive, Denica hopes that every purchase is more carefully thought out, used with care, and cared for to prolong its life. Lastly, the natural fiber and dye materials used by SukkhaCitta also pose their challenges, especially the issue of consistency, as well as increasing the number of productions that depend on nature.

The dynamics of the partnership relationship that SukkhaCitta has established with the artisans in the village has certainly had an effect since the pandemic. Long-distance travel needs to be postponed, and technology is needed to facilitate long-distance coordination with farmers and artisans. In addition, the level of sales was also negatively affected by the pandemic.

STRATEGY FOR REPLICATION

Most of the fashion industry workers are domiciled in areas outside of urban areas so they are vulnerable to being exploited without the knowledge of consumers. With the Farm to Closet initiative, SukkhaCitta applies the principle of transparency in the elements involved in the business. The 100% traceable supply chain of SukkhaCitta products makes it easier for the SukkhaCitta team to supervise and control the quality of the clothes they produce. This closeness also allows the SukkhaCitta team to implement sustainable policies for the community in the village, thanks to their knowledge of the conditions in which the craftsmen come from. In addition, SukkhaCitta also displays the faces and stories of farmers and artisans on their social media pages,

with the hope that consumers can feel connected to the hands behind their clothes, and know the beneficiaries of the money they spend.

In the midst of non-environmentally friendly options that are easier and cheaper to obtain, SukkhaCitta does not look for shortcuts or suppress production prices in order to maximize profits. Even though it affects the price point of their products to be high, SukkhaCitta is not afraid that their products will become more difficult for all people to accept, and tries to provide education behind the reasons for setting these prices because that is the reality of the ground. Indirectly, SukkhaCitta is trying to go against the grain with this policy and define a new standard for the fashion industry. As

quoted by Denica, "The process is indeed much longer and costs much more. But for us, this is the only way."

SukkhaCitta is also working on #MadeRight Supply, a platform that makes it easier for other fashion brands to access the fabrics and other basic materials used by SukkhaCitta. With this platform, SukkhaCitta does not cover up the suppliers they use but invites owners and workers who are in the fashion industry to participate in this ethical fashion journey for the transformation of the future of the industry. After all, intentions and efforts in goodness must be spread widely, right?



4

PT Pertamina (Persero)

Reducing Emissions
in Energy Supply
Management

R2 Reduce

Actor: BUMN
Sector: Other



It has been more than 6 decades that PT Pertamina (Persero) provided energy for all corners of the country. Departing from its dream to realize energy sovereignty in remote corners of the country, Pertamina seeks to ensure the availability of inclusive national energy based on the principles of availability, accessibility, affordability, acceptability, and sustainability. In 2011, Pertamina perfected its vision, which is to become a world-class national energy company. Pertamina always realizes its goals through its innovations,

including the application of the circular economy principle.

This achievement makes Pertamina continue to develop with innovations as a form of support and response to environmental issues. Pertamina is committed to implementing sustainability principles in all of its operational activities, from the use of renewable energy to clean and environmentally friendly production. Pertamina managed to save energy of 6.66 million GJ during its reporting process in 2021.

CIRCULAR ECONOMY PROGRAMS & INITIATIVES

One of the circular initiatives is realized through the Beyond Compliance program at PT Pertamina EP Field Subang. Beyond Compliance is an activity to reduce energy use, reduce emissions, use water, reduce toxic hazardous materials (B3) waste, and reduce non-B3 waste following the **R2 (Reduce)** strategy.

As a form of B3 and non-B3 waste management, Pertamina applies the 5RTD principle (reduce, reuse, recycle, replace, return to supplier, treatment, and disposal). Non-B3 waste treatment is carried out through several initiatives, namely digitizing business processes to reduce waste paper waste, using

reverse osmosis in the supply of drinking water to reduce plastic waste for beverage packaging, and utilizing domestic waste for animal feed cultivation.

Pertamina is also actively pursuing the Circular Carbon Economy, a closed loop system with the 4Rs principle: reduce, reuse, recycle, and remove as an effort to reduce carbon emissions. Pertamina continues to increase the utilization of New and Renewable Energy and Low Carbon Projects that allow reducing carbon footprint by implementing Carbon Capture, Utilization, and Storage (CCUS) to support Enhanced Oil Recovery (EOR) and Enhanced Gas Recovery (EGR).



Carbon Capture, Utilization, and Storage (CCUS) is a technology that can capture CO₂ from operational activities before it is released into the atmosphere, as one of the efforts to mitigate climate change. Once captured, carbon dioxide can be stored in underground reservoirs or reused to increase oil and gas production which produces products of economic value.

At the end of 2019, Pertamina started to produce B30 biodiesel and conducted a trial using B100. Pertamina's energy efficiency is also one of the efforts to reduce CO₂ emissions. With the implementation of a circular economy, CO₂, which was originally an impurity from gas sales, can be monetized into products that are sold to consumers.

The circular economy programs and initiatives carried out by Pertamina have had a real impact on the company and the surrounding environment. For example, the Beyond Compliance program of PT Pertamina EP Field Subang has had a positive impact which will be described below.

REAL IMPACT FOR SURROUNDINGS



Reduction of 10.7 tons of 3R non-B3 waste for the period 2019–2021.



Reduction of energy use by 958,877.7 GJ in the period 2019–2021.



Employ 1 person from the PELITA Program participants as a contractor at the company's facilities and 6 other PELITA Program participants have the potential to become FACILITATORS for community empowerment activities.



The reduction of 352,483.42 tons of CO₂eq (for the period 2019–2021) of which 106,055.24 tons of CO₂eq is a CO₂ utilization program from CO₂ Removal for the industry.



Reducing the use of clean water by 75,750.33 m³ in the period 2019–2021.



Benefits for the community around the Subang Field operating facilities that are fostered partners of the Subang Field CSR:

- Education cost savings of IDR 120,000/year/program participant.
- Additional income from the Sustainable Food House Area of IDR 600,000/person/harvest.
- The turnover of the Empowered Teachers Business Group (PAUD Teachers) is IDR 16,000,000/year.



Reduction of 64.97 tons of B3 waste in the period 2019–2021. Direct measurement.



Budget savings for 2019–2021 total more than IDR 405 billion from reducing the use of energy, emissions, water, B3 waste, and non-B3 waste.

IMPLEMENTATION CHALLENGE

Pertamina develops NRE (New Renewable Energy) based on environmentally friendly materials that are abundant in Indonesia. This project consists of geothermal with a total capacity from 672 MW in 2020 to 1,128 MW in 2025; utilization of green hydrogen in geothermal areas with a total potential of up to 8,600 kg hydrogen/day; Electric Vehicle Battery & Energy Storage System with a target of 140 GWh in 2029; Gasification project through the construction of the Dumai Methanol Plant with a capacity of 1,000 KTPA onstream in 2025, potential offtake from Nunukan 650 KTPA in 2026, Bintuni fertilizer Indonesia 1,800 KTPA in 2026, and Jambaran Tiung Biru with a synergy scheme for Upstream Portfolio and Refining & Petrochemical of 1,000 KTPA; Development of Dimethyl Ether (DME) with a capacity of 5,200 KTPA onstream 2025; Implementation of the Carbon Economy with the 3R method; Environmentally Friendly Refinery/Green Refinery with the addition of 5 refineries with a capacity of 6–100 KTPA in 2025; and Bioenergy through the addition of generating capacity in 2026 Biomass/Biogas 153 MW, bio blending gas oil & gasoline, biocrude from algae, and ethanol 1,000 KTPA onstream in 2025.

The development of NRE opens new business opportunities for Pertamina as a world-class energy provider. However, the development of NRE also faces challenges, including government policies that prioritize NRE for the electricity sector. Another challenge is that the development of NRE must remain relevant in the next 10–20 years, especially in terms of technology so that it is not obsolete. The pandemic is a real challenge faced by PT Pertamina. Several challenges that hindered the running of Pertamina's program were the limited activities both internally and with external parties. This has an impact on the intensity of activities that the company can carry out with the community.

STRATEGY FOR REPLICATION

Pertamina strengthens internal and external support to maintain the sustainability of its program, in the form of technology and joint studies for several programs, for example, a study on the utilization of CO₂ into Precipitated Calcium Carbonate (PCC) at Pertamina EP Field Subang which will begin in 2021, as one of the alternative CO₂ emission reduction programs. Pertamina. They also provide regular assistance and monitoring of the programs being implemented. This is the key for a program to run well, especially in companies that consist of many units and are required to continue to grow.

Continuing to move forward progressively and innovatively is also an example that can be taken from Pertamina as a whole. As a large company in the energy sector, this step of developing new and renewable energy is carried out quickly and directed, while still synergizing with many parties.



5

Ministry of Public Works and Housing (PUPR)

Resource Efficiency in Building Operations

R2 Reduce

R8 Recycle

Actor: Government

Sector: Construction



In 2012, the Directorate General of Human Settlements carried out the task of building the main building of the Ministry of Public Works and Housing with a total building area of 28,957 m².

The main building was also designed with the concept of green building by considering several things, ranging from the implementation of Indonesia's climate commitments internationally, to reasons that are quite practical, but still strategic,

namely to save operational costs so as not to burden the state budget.

This concept later received various awards, namely the Platinum Level GreenShip certificate and the 2021 Subroto Energy Efficiency Award for the Energy Savings category in Government Agencies with the Old Building subcategory. This building is also expected to provide an overview to the public about the application of green buildings.

CIRCULAR ECONOMY PROGRAMS & INITIATIVES

The green building concept of the Ministry of Public Works and Housing Main Building aims to save water, energy, and local materials, minimize carbon emissions, and still prioritize comfort for users according to the **R2 (Reduce)** principle.³⁷ In terms of energy, this green building design seeks to maximize the source of natural sunlight during the day by installing sensors that allow the lights to go out if no one is in the room. In this

building, there is also a pedestrian path (equipped with guiding blocks for users with disabilities) and green open space with park benches.

Water use can also be saved using a rainwater harvesting, recycling, and reuse (**R8/Recycle**) system. Rainwater that falls in the catchment area is channeled into the drainage, then stored in underground water tanks and recycled as water for watering plants, flushing urinals, and supplying water for cooling towers.³⁸

³⁷ <https://pu.go.id/berita/gedung-utama-pu-dengan-konsep-green-building>, accessed on April 2022

³⁸ https://eppid.pu.go.id/page/kilas_berita/2723/Terapkan-Konsep-Green-Building-Gedung-Utama-Kementerian-PUPR-Terima-Penghargaan-Subroto-Bidang-Efisiensi-Energi-Tahun-2021, accessed on April 2022

In accordance with the design, energy savings have been carried out since the building was established. Over time, the Ministry of Public Works and Housing can save enormous amounts of power. This is evident in the measurement in 2021 which results in an energy use rate of 181 kWh/m² annually or around 75.4% of the 240 kWh/m² per year usage threshold.

IMPLEMENTATION CHALLENGE

The biggest challenge in applying the green principle during the operational period of the building is consistency and discipline in supervising the use of resources, especially the Ministry of Public Works and Housing building has 17 floors whose operational supervision must be carried out thoroughly. Errors in operations will have an impact on excessive resource consumption and result in a decrease in green building performance.

Completeness of maintenance documents is also often a challenge for the Ministry of Public Works and Housing in implementing green principles. If the document is incomplete, the decisions required for maintenance may be inaccurate, resulting in reduced performance. In addition, challenges also exist in terms of the need for renovation. Coordination with building management is very important for the smooth process of building renovations.

STRATEGY FOR REPLICATION

The Ministry of Public Works and Housing continues to disseminate regulations related to environmentally friendly development so that it can encourage similar actors, such as offices, governments, companies, and so on, to apply the green building concept.

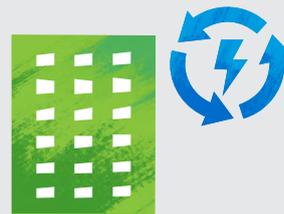
To carry out this strategy, of course, the Ministry of Public Works and Housing cannot work alone. Internal support is needed as a media for innovation research in the development of green buildings, including growth data. The real action taken by the Ministry of Public Works and Housing in building a building with a green building concept is very meaningful to give a message to the public that policymakers can walk the talk, which is to set a good example under the policies and regulations that have been made.

We can take this as an example by finding out green building standards and starting to apply what we can to our homes by starting with simple things, such as storing rainwater and saving energy. And, what we need to remember, the behavior of green building users is also very influential on the performance of this green building. So, although our homes are not very modifiable, our environmentally conscious behavior is also very important to continue to build!

REAL IMPACT FOR SURROUNDINGS



In the 2021 period, there will be a reduction in carbon emissions of 29.472 tons CO₂/year (equivalent to 23.8% of the threshold, which is 123.62 tons CO₂/year).



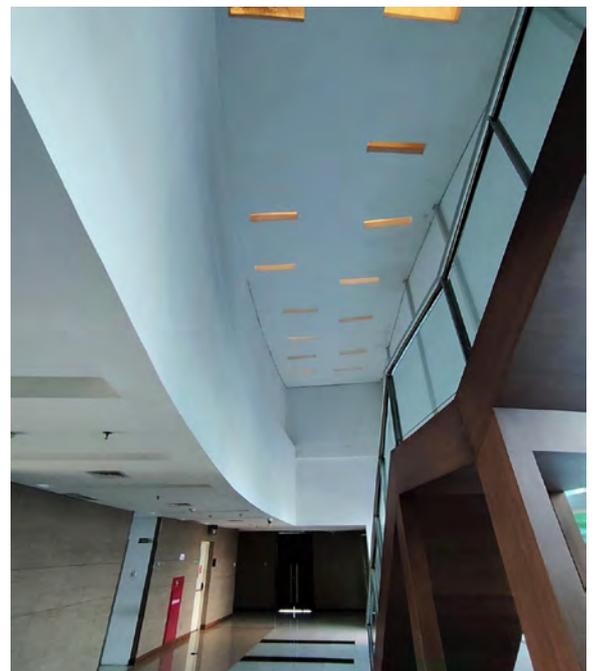
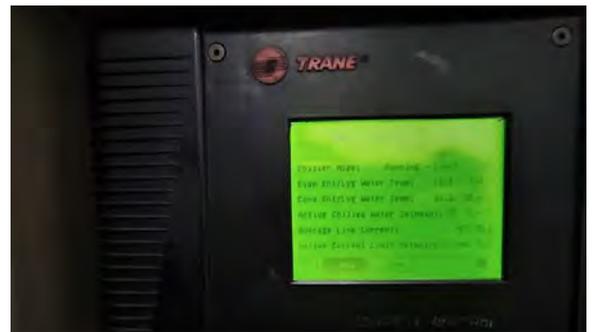
Energy savings in government agencies with the Old Building subcategory because they managed to save energy up to 24% and save electricity costs.



Water usage savings of up to 60% through a recycling system (rainwater harvesting, recycling, and reuse).



Absorbing more than 1,000 people consisting of experts and skilled.



6

Burgreens

Organic Food
Ingredients from
Local Farmers

R1 Rethink

R2 Reduce

Actor: Private

Sector: Food & Beverage



Preventing GHG contributions from our plates? Certainly can! Apart from keeping food waste free by taking the necessary food and finishing the food that has been taken, our diet also affects the GHG that we contribute. Changing the menu and diet by reducing meat to food from plants is the most important thing that will reduce our GHG contribution.

This plant-based menu is a niche for Burgreens. Burgreens is a pioneer of plant-based cuisine in Indonesia, which currently has more than 16 restaurant branches spread across the islands of Java and Bali. Helga Angelina and Max Mandias, a young vegan power couple, started the Burgreens business in 2013 by opening their first restaurant in the Rempoa area, Tangerang. Helga herself started eating healthy food and became a vegetarian at the age of 15 because she had some chronic health problems, while Max turned to a vegan after seeing for himself that many people have recovered from chronic diseases such as cancer or diabetes by changing their diet to plant-based diets. -based when Max was volunteering at a vegan

restaurant in Amsterdam. Based on this personal experience, they then built Burgreens, a food business that is not only plant-based, but also its products are healthy, environmentally friendly, provide empowerment to the community, and have affordable prices.

Burgreens' business model focuses on the concept of a social enterprise that embeds social and environmental impact as part of the foundation of business development. This can be seen from the development of Burgreens products that use plant-based menus that bring health benefits and are environmentally friendly (plus, they taste delicious!). In addition, Burgreens also ensures that suppliers are paid a fair price so that for every product sale, the benefits are felt directly by the suppliers. Furthermore, Burgreens also diversified its business by providing catering services, developing Green Rebel Foods, its subsidiary that provides animal protein alternatives for both retail and B2B consumers, and Max's Pizza which is the first vegan pizza restaurant in Indonesia.

CIRCULAR ECONOMY PROGRAMS & INITIATIVES

By processing and serving only plant-based food, Burgreens has saved a lot of carbon emissions and water use from the livestock industry sector (R2/Reduce).



Globally, the livestock sector is one of the largest carbon-emitting sectors worldwide.³⁹ On the other hand, the use of plant-based ingredients greatly saves water resources, for example, to make one beef patty requires 660 gallons of water (or about 3,000 liters, equivalent to the amount of water we need to bathe for two months), while to make a vegetable-based patty, for example from chickpeas, peas, or lentils only use a maximum of 40 gallons or less than 10% of the amount needed to make a beef patty.⁴⁰

To minimize environmental impact, Burgreens supplies food directly from local organic farmers in Java. Burgreens works closely with small farmers, medium farmers, and food craftsmen who implement sustainable agriculture and food production at fair trade prices.⁴¹ Although not all organic, Burgreens always strives to keep its food sources free from chemical additives and uses coconut oil, sea salt, and local spices.

Burgreens also tries to reduce waste from production activities in various ways, including processing waste banana peels into sausage wrappers, as well as trying to use 100% of the raw materials when developing recipes, for example, if they make chips from sweet potatoes, they use the unused portion of the sweet potato. dessert or leftover pieces of food made into broth. At Burgreens' central kitchen in BSD, waste management is always carried out by sorting waste and collaborating with waste management start-ups to ensure that the remaining waste does not end up in the landfill. Food packaging for takeaway also uses materials that can be recycled again, such as cassava bags for takeaway and bamboo straws that can be composted when not in use. The results of organic waste processing from the central kitchen are also reused as fertilizer for the organic farming of Burgreens partners.

REAL IMPACT FOR SURROUNDINGS

Burgreens is a business that believes that physical health, a sustainable environment, economic and social equity, as well as women's empowerment are interrelated. As of last 2021, Burgreens had:



Opened new job opportunities for 61 people.



It employs 200 employees in total, 120 of whom are women.



Provides income of more than IDR 2.3 billion directly to local farmers and artisans.⁴²



Deposits about 10 tons of cardboard waste to the waste bank per year, while plastic bottle waste and other single-use packaging are deposited into Parongpong RAW Lab.



Saves production costs of 15–25 million per month by using maximum oil (for example, used frying pans are used for sautéing spices) and reducing production waste by 0.1% (the remaining pieces of mushrooms produced from making vegetable meat that is too small are used as stuffing for lasagna and gyoza).



Prevented the possible wasting of more than 200,000 plastic and single-use cutlery.



Reduced CO₂ footprint by 1.1 million kg.



Saved approximately 117,000 animals.



Empowering more than 600 local farmers.



Educated more than 10,000 people about healthy and sustainable lifestyles.

³⁹ <https://www.wri.org/insights/4-charts-explain-greenhouse-gas-emissions-countries-and-sectors>, accessed on March 19, 2022.

⁴⁰ Interview Helga via Cleanomic Radio, <https://open.spotify.com/episode/3C8smA6VCxcESnwE861nKi>, The Sustainability Secret: Rethinking Our Diet to Transform the World (Kip Andersen & Keegan Kuhn, 2016)

⁴¹ <https://burgreens.com/about-us>, accessed on March 19, 2022.

⁴² Instagram @burgreens (https://www.instagram.com/p/CSqtlLrGWY/?utm_medium=copy_link)

IMPLEMENTATION CHALLENGE

In implementing the circular economy initiative, Burgreens allocates a certain percentage of profit to ensure operational activities run with sustainable business values. For example, Burgreens has to spend more to buy raw materials from small farmers than large suppliers and has to exercise control over the additional quality it makes.⁴³ So, to get a healthy profit margin for the business, the effort is indeed harder because it has to add resources, it must educate and coordinate with suppliers and vendors, as well as more effort to rack my brain so that materials that may not be perfect can still be used.



STRATEGY FOR REPLICATION

For culinary entrepreneurs, many Burgreens initiatives can be emulated. For example, starting with sorting waste and collaborating with waste processing startups, being creative with plant-based menus and developing recipes using leftover ingredients to reduce organic waste, and starting to pay attention to operational patterns in the kitchen and supply chain. Creativity is the key to Burgreens' business development and most importantly business actors can also try to start calculating the impact generated from each activity (both the amount of waste generated and successfully reduced) to obtain data that can be evaluated further.



⁴³ <https://www.cleanomic.co.id/post/burgreens>, accessed on April 5, 2022.

7

BulkSource Healthy Eco Grocer

Single-Use Plastic
Packaging Free
Grocery Store

R2 Reduce

R3 Reuse

Actor: Private

Sector: Wholesale & Retail



Packaging is one type of waste that contributes to the 620,000 tons of Indonesian plastic waste that is 'released' into water bodies,⁴⁴ which then become marine waste. Responding to waste reduction strategies, in this modern era, many retail entrepreneurs in Indonesia have a zero waste business concept (reducing waste), including one of them, BulkSource.

BulkSource is one of the daily necessities stores with a zero waste concept. BulkSource was founded by Putri and 5 colleagues in 2019, as a response to market needs and awareness of sustainable consumption patterns. At that time there were not many shops that could meet the needs of those who

wanted to change their lifestyle to be environmentally friendly and healthy.

BulkSource tries to restore the local wisdom of the previous community when shopping at traditional markets that sell products on a large scale and don't use a lot of plastic packaging. However, these traditional markets are now filled with plastic packaging and product choices that are not environmentally friendly. To run its business, BulkSource attracts local suppliers and curates products that support an environmentally friendly lifestyle. Along the way, in addition to the first physical outlets in Menteng, Central Jakarta, and online stores, BulkSource also has 5 other physical outlets and continues to plan to expand its business.

CIRCULAR ECONOMY PROGRAMS & INITIATIVES

BulkSource invites people to buy their needs in bulk so that consumers can rethink their shopping patterns so far by bringing their reusable containers. The form of the container is left to the buyer: glass jars, lunch boxes, bottles, or others. Don't worry about the weight of the container, because when weighed, the container will be

weighed first so that the weight is not counted in the purchase! So, consumers only pay for the product. If the buyer forgets to bring the packaging, BulkSource provides a wide selection of reusable containers. With this initiative, apart from reducing the potential for packaging waste as expected from

⁴⁴ In-depth Report: Radically Reducing Plastic Pollution in Indonesia: A Multi-Stakeholder Action Plan. The Global Plastic Action Partnership collaborates with the Indonesia National Plastic Action Partnership. World Economic Forum, 2020

the **R2 (Reduce)** strategy, BulkSource also encourages the reuse of any containers already owned by consumers (**R3/Reuse**).

In addition to bulk products, BulkSource also sells the majority of local, organic, healthy, and natural products, as well as various daily necessities that support a zero-waste lifestyle.

IMPLEMENTATION CHALLENGE

As a provider of bulk products, BulkSource strives to maintain the humidity level of the room and conducts quality control every week to maintain product quality. For food products, on average, bulk products are sold in dry forms, such as nuts or snacks, so they can be stored for a long time.

BulkSource also needs to pay attention to product arrangement in each outlet. Products that sell well will be displayed in more strategic locations and use larger or conspicuous jars, while those that are slow-moving can use smaller jars. The placement is also adjusted to the needs of each product, for example, whether it is heat resistant or not; needs to be stored in the chiller or not.

The pandemic is quite a challenge for BulkSource because the minimal waste shopping experience can only be felt by consumers as a whole if they come to the store, namely by bringing their own packaging from home and refilling the items they buy at the store. The number of consumers has become limited during the pandemic, and this minimal waste shopping experience is difficult to implement online. However, currently BulkSource is trying to transition and provide online shopping services by paying attention to the packaging used and also the delivery strategy in collaboration with bicycle couriers and couriers themselves to reduce emissions.

STRATEGY FOR REPLICATION

In the success of its programs, BulkSource has various ways, namely collaborating with many parties, both government and non-government. BulkSource also wants to invite the public to look back at local wisdom in the past, especially on a more environmentally friendly lifestyle with a focus on unpackaged bulk trade.

Campaigns are essential for business continuity and spreading good values. Apart from social media, the campaign is also carried out through non-bulk goods sold in their online and offline stores, namely goods that can make it easier for people to live a more environmentally friendly lifestyle.

REAL IMPACT FOR SURROUNDINGS



Successfully eliminated 2,200 tons of plastic over the last 3 years.



Plastic packaging savings in the distribution and sales process of materials by 10–40% from producers.



Until now it can absorb as many as 25 workers, and 80% of them are women.



Contribution of 5% of profits to restore mangroves in Bedono Village.



Successfully reduced about 4 tons of waste from landfill during 2021.



8

Anomali Coffee

Reduction of
Single-Use
Coffee Packaging

R2 Reduce

R3 Reuse

Actor: Private

Sector: Food & Beverage



Coffee is now not just a bitter drink and medicine against drowsiness but has become a lifestyle, especially for urbanites in Indonesia. Anomali Coffee is one of the most popular destination coffee shops for young Indonesians.

Irfan Helmi and M. Abgari (both Co-Founders of Anomali Coffee) created this coffee shop in 2007 because there are no coffee shops that sell processed Indonesian coffee beans. Since then, Anomali Coffee has become the pioneer of the “sustainable coffee” movement in Indonesia, which has succeeded in introducing various variants of

Indonesian coffee to its consumers. Anomali Coffee’s position is also supported by its high-quality coffee, which is supported by all the key players in the coffee journey from plantations to consumer cups. Anomali Coffee is also part of the Sustainable Coffee Platform of Indonesia (SCOPI) forum. Their role was felt during the COVID-19 pandemic through equal distribution of coffee in cooperation from upstream to downstream. For example, coffee that was not sold during the pandemic was reused to make palm sugar iced coffee.

CIRCULAR ECONOMY PROGRAMS & INITIATIVES

Anomali Coffee tries to implement a circular economy in reducing the use of coffee packaging, with a marketing strategy starting from giving discounts to consumers who bring their tumblers or mugs so that consumers can practice the **R3 (Reuse)** strategy. In addition, Anomali Coffee launched the #NgopiMembumi campaign, using 100% paper packaging for coffee, which is guaranteed to be safe as well as compostable and recyclable.

In this case, one of Anomali’s efforts began in 2021 together with environmentally friendly packaging suppliers (Foodpak) and the environmental care movement (The Earth Keeper) to collaborate by using

butterfly cup packaging which is 100% paper-based with a total of 82,457 cups. This directly helps reduce the accumulation of waste by more than 593 kg of plastic. Second, the butterfly cup design does not require additional plastic lids and plastic straws so that Anomali Coffee can reduce the use of plastic straws by 32.9 kg and reduce waste from plastic lids by 338 kg as expected by the **R2 (Reduce)** strategy.

Anomali Coffee has also created an academy for the general public, so they can know how to recognize and process quality coffee beans, while of course expanding on the sustainable principles they apply to their business.



REAL IMPACT FOR SURROUNDINGS



Reducing plastic waste due to switching to 100% paper packaging in the last 6 months, up to 593,690 grams of plastic cups.



Anomali Coffee also bought coffee directly from farmers with a total purchase of IDR 5 billion in green beans with distribution to female farmers of IDR 1.5 billion and male farmers of IDR 3.5 billion.



Thanks to the butterfly cup packaging design that does not require a lid and straw, Anomali has reduced the use of plastic straws by 32,982.8 grams and waste from plastic lids by 338,073 grams.



In 2021, Anomali helped improve the welfare of farmers by providing income to 1,008 male farmers and 717 female farmers.



Empowering women in the form of employing women around the coffee plantations that supply Anomali Coffee.



Absorb 100 workers.

IMPLEMENTATION CHALLENGE

The coffee shop industry which is already saturated and has many competitors is also a challenge when Anomali wants to introduce this paper-based packaging. When compared to plastic packaging, it is undeniable that Anomali paper packaging still has shortcomings in terms of durability, for example, it is not spill-proof because the packaging is not completely closed.

It can be said that this packaging replacement does not offer added value for consumers directly, other than its good impact on the environment. The cost of packaging made from paper is also higher and becomes a challenge in itself.

STRATEGY FOR REPLICATION

To realize a circular economy system, Anomali Coffee empowers local workers and utilizes local raw materials. With local raw materials, it is hoped that the carbon emissions produced can be suppressed, while continuing to explore the uniqueness that this country has to offer.

The campaign they created also invites coffee lovers to be more aware of the environment. With the increase in consumers who care about the environment, the demand for products and/or services designed to be environmentally friendly will increase. If demand increases, it is expected that it will have a positive impact on the addition of vendors supplying goods with circular materials along with an increase in economies of scale. By participating in educating, in addition to the procurement and sale of goods and/or services, little by little we are also working towards the sustainability of circular businesses so that they remain acceptable to the public. The presence of circular businesses is important, but support from consumers is equally important to determine the sustainability of business activities that have implemented the circular economy principle.

Offering attractive promos can also be a way to attract coffee connoisseurs in general, including those who do not yet have an awareness of the importance of sustainability in any goods and/or services consumed daily. However, promotions must be made in such a way that business profits are maintained, considering that environmentally friendly packaging generally costs more.



9

Lingkar Temu Kabupaten Lestari

Innovation in Making
Derivative Products from
Natural Resources

R1 Rethink

R2 Reduce

R7 Repurpose

Actor: Society

Sector: Other



When asked who is the most appropriate party to maximize the use of the potential of an area's resources, the answer is the local community. Living side by side for many years certainly makes the local community understand the intricacies of the potential resources that can be utilized, both natural and human, as well as the problems that are waiting to be resolved.

This role is used by 9 districts in 6 different provinces but has the same concern for sustainable development. Starting from a conversation between several district heads and network partners, the regional leaders declared themselves an open membership-based partnership to focus on sustainable development that protects the environment and improves the welfare of the community through cooperation. Under the auspices of APKASI (Association of All Indonesian Regency Governments), a district government association was formed which is now known as Lingkar Temu Kabupaten Lestari (LTKL). Member

districts that are members of the LTKL include Musi Banyuasin district in South Sumatra, Siak district in Riau, Sigi district in Central Sulawesi, Gorontalo and Bone Bolango districts in Gorontalo, Aceh Tamiang district in Aceh, and Sintang, Sanggau, and Kapuas Hulu districts in West Kalimantan.

LTKL has a target to protect local wisdom, at least 50% of the forest area which reaches about 6 million hectares, and peat which reaches about 1.9 million hectares. In addition to protecting nature, this effort also supports LTKL's goal of improving the welfare of approximately 1 million families living in these 9 districts. Although concrete forms of implementing sustainable development vary in each member district, each area has a common thread, namely protecting nature by making the best use of its resources for the welfare of the people living in it.

CIRCULAR ECONOMY PROGRAMS & INITIATIVES

LTKL member districts have had their circular initiatives according to their regional potential. In Musi Banyuasin Regency, for example, waste sap and gambier leaves are processed into dye for jumputan cloth called Gambo. In the production process, no specific waste is generated, because all of them use natural materials, following the **R1 (Rethink)** strategy. The secondary waste



generated is the use of plastic rope to tie the cloth in the pinch process (Javanese: *jumputan*), but in its use, this plastic rope can still be used repeatedly before finally being disposed of according to the **R2 (Reduce)** strategy. This Gambo batik cloth has been exhibited at the 2019 Jakarta Fashion Week. The craftsmen now have several products derived from jumputan gambo including bomber jackets, kaftans, masks, and others.

Remember the Riau forest fires in 2019? Well, the protection of forest and peat ecosystems targeted by LTKL is a form of response to that incident. A large number of forest and peat lands have been lost and the losses experienced by the regions have made LTKL together with local youths take the initiative to take advantage of the potential of commodities in peatlands to keep the land wet and sustainable. Alam Siak Lestari (ASL), a community-based company engaged in research and production of natural ingredients from Siak, currently processes snakehead fish cultivated on peatlands into albumin products which are very useful for cell regeneration and accelerate healing.

ASL is driven by local communities to protect nature for the common good. The cost to start this initiative is around IDR 2–3 billion. To prevent waste, fish heads that are not used in the albumin manufacturing process are processed into other derivative products (**R7/ Repurpose**), such as liquid and solid organic fertilizers and garum.

In the process of carrying out these two initiatives, LTKL together with partners in member districts always tries to involve women's roles. The majority of jumputan gambo craftsmen are women, while in ASL alone, female staff makes up 30% of the total number of staff.

REAL IMPACT FOR SURROUNDINGS

1

Jumputan Gambo Fabric Derivative Product Innovation with Natural Coloring



Gambier farmers get additional income from processing gambier into natural dyes of IDR 2,000,000.00 per month per person.



Jumputan gambo fabric craftsmen get additional income ranging from IDR 1,500,000 to 2,000,000.00 per month per person.



Since the initiative to treat gambier waste combined with *jumputan* cloth, every year there has been an increase in the number of craftsmen by more than 50%, which is directly proportional to the increase in the income of the craftsmen.



There are 150 *jumputan gambo* fabric craftsmen.

2

Peat-friendly Derivative Product Innovation Based on Cork Fish Commodity



There was a reduction in fish waste produced from one production process as much as 95 kg to 0 kg.



Adding profit from products resulting from the processing of production waste in the form of other derivative products, such as liquid and solid organic fertilizers, and garum.



Additional income for the community or community groups who cultivate snakehead fish is IDR 15,000,000.00 per month.



The number of people involved in this initiative is approximately 45 people, and the workforce involved is 10 people.



Additional new market share with 50% profit from capital issued from snakehead fish derivative products.

IMPLEMENTATION CHALLENGE

Community knowledge of snakehead fish cultivation is still relatively low, and it still needs a lot of assistance. The process of product registration, licensing, as well as production, and research supporting facilities and infrastructure that are still not all appropriate and adequate also make work slower.

Meanwhile, in the manufacture of jumpitan gambo fabric carried out by LTKL, the first challenge is in the gambier waste treatment process. There are two materials produced, namely catechins and tannins. Tannins will enter the next process to produce natural dyes, while catechins, which are solid deposits, are currently not being utilized properly so they are still sold to suppliers at low prices.

During the pandemic, of course, product sales decreased, especially gambo fabric products which are tertiary household needs. Communication between members is even more difficult because everything is limited and must be done online so many activities carried out in the field are hampered.



STRATEGY FOR REPLICATION

Seeing the character of the district community has a high sense of kinship and cooperation and multi-stakeholder support, the LTKL jurisdictional approach that emphasizes 5 key governance pillars, namely regulations and policies, planning, multi-stakeholder institutions, joint action, and progress reporting and communication is right on target and easily accepted by society. By leveraging the power of the community, everyone in the community will have room for discussion for the implementation of their initiatives. In addition, community members can become figures who hold someone accountable for implementing the circular economy principles, whether it is on initiatives that they agree on specifically or their daily lifestyle in general.

LTKL as a community certainly cannot run if its fellow members do not care about the importance of running a circular economy. Therefore, if you want to work on a circular economy collectively, partner with the right people and make sure they have the same concern so that they can encourage and motivate each other in its implementation.



10

Asia Pacific Rayon (APR)

Viscose Fiber from
Natural and Circular
Production

R2 Reduce

R6 Remanufacture

R8 Recycle

Actor: Private
Sector: Textile



Have you ever worn clothes made from viscose rayon, an artificial cellulose fiber (Man-Made Cellulosic Fiber – MMCF) made from wood pulp? It could be that the viscose rayon material you have used is the product of Asia Pacific Rayon (APR). Besides being popular because of its “fall” and smooth character when used, viscose or viscose rayon is also popular because it is friendly to the environment. The same circularity principle is also upheld by APR, resulting in the production of renewable and biodegradable viscose rayon fiber, which is certified through its manufacture in Pangkalan Kerinci, Riau with a capacity of 240 thousand tons per year. Not only has it enriched the domestic fashion market since December 2018, but APR’s fiber production has also gone global and contributed to the country’s export figures.

100% viscose takes only 21 days, taking into account several conditions, to be fully biodegradable by both water, soil, and marine life, without affecting its quality.

CIRCULAR ECONOMY PROGRAMS & INITIATIVES

APR has a decade-long sustainability commitment called APR2030, based on four areas of commitment to be achieved by 2030, namely focusing on positive impacts on the climate and nature, clean manufacturing, circularity, and inclusive society.

The first commitment was manifested through APR’s concrete actions which reduced the carbon footprint of its products by up to 50% per ton of viscose staple fibers (VSF) in line with the **R2 (Reduce)** strategy.

All the energy needed by the plant’s operational activities is also sourced from clean renewable energy.

The second commitment still refers to the **R2 (Reduce)** strategy, which is realizing clean manufacturing as stated in APR’s commitment to reduce water use by 50% and reduce waste contribution to landfill by up to 80% through investment in closed-loop production and recycling.



Regarding circularity, APR is building the collection, selection, and logistics infrastructure needed to recycle textile waste in Indonesia (**R8/Recycle**). Not only from the rest of its production, but APR also collaborates with industry partners, such as yarn, fabric manufacturers, and retailers to collect and resupply textile waste that can be recycled. This system makes APR a pioneer in textile waste recycling in Indonesia. 20% of the viscose APR produces will use recycled textiles by 2030, aligning APR's products with its **R6 (Remanufacture)** strategy.

The APR supply chain from plantations to viscose rayon fiber is also made transparent and traceable through blockchain technology by collaborating with two blockchain pioneers, namely Perlin and GEORA. Thus, all data is recorded and archived forever in the blockchain technology to be accessed again by their partners, consumers, or second-layer consumers.

To address social commitments, APR has developed a series of initiatives that can provide sustainable livelihoods and inclusive prosperity. Gender equality is also a concern for APR especially those in their value chain. Including involving women entrepreneurs by applying batik to viscose fabric through the Malay Merindu program, so that traditional textile crafts are also maintained and at the same time empower women. The textile center in Riau also provides access to professional development opportunities for local women and youth.

REAL IMPACT FOR SURROUNDINGS



Reducing the amount of waste generated from 95.99 kg per tonne of VSF in 2019 to 74.08 kg per tonne in 2021.



Reducing the level of Total Suspended Solid in wasted water, or the level of solids in water samples that are not dissolved so that it settles or makes the water cloudy, from 36.39 mg/L in 2019 to 33.70 mg/L in 2021.



Reducing process water consumption from 49.97m³ per ton VSF in 2019 to 37.48 m³ per ton VSF in 2021.



Reducing the intensity of energy used, from 26.54 GJ/ton VSF in 2019 to 24.81 GJ/ton VSF in 2021.



Reducing the intensity of sulfur emissions in the manufacturing process from 30.98 kg per tonne VSF in 2019 to 17.51 kg per tonne VSF in 2021.



Using 100% renewable energy since 2020, 100% wood fiber from certified or controlled sources, and 100% transparency from plantation to viscose fiber.



Improve the quality of water that must be wasted so as not to damage the ecosystem by increasing oxygen levels in water samples from 2,691 grams per tonne VSF in 2019 to 3,629 grams per tonne VSF in 2021.

IMPLEMENTATION CHALLENGE

Looking at the production mechanism of viscose fiber and its large production scale, APR requires an in-depth research and development process. The use of integrated technology is also needed. This technology certainly requires a high amount of investment and a large commitment because of its long-term nature. The company that oversees APR, namely Royal Golden Eagle, has invested USD 200 million over 10 years, a number that is not small, to realize a circular production chain.

The APR distribution process is also quite dependent on the policy of opening and closing state borders considering the market is already global. If the lockdown policy is implemented, of course, it will also be a challenge to distribute environmentally friendly textile materials that have been made in such a way by APR for the benefit of many people.

STRATEGY FOR REPLICATION

In efforts to implement the circular economy principle, apart from focusing on reducing quantity, attention to quality needs to be maintained. Looking at the data taken from the 2021 Sustainability Progress Report⁴⁵, APR not only focuses on reducing the quantity of waste or production residue that is donated to the environment, but also on improving the quality of the waste. The hope is that although there is still residual waste in any form that must be accepted by the environment, the waste will not be destructive to the health of the ecosystem. This is a reminder that the amount of waste or quantity is important, but how the waste will affect the environment is equally important.

APR traceability principle called Follow Our Fiber is also a good example, that consumers or partners need to know the origin or source of the products they produce or use. In this way, producer accountability can be better maintained considering that many parties can access and supervise their sustainability work, including consumers who can also feel more involved in this circular economy effort.



⁴⁵ https://e.issuu.com/embed.html?d=apr_sustainability_report_2021&hidelssuuLogo=true&pageLayout=singlePage&u=rgei, accessed on June 16, 2022

11

Plastic-Free Market, The Result of Collaboration with Local Governments

Traditional Markets
Without Single-use
Plastic Packaging

R2 Reduce

Actor: Community & Government
Sector: Wholesale & Retail



If you ask a place that uses a lot of plastic bags, the traditional market will likely be the one that sits at the top of the rankings. The large use of plastic bags is not only because we tend to shop from many sellers when in traditional markets. Even if we only shop from one seller, we can use more than one plastic bag.

Traditional markets or people's markets are still one of the favorite shopping destinations, due to interactions with traders, fresh food ingredients, and room for price negotiations.

Research from the Center for Environmental Education (PPLH) at the Sindu Market in Sanur, Bali, on

104 traders showed that everyday traders use more than 2,960 plastic bags.⁴⁶ This means that the number of plastic bags used is 200 times more than the ratio of the number of sellers.

The Plastic Free Market Pilot Program is an initiative of the Indonesian Plastic Bag Diet Movement (GIDKP) in collaboration with the local Environmental Agency (DLH). This program aims to reduce the use of single-use plastics such as plastic bags (whether with handles or not) in traditional markets, either through changing the behavior of market traders and consumers.

Research in 2019 as a result of collaboration between academics and the Bali Partnership community noted that 4,281 tons of waste are produced in Bali every day, with 11% of it flowing into the sea and 52% of it being unmanaged.⁴⁷

⁴⁶ <https://www.mongabay.co.id/2022/01/17/mengurai-benang-kusut-pasar-bebas-plastik/>, accessed on April 19, 2022

⁴⁷ <https://fkip.unud.ac.id/posts/fkip-unud-bersama-tim-bali-partnership-release-data-kebocoran-sampah-ke-laut-di-prov-bali>, accessed on April 19, 2022



CIRCULAR ECONOMY PROGRAMS & INITIATIVES

Sindu Sanur Market has become one of the markets that have been selected as a Plastic Free Pilot Market in Bali since September 2021, considering that this market is one of the icons of tourism based on local wisdom and environmentally friendly, and has been awarded the title of the best traditional market in Southeast Asia. Implementing a single-use plastic-free policy in line with the **R2 (Reduce)** strategy is hoped that it will further add to the good reputation of the Sindu Sanur Market.

The Sindu Sanur Market pilot location in Denpasar is an extension of the Plastic Free Market Pilot that has been implemented in Jakarta, precisely at Tebet Barat Market in 2019–2021. The impact is quite significant, there is a reduction of single-use plastics by up to 40% and encourages the use of shopping bags to be reused by up to 100%. After this pilot program, apart from Denpasar, the Plastic Free Market was expanded in four other cities, namely Bandung, Banjarmasin, Bogor, and Surabaya.

In practice, sellers are encouraged not to automatically package the purchased goods, but to ask in advance whether buyers bring their shopping bags or containers. If buyers do not have their bags or containers, they will be reminded to always bring them with them at their next purchase or can buy at plastic kiosks which are also encouraged to sell reusable shopping containers and bags. However, sellers are still allowed to provide single-use plastic for certain transactions. Although no disincentives have been implemented yet, this program has had a fairly good impact as described below.

REAL IMPACT FOR SURROUNDINGS



In line with the success of the pilot program in Jakarta, the success rates of implementing the single-use plastic ban at Kosambi and Cihapit Markets in Bandung reached 11% and 19% reduction in single-use plastics, and 18% and 27% at Pekauman and Pandu Markets in Banjarmasin. However, at Sindu Sanur Market, the reduction occurred in plastic bags without handles by up to 37%, but not in plastic bags with handles.



Impact on the economy of traders because there is no need to buy plastic bags. The pilot program in Jakarta saves traders up to 50%.



Door-to-door education to traders, traditional market managers, and the local government helps traders understand not only the prohibition but also the reasons why the use of single-use plastic is prohibited. Understanding why it is prohibited, it will undoubtedly instill motivation for traders to run an environmentally friendly business.



Among other cities, Surabaya was the only city selected for the location of the Plastic Free Market pilot program that did not have regulations when the program started. However, after the pilot program ended, the Surabaya City Government issued Surabaya Mayor Regulation No. 16 of 2022 concerning Reducing the Use of Plastic Bags in the City of Surabaya on March 9, 2022. This shows the government's seriousness in suppressing the generation of plastic waste.

IMPLEMENTATION CHALLENGE

In recent years, there have been regulations from the government regarding the ban on the use of single-use plastics. In Bali, with the Governor of Bali Province Regulation Number 97 of 2018 concerning Restrictions on the Generation of Single-use Plastic Waste, it is emphasized that three types of single-use plastics (shopping bags, straws, and polystyrene for food-beverage and decoration) must be stopped since the production and distribution process in food and beverage services (hotels, restaurants, and cafes), decoration industry, and retail (shopping centers, supermarkets, and traditional markets). Likewise, in Jakarta, there is a DKI Jakarta Governor Regulation Number 142 of 2019 concerning the Obligation to Use Environmentally Friendly Shopping Bags in Shopping Centers, Supermarkets, and People's Markets.

Even though this regulation already exists, close supervision and enforcement of these regulations are still relatively minimal, so the goal of eradicating single-use plastic waste has yet to be realized. There needs to be a long-term solution to convince traders in the form of alternative materials that can be used, at a price equal to or lower than the price of single-use plastic bags.

STRATEGY FOR REPLICATION

The Plastic Free Market Pilot Program is not the idea of a single group, nor is the implementation process. In this program, the Plastic Free Market can be realized thanks to coordination with the local Environmental Service, Perumda Pasar or the local Industry and Trade Office, and their respective market managers.

Collaborating with many parties, from the government to the smallest

On the other hand, not a few consumers have expectations that merchants will wrap their groceries in plastic bags. Because of this expectation, there are bound to be consumers who don't bring their shopping bags. As a result, there is a possibility that these consumers will not shop, reduce the number of transactions, and there are opportunity costs that need to be borne by the seller. Likewise, with food ingredients that are watery and easily broken, consumers generally will ask to be separated from other groceries. In addition, there may even be consumers who are angry if they are not given plastic. Therefore, the intention of traders to reduce the use of single-use plastics is hampered again because they have to follow consumer demands. While the Plastic Free Pilot Market is still a pilot and non-coercive one, these challenges will emerge and will have to be faced by traders when local regulations begin to prohibit the use of single-use plastics in the future.

unit, namely the community, can be a solution if you want to succeed in environmentally friendly programs. There needs to be regular monitoring of its implementation, as well as concrete solutions so that the targeted targets are willing to switch to more environmentally friendly and reusable options.







CHAPTER 03

CARING BY SHARING

The phrase sharing is caring is certainly familiar to our ears. In meeting the necessities of life, there must be things we borrow so we don't need to buy new ones. It is this lending and borrowing concept that brings us to the next circular business model: the Sharing Model.

The Sharing Model emphasizes an economic system in which several individuals share assets and services, otherwise known as collaborative peer-to-peer (P2P). Also known as the sharing economy, the use of technology for optimization is also often the main highlight of this business model. The sharing economy has become part of our daily lives, starting from transportation, accommodation, and much more. Throughout history, the sharing economy has been one of the fastest-growing business trends,⁴⁸ so don't be surprised if in the future we will see more similar business models that will disrupt existing industries, such as Airbnb or Gojek.



This Sharing Model prioritizes excellent service so that the joint utilization of goods and services can be optimal. With excellent service, we as users can get the function of an item without having to own the item. This principle, which is also practiced by the initiators in this book, is closely related to the application of the third circular business model, **namely Product as a Service (PaaS) or Product Service System (PSS)**.

The **Product as a Service** business model emphasizes long-term maintenance guarantees that are sold in a package with the main product. Combining a product in the form of

goods with a service component, this model generally varies in emphasis. Some are more focused on goods, some are more focused on the service aspect.⁴⁹

If we buy a product from a business that implements the PaaS business model, we are buying the functionality or service promised by the business activity, not just the physical product. The sale of services is prioritized, even though there are goods involved in it. It can be said, the PaaS business model is a form of concern from the producer to the consumer to maximize the value of goods and the life of the product in the hands of

consumers. In this way, concern from producers to consumers in the form of repair or maintenance services contributes to a circular economy, by reducing the potential for products to be discarded by consumers because they are damaged or new products that consumers must buy.

In this chapter, we will look at initiatives that align with the second and third circular business models with the principles described above. Sure, after reading this chapter, we can believe more and more that caring and sharing is the key to implementing a circular economy!

⁴⁸ <https://www.thebalancesmb.com/the-sharing-economy-and-how-it-changes-industries-4172234>, accessed on April 14, 2022

⁴⁹ Business Models for the Circular Economy: Opportunities and Challenges for Policy, OECD, 2019.

12

Gojek

Reducing Carbon Footprint with Collaboration and Technology

R2 Reduce

R7 Repurpose

R8 Recycle

Actor: Private
Sector: Other



Who doesn't know Gojek? It seems almost everyone knows, especially when you see the pacing motorcyclists wearing green jackets and helmets. Gojek is inspired by the experience of one of its founders, Nadiem Makarim, who used to always use motorcycle taxis to work when he was a consultant at McKinsey & Company. However, he felt that the taxi-bike system at that time was ineffective because when he needed it, it was difficult for him to get a taxi bike, whereas many other taxi bikes whose time ran out were just to hang around waiting for passengers.

Nadiem and two of his colleagues, Kevin Aluwi and Michaelangelo Moran, started an application-based motorcycle taxi start-up in 2010, with 20 couriers and 1 call center. Only in 2015, Gojek released its first Android and iOS applications. They began to expand outside the city and a year later, Gojek became the first unicorn in Indonesia. Gojek

managed to enter the 17th rank of the 20 companies that changed the world according to Fortune. In 2018, Gojek orders per day can reach 100 million per day. This app has been downloaded more than 190 million times. Gojek is also available in Singapore and Vietnam. In Indonesia, Gojek is the only *decacorn*, company that has a valuation value of USD 10 billion.

In 2021, Gojek decided to merge with Tokopedia and form GoTo. The combined economic activities of GoTo in 2020 represent 2% of Indonesia's Gross Domestic Product (GDP). This 2% figure looks small, but it is not at all. Indonesia's GDP in 2020 is Rp15,438 trillion, and is ranked 16th in the world and 4th in Asia after China, Japan, and India. This figure of 2% or around USD 22 billion is bigger than Iceland's GDP and almost twice the GDP of Brunei Darussalam!

CIRCULAR ECONOMY PROGRAMS & INITIATIVES

The GoTo Group's approach to circularity is summarized in their commitment to achieving The Three Zeros by 2030, which includes:



1 Zero Emissions

GoTo is committed to being a carbon-neutral ecosystem and focuses on decarbonization efforts, both directly and indirectly. The efforts made include the transition to the use of electric vehicles (EVs) up to 100% by 2030, increasing the efficiency of energy use for operational needs, as well as efforts to transition to renewable energy.

In 2021, GoTo will start providing 500 electric motorcycles and build 14 battery exchange stations in 7 locations in South Jakarta in collaboration with Pertamina as a pilot project. In accelerating the process of EV adoption in Indonesia through this initiative, GoTo formed a joint venture company called PT Energi Kreasi Bersama or also known as Electrum. It is planned that starting in 2023, GoTo will scale up the use of EVs and the battery exchange ecosystem and provide a Research and Development (R&D) division for vehicles and battery technologies that are most suitable for the Indonesian market.

In promoting the use of renewable energy, as of January 2022, GoTo purchased 361 Renewable Energy Certificates (REC) from the State Electricity Company. The ownership

of REC is proof that GoTo uses electricity generated from renewable energy plants with international standards. The amount as of January 2022 is 361,000 kWh and is stated in the 2021 Sustainability Report will continue to grow to help absorb some of GoTo's carbon footprint.

Not only trying to absorb carbon offsetting internally, but GoTo also introduces features so that Gojek consumers in particular can also offset the carbon footprint generated when driving using GoCar and GoRide services. The feature is called GoGreener Carbon Offset with Jejak.in, allows people to calculate the carbon footprint generated from their daily activities through the Gojek application as well as plant trees in conservation areas and urban forests. This feature only needs to be activated once and then it will automatically apply to all consumer journeys concerned, and has been adopted by the Ministry of Tourism and Creative Economy in 2021. Not only applied to Gojek, but Tokopedia also opens tree planting donations from users in collaboration with Yayasan Konservasi Alam Nusantara (YKAN) under the **R2 (Reduce)** strategy.

2 Zero Waste

Both Tokopedia and Gojek process millions of orders on various platforms every day, which of course contributes to an increase in waste. In 2021, GoTo for the first time performs a waste count throughout the ecosystem by using the extrapolation method or estimating the value of a variable based on its relationship to other variables. This method was chosen because of GoTo's decentralized partner network. The results of this

calculation will be used as a baseline regarding the composition and sources of waste generated by the entire GoTo ecosystem.

There are three main categories of waste or waste classified by GoTo, namely; (1) waste generated at GoTo offices, (2) waste generated as part of on-demand services such as GoFood and Tokopedia sales, (3) waste generated from

GoTo warehouses. According to the 2021 Sustainability Report, waste generated at the GoTo office reached 187 metric tons, waste from on-demand services reached 333,583 metric tons, and waste from GoTo warehouses reached 1,319 metric tons.

To reduce the amount of waste (**R2/Reduce**), GoTo launched an initiative to reduce the waste footprint in each category. To reduce waste in the office, GoTo no longer uses single-use products and packaging while increasing employee awareness of sustainable office practices and sorting and processing waste in the office by collaborating with credible third parties.

Meanwhile, to reduce waste generated from GoTo's on-demand services, recycled and reusable

packaging was introduced. GoTo also sets guidelines for merchants to reduce the use of excessive packaging. For waste or waste generated from the GoFood cloud kitchen in Tebet, South Jakarta, GoTo partners with Rekosistem.

Apart from the three categories of waste, Gojek also seeks to increase the recycling of waste or waste (**R8/Recycle**) in general by collaborating with Ades and Waste4Change in the #NiatMurni campaign in 2019. Gojek drivers can deliver used consumer plastic bottles to waste banks. nearest you, where every bottle you deposit can be exchanged for balance, credit, or tokens. The company also assists Gojek partners to recycle personal waste and deposit their used cooking oil to Waste4Change to be reprocessed into biodiesel.

3 Zero Barriers

GoTo wants to build an ecosystem that is inclusive and accessible to everyone so that everyone has the opportunity to have a sustainable livelihood. The focus is on reducing barriers to socio-economic growth for driver-partners and sellers in the GoTo ecosystem, as well as improving diversity, equality, and inclusion (Diversity, Equality, and Inclusion or DEI for short) practices. GoTo has signed the United Nations Women's Empowerment Principles (UN WEP) which aims to promote gender equality in the workplace, marketplace, and community so that gender equality can be realized and offer equal opportunities for partners and women entrepreneurs.

In addition to the UN WEP, GoTo has also signed the Valuable 500 in

2021, an initiative that promotes inclusiveness for groups of people with disabilities across the company and the GoTo ecosystem. Gojek consumers from people with disabilities can use the screen reader feature on the login screen and home screen. GoTo also displays information about Gojek partners who are people with disabilities in the application so that consumers can understand the condition of their driver partners. At Tokopedia, GoTo released the Voice Over feature in the iOS application in 2021 to make it easier for people with disabilities, especially the visually impaired, to use the Tokopedia platform with audio assistance. This feature is being worked on to be used in Android applications.

REAL IMPACT FOR SURROUNDINGS

Based on the 2020 Gojek Sustainability Report:⁵⁰



Collaborating with more than 4,000 business partners in the GoGreener program.



10% of Gojek Cloud Kitchen has also reached zero waste in the second half of 2021.



Prevent the use of more than 13 tons of single-use plastic waste through the paid cutlery program from August 2019–December 2020.



Gojek's 2020 Sustainability Report won a Gold Rating in the Asia Sustainability Reporting Rating or ASRRAT 2021.



More than 6.3 tons of plastic bottle waste was collected from the point of delivery.

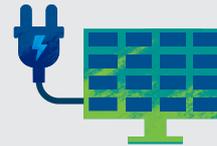


Gojek has partnered with 900,000 GoFood business partners (96% of which are MSMEs), more than 2 million driver partners, and more than 5,000 employees in 5 countries (Indonesia, Singapore, Vietnam, Thailand, and India).

After the merger into GoTo, the impact of the Three Zero GoTo targets summarized in the 2021 GoTo Sustainability Report⁵¹ includes:



Signed the Stakeholder Capitalism Metric from the World Economic Forum (WEF) as a global effort to consolidate industry reporting standards in terms of environmental, social, and governance performance or Environmental, Social, Governance (ESG) to produce more accurate and credible reports.



Transitioning the Gojek, Tokopedia, and GoTo Financial head offices by using 100% new renewable energy-based electricity resources.



Has completed a comprehensive calculation of the inventory of waste and emissions generated throughout the company's ecosystem.



Distributed more than 75,000 reusable delivery bags with driver-partners.

⁵⁰ <https://www.gojek.com/sustainability/>, accessed on April 14, 2022

⁵¹ https://assets.tokopedia.net/assets/goto/GoTo_Sustainability%20Report%202021_Bahasa.pdf, accessed on May 31, 2022



Planted more than 7 thousand trees from the tree planting donation program from Tokopedia users.



Reducing the volume of waste that ends up in the landfills from the shared kitchen (cloud kitchen). As much as 95% of the total waste of the Joint Kitchen does not end up in landfills but is processed using various methods, ranging from composting, recycling, pyrolysis, and gasification, as well as processing with black soldier fly. The 5% that ends up in the landfill is also not considered dangerous and is outside the location of the GoTo Group.



Tokopedia Serviced Facilities or Tokopedia's fulfillment center, previously known as TokoCabang, practices the **R3 (Reuse)** principle by reusing used cardboard as cushions in order packaging instead of bubble wrap and air pillows. The amount, in 2021, will account for more than 10 metric tons of used cardboard and more than 113 metric tons of cardboard recycled into pulp through a collaboration with PT Fajar Surya Wisesa Tbk.

IMPLEMENTATION CHALLENGE

GoTo's efforts to become a carbon-neutral company require long-term investments and significant costs. In addition, efforts to adopt EVs on a large scale must be able to overcome the limitations and availability of infrastructure for charging so continuous collaboration with many parties is very important to do. In the retail sector and waste reduction, plastic is currently still the most frequently used material for packaging because it is cheap, easy to obtain, and practical for food and beverage packaging. To overcome this challenge, Gojek also joined the Steering Committee of the National Plastic Action Partnership (NPAP), a collaboration that is part of the World Economic Forum that aims to find solutions to end-to-end plastic problems.

STRATEGY FOR REPLICATION

An important lesson for business actors that can be imitated from GoTo is collaborating with various external parties in realizing the sustainability ambitions they have set, such as collaboration with electric motorcycle manufacturers Gesits and Gogoro in Gojek's efforts to create an electric vehicle ecosystem, for example. Imagine if Gojek chose to provide an independent electric motorbike, of course, it would take a long time until the plan can finally be realized.

In addition to designing sustainability initiatives that the company can undertake, Gojek also encourages its customers to do their part in different ways. It can be seen from the #NiatMurni campaign which involved Gojek drivers delivering used plastic bottles from consumers to the nearest waste banks. Not only encouraging behavior, but Gojek also facilitates environmentally friendly behavior with the services they have.

Like the essence at the heart of Gojek's work which focuses on solving solutions through technology, Gojek also makes environmentally friendly behavior by being monitored by technology, namely the GoGreener Carbon Offset feature. Thus, people who want to try to reduce their carbon footprint can start by knowing in advance the carbon footprint they have emitted, with accurate and practical calculations because it is supported by technology.



13

Kecipir

Affordable Organic
Local Food and
Package Returns
Circular Initiative

R2 Reduce

R3 Reuse

R8 Recycle

Actor: Private

Sector: Wholesale & Retail



The agricultural sector in Indonesia is still one of the 3 largest contributors to Indonesia's National GDP. This sector is directly affected by climate change but also has an important role in climate change. Organic farming is one way to overcome this.

However, the transition from inorganic to organic agriculture has many obstacles, ranging from consumer interest to the rejection of organic products by middlemen due to the small amount of supply. Generally, farmers also sell organic vegetables using third parties so that the selling price is not competitive and consumers buy at a price that is too expensive.

In response to this, in 2015 Kecipir is here to provide an e-commerce platform, harvest management, and delivery of agricultural products and organic food on a circular basis. Kecipir is a social enterprise to realize agricultural production, distribution, and consumption in a more equitable and environmentally friendly manner. His dream is to realize a healthy Indonesia by making the consumption of fresh local organic food a habit, with more than 3 values: from a competitive price point of view, from a reliable supply side, and a healthier consumption perspective.

CIRCULAR ECONOMY PROGRAMS & INITIATIVES

The circular farming initiative carried out by the Kecipir starts with the farmers. All food products sold by Kecipir are grown organically. Even though not all of them are certified, Kecipir has done regular research to ensure that no partner farmers use chemical fertilizers or pesticides in their agricultural practices. The freshness of food ingredients is also the main thing for Kecipir. To ensure freshness, all vegetables are harvested on the

same day as the customer's order day. Kecipir carries the concept of order-harvest-delivery. With this concept, the Kecipir prevents the possibility of wasted crops, such as the **R2 (Reduce)** strategy. Farmers will plant and harvest products according to demand trends from consumers. All vegetable products, eggs, processed foods, and other products sold by Kecipir are 100% local products.



In general, the organic food distribution chain must go through a third party so that farmers' selling prices are low and consumers' buying prices for organic food are more 'expensive' than ordinary vegetables. By cutting the production chain from farmers directly to consumers, Kecipir as much as possible balance the price of organic food to equal the price of conventional agricultural products. This initiative also has an impact on reducing the carbon footprint generated during the distribution process, an implementation of the **R2 (Reduce)** principle.

Kecipir also creates an environmentally friendly business model through circular online shopping services (**R2/Reduce**), product packaging in reusable packaging (refill), and acceptance of used cooking oil from consumers for recycling (**R8/Recycle**). Kecipir provides a door-to-door free pick-up service for all residents of Jakarta, Bogor, Depok, Tangerang, and Bekasi (Jabodetabek), Cikarang, and Cibitung. Some forms of utilization of used cooking oil are as fuel for oil lamps, biodiesel, aromatherapy, poultry feed, fertilizer, as well as floor cleaning fluid, and liquid soap which

are also environmentally friendly. The used cooking oil received by Kecipir does not have to come from Kecipir products, all used cooking oil from any purchase is acceptable.

Consumers can also return all types of product packaging obtained when purchasing, whether in the form of paper, glass, plastic, sacks, cardboard, or plastic wrap. For example, in refilled milk products, if the consumer returns the packaging, he will get a cashback of Rp13,300. The cashback costs the cost of the bottle so that consumers only pay for the product. Quite profitable, yes! All these procedures are neatly organized through the web store and the KECIPIR application which can be accessed via iOS and Android. To start the initiative following this **R3 (Reuse)** strategy, Kecipir invested Rp 300 million, which was allocated for system development and farmer empowerment.

In order to increase the competitiveness of partner farmers' products that have not been certified organic, Kecipir cooperates with PAMOR (Organic Quality Assurance) from AOI (Indonesian Organic Alliance). PAMOR is a participatory organic farming certification system

involving producers, traders, consumers, and the government. Activities undertaken include mentoring, organic training, ICS (Internal Control System), and field inspections. The PAMOR certification system involves partner farmers inspecting each other to ensure the organic quality of their products. This system not only keeps organic farmers connected but also offers very affordable certification fees. On the other hand, Kecipir also continues to research and develop systems and collaborate with several ITB academics.

Currently, Kecipir is also in the process of establishing a customer cooperative, where later all Kecipir consumers can become members of the cooperative and receive dividends every year. In the future, Kecipir hopes that the government can support and facilitate the initiators or circular pilots, such as tax reductions/exemptions for circular/recycled products.

In 2019, Kecipir was awarded the Circular Economy 2nd WINNER at the Ocean Plastic Innovation Challenge.

IMPLEMENTATION CHALLENGE

The process of developing the capacity of farmers as professional food producers as well as applying the principle of delivery-order or direct selling to final consumers is a challenge for Kecipir. In addition, market penetration and education on environmentally friendly agricultural products are also relatively low. For the consumption of organic food to be more normalized and become a habit, the community must work together as consumers, producers, and also movers.

Kecipir also faces technological challenges, namely building information systems and operating systems that are appropriate and adaptive to constantly evolving innovations. The high cost of the certification process is also a challenge because this affects the selling price of organic products, which makes it difficult to compete with conventional products.

During the pandemic, there is an increase in scale due to increased

demand. The opportunity to increase profits for the Kecipir cannot be fully taken because it is constrained by restrictions on movement and unfavorable business governance, especially for the main food product, or staff and staples (sembako), such as cooking oil, eggs, and so on.

REAL IMPACT FOR SURROUNDINGS



In 2020, more than 104,173 plastic/styrofoam could be prevented from being used. In 1 order through Kecipir, can prevent 10–15 plastic waste.



Opening job vacancies for 50 people.



Empowering women through collaboration with women's groups who manage waste banks in Bekasi and Bogor, West Java.



Reducing packaging and using a bulk/refill system reduces production costs and increases profitability (the economic impact cannot yet be calculated because it is still in the process of developing an impact monitoring system).



More than 203,397 kg of food waste can be prevented.



Assisted more than 600 farmers and farmer groups, who also contributed to the management of organic waste in farmers' gardens by processing organic waste into compost.



Emissions reduction as a result of efforts to cut the distribution chain.

STRATEGY FOR REPLICATION

If the majority of business activities tend to be reluctant to show their key partners, especially those who work for the procurement of goods and/or services, Kecipir is not. Kecipir does not hesitate to put forward the fact that their crops are the result of cooperation with local farmers. This transparency in addition to increasing consumer confidence in Kecipir

services also provides a sense of purpose for consumers because each of their purchases also means supporting the work of local farmers.

By directly involving local farmers, Kecipir also not only improves their welfare without needing to go through other hands but also makes it easier to monitor and control

agricultural practices following circular economy principles. This direct trading system also makes the price of crops from organic farming more controlled so that the benefits of the organic farming system can not only be accessed by certain groups of people.



14

Koinpack

Household Products
with Returnable
Packaging

R1 Rethink

R3 Reuse

R8 Recycle

Actor: Private

Sector: Wholesale & Retail



Familiar with the use of gallons of water that must be returned? The use-spend-return concept of using a gallon of water was adopted by Koinpack. However, it is not drinking water that is their core business. This start-up sells household products, such as cooking oil, dish soap, rice, cleaning fluids, clothing lubricants, and many others for consumers in Jakarta, Bogor, Depok, Tangerang, and Bekasi (Jabodetabek).

Not only homecare products, but Koinpack also sells personal care products such as shampoo, bath soap, and hand sanitizer. These products are of course not the result of copying, but the original ones are directly obtained from the distributor so that they have the same quality as those sold in the market. The difference is, at Koinpack, all

products are packaged in Koinpack's special packaging, the result of a collaboration with ALPLA, a company that produces quality plastic packaging. With a transaction scheme like this, Koinpack minimizes the use of sachets, a form of multilayer packaging that is considered beneficial for both companies and consumers, but has a negative impact on the environment, especially if it is not managed properly.

Due to this initiative, Koinpack has won many awards, such as 1st Place in AIS Innovation Challenge 2020, Finalist of P&G Start-up Innovation Challenge 2020, iF Social Impact Prize 2021, and 10 selected social entrepreneurs for the Instellar & IKEA Social Entrepreneurship Indonesia Accelerator (I- SEA).

CIRCULAR ECONOMY PROGRAMS & INITIATIVES

Consumers can buy products with returnable and reusable packaging through their partners, ranging from mini stalls, peer-to-peer sellers, or waste banks spread across Jakarta, Depok, and Bekasi (Jabodetabek). To reach a wider market, Koinpack also opens an order via WhatsApp, web store, and Tokopedia.

Products will be delivered to your home for online purchases, even for purchases via WhatsApp Shop and web stores in the Jakarta area, sent by Westbike Messenger Service couriers to further support environmentally friendly initiatives that are the main core of Koinpack's business model.



After the product runs out, consumers can return the empty Koinpack packaging to the place where they purchased the product or request a free pick-up schedule. There are several options for returning the empty Koinpack packaging, first, if you buy from a Partner, then return it to the Partner. Second, if you buy via online channels, you can return it to the Koinpack courier or Westbike Messenger Service when delivering the product on your next purchase. Now lastly, if you buy via e-commerce or just want to return the packaging, you can request a free pick-up schedule via WhatsApp Koinpack or fill out the bottle return form. In fact, Koinpack still receives

imperfect packaging, such as dents, missing lids, and so on, as long as the packaging is still tangible. So, consumers can use the product without the need to keep the quality of the packaging as perfect as new. For every returned package, Koinpack will provide incentives in the form of cashback that can be used on subsequent purchases.

Later, the packaging received by Koinpack will be cleaned for reuse (**R3/Reuse**) to the next consumer. However, hygiene is also guaranteed, because Koinpack uses semi-automatic machines and other cleaning materials that will not damage the quality of the packaging.

Koinpack also doesn't play around in claiming that their products are hygienic, even though the packaging has been used by other consumers by conducting tests in the laboratory to measure the level of microorganisms in the cleaned packages.

Ideally, one package of Koinpack can be used up to 20 times, in accordance with the **R1 (Rethink)** strategy to use the product more intensively. After reaching 20 times, these packages are not just thrown away, but donated to recycling facilities in the hope that they can be used as new packaging from recycled materials (**R8/Recycle**).

REAL IMPACT FOR SURROUNDINGS

Since the Koinpack pilot project started in March 2020 until June 2022, the following are the impact of the business model that Koinpack has generated:



Reduce 286 kg of CO₂ emissions with delivery using the West bike Messenger Service bicycle courier.



Prevent more than 165,000 single-use packages that have the potential to be wasted in the river to be replaced with Koinpack packaging.



Absorb 9 workers.



Collaborating with fast-moving consumer goods (FMCG) brands, such as P&G, Wipro Unza, and several local brands, such as Barco and Yagi Natural, thereby accelerating the achievement of their sustainability ambitions, as well as setting an example for other similar companies that sales can still be made without earning packaging waste.

IMPLEMENTATION CHALLENGE

The use-spend-return principle may work through the sale of gallons of water because there is no other alternative as an option. The available options other than reusable gallons are only mini plastic gallons, with smaller sizes and higher prices. Therefore, it is natural that reusable gallons are the choice of many people.

The challenge for this business is to build consumer practices and habits

on the use of refillable gallons, but for different types of products (such as home care and personal care). Because no packaging option can be returned after use, it has become a habit for consumers to immediately dispose of used packaging for home care and personal care products. The pandemic has also made cleanliness a priority so that more and more hygiene products are used and their packaging is discarded.

Although the consumer habit of reusing homecare and personal care product packaging has not yet been established, Koinpack has established an incentive system in the form of cashback which is expected to be an attraction for consumers. The forms of training and education are also consistently disseminated to partners so that partners can also underline the importance of using this single-use packaging for their customers.

STRATEGY FOR REPLICATION

Koinpack utilizes technology to facilitate the traceability of packages that have been circulating in the community, namely precisely with the QR code embedded in each package. In addition, Koinpack also cooperates with large producer companies in providing products such as P&G, with the awareness that the mounting waste of sachets cannot be the responsibility of the consumers alone, but also the producers.

Although Koinpack's main mission is to reduce sachet waste ending up in landfills, waterways, or coastal areas, Koinpack does not compromise product quality and cleanliness. This can set a new standard for other environmentally friendly products, that consumers do not have to sacrifice cleanliness or quality when choosing to use environmentally friendly products.



15

Aruna Indonesia

Harnessing the Potential of Indonesia's Seas with the Use of Technology

R2 Reduce

R8 Repurpose

Actor: Private
Sector: Other



As a country whose majority area is the sea, the potential of Indonesian marine products is certainly very abundant. This potential was then worked on by three young Indonesians, one of whom was born and raised in a fishing village in East Kalimantan.

Aruna is a fishery supply chain aggregator company from Indonesia that is committed to condensing the supply chain of fishery products by connecting small-scale fishermen to the global market through technology. Aruna works with coastal communities and empowers fishermen in Indonesia to be able to produce fish catches in an environmentally friendly way. Aruna is also determined to cut the

supply chain so that the income of Aruna Fishermen can increase significantly.

In 2020, three of Aruna's co-founders, namely Utari Octavianti, Indraka Fadhilillah, and Farid Naufal Aslam, were selected to be Forbes 30 Under 30 2020. Since the COVID-19 pandemic, Aruna's growth has increased seven times as people eat seafood more often. , considering seafood is a good source of nutrition for the body's immune. Through its achievements, Aruna continues to grow until 2022 and has received series A funding support from investors amounting to \$65 million or approximately 1 trillion Rupiah.⁵²

CIRCULAR ECONOMY PROGRAMS & INITIATIVES

Aruna creates a system that can help fishermen to connect directly to consumers through digital technology, such as Aruna Heroes, an Aruna Fisherman profiling application that helps overseas consumers to obtain traceability. This application is not open to the public. Aruna opens access for Aruna Fishermen to be able to

go to a wider market so that Aruna Fishermen can earn more.

Aruna also provides socialization and education to Aruna fishermen, and requires them to catch fish with certain standards, including catching fish in areas that are not overfishing, according to data submitted by the authorities in the marine and fisheries

⁵² <https://katadata.co.id/maesaroh/digital/61f74415167ca/dapat-suntikan-dana-segar-rp432-miliar-aruna-akan-gencar-ekspansi>



sector, using environmentally friendly fishing gear and do not use explosive devices or nets that damage coral reefs and return catches that are not in size (baby fish and crabs must be returned to the sea quickly!). Socialization and education on fishing in an environmentally friendly way is one of the important aspects of the circular economy to build a regenerative system by ensuring that marine ecosystems and fishery commodities as natural resources remain renewable resources (infinite resources).

The regenerative system is one of the main principles of a circular economy, which ensures that humans do not take natural resources beyond their capacity and maintain the balance of nature so that nature can continue to grow and be renewable, and in the end, can provide resources for human life in a sustainable manner.

Aruna also developed other social programs such as planting mangroves with the Ministry of Trade and the East Java Provincial Government because mangroves are one of the areas that support the preservation of marine resources. Aruna also built a Zero Waste Hub in the form of a post for processing crab shell waste to be used as flour and high-value fish feed. In addition, Aruna has developed the Gahar (Gift Wave) program, which is the distribution of necessities, fishing gear, and fishing necessities to fishermen.

REAL IMPACT FOR SURROUNDINGS

Throughout 2021, Aruna's achievements are as follows: ⁵³



Aruna has empowered more than 26,000 fishermen in 27 provinces in Indonesia by the end of 2021. Aruna's reach has represented 70% of the total of all provinces in Indonesia.



Aruna has also built more than 40 distribution centers and more than 70 Aruna hubs.



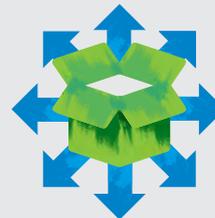
Every fisherman who has been fostered by Aruna can reap a turnover of 7 times greater every month.



Aruna managed to achieve a Nakama (people in the Aruna ecosystem) growth of 140%.



Aruna has created more than 5,000 jobs in remote areas.



Aruna has distributed marine catch products to 8 countries as much as 44 million kg.

⁵³ <https://www.instagram.com/p/CYMEoSHF3-q/>

IMPLEMENTATION CHALLENGE

Aruna explained that they had two main challenges, namely infrastructure and human resources. Internet access and the large number of fishermen who do not have smartphones are one of the infrastructure constraints for Aruna which uses application systems in its operational activities. The second challenge is the limitation of human resources (HR) because the interest of existing human resources is still very minimal to work in the fisheries sector. Rarely do young people, even those who come from fishing villages, when they graduate from school want to work again in the maritime sector.⁵⁴

STRATEGY FOR REPLICATION

Many opportunities can be utilized from economic activities and the local wisdom of the local community. For example, the Heole-Ole'a fishing tradition carried out by the Wakatobi community is in line with the concept of sustainability.

Heole-Ole'a is a fishing tradition for Ole, a fish that is sacred to the local community. *Parika*, an adat stakeholder was assigned to consider the location and timing of the catch, as well as the management of the ole fish catch. Being a *Parika* must be careful! He needs to observe the process of gathering ole fish at a point and make sure that the fish have finished laying eggs. When the ole fish have finished laying eggs, the new *Parika* will give orders for the fishermen to start catching the ole fish.⁵⁵

By paying attention to local wisdom and also maintaining the balance of nature, we can maintain the quality of the environment, so that in the end it can provide good results for our economy. We can learn to be observant in mapping the economic ecosystem that is formed in a community to find solutions to the problems that exist in that ecosystem. When the offered solution provides direct benefits, the adoption process will be easier to do. Another thing that can be followed by Aruna is empowering young coastal children to become local heroes to operate and help fishermen using Aruna's smartphones and applications.



⁵⁴ <https://katadata.co.id/desysetyowati/digital/606c415ccaae3/startup-aruna-potensi-bisnis-perikanan-ri-besar-tapi-ada-2-tantangan>, accessed on April 5, 2022

⁵⁵ <https://aruna.id/tag/tradisi-heole-olea/> accessed on May 24, 2022



CHAPTER

04

OLDIE BUT
GOLDIE



Who sees shopping as a way to be happy? Having new stuff often makes you happy, whether it's something you need, or something you don't need, but it's just nice to have. Providing boundaries between the two also requires an open mind. For example, clothes are certainly a necessity, but do we need to have two closets full of clothes because we are embarrassed to be seen wearing the same clothes?

Not all new things are of the best quality and vice versa, it does not mean that new goods are of inadequate quality. By reducing the purchase of new goods, in addition to saving on the pocket, you have also saved the use of raw materials. This means that you have contributed to preserving the environment. It's something we should be proud of, right?

Taking the example of the problem of clothing waste, the condition is now very worrying. Every seven minutes, the amount of clothing that is thrown into the landfill is quite fantastic, which is as high as Mount Everest, the highest mountain in the world at 8,848 meters above sea level.⁵⁶

The principle of 'Old is Gold' applies not only to clothing but also to other products. Moreover, modern humans seem to need a lot of things to survive. Fortunately today, many business actors are promoting the fourth circular economy business model, namely **Product Use/Life Extension**. In principle, this business model emphasizes efforts to make a product last longer or can still be used for a long time.

Extending the life of the product will not only have an impact on reducing the volume of waste in final disposal. Every time we throw away a product, we also "waste" all the energy and



materials used in the production process.

By not constantly buying new things, we also reduce the carbon footprint that goes into making those things. This certainly has an impact on preventing global warming. Every action we take to prevent global warming is the same as protecting many living things in the sea and land and keeping our water and food quality safe and sustainable.

The form of implementation can vary, such as turning waste into raw materials for new products. Is sound similar to the first circular economy business model, namely Circular Inputs? The two turn out to be related, especially when a product is made from recycled materials. The form does change because it is recycled, but in principle, the product is still not wasted at final disposal but is transformed into other products that still have use value.

Apart from converting waste into raw materials for new products, distributing the same product to second, third, and so on users, is

also one of the efforts to extend the life of the product. If you feel that something is useless, other people don't necessarily think so.

The Product Use Extension business model, apart from being related to the Circular Inputs business model, also has similarities to the Product as a Service (PaaS) business model. The difference is, if the PaaS model tries to extend the life of the product through ownership of the product remains with the manufacturer, this Product Use Extension business model designs the product in such a way that the quality of the product itself can last longer. Not only in terms of choosing more durable materials, manufacturers who adopt the Product Use Extension business model can also build repair and recycling centers that are easily accessible.

Below are examples of business activity initiatives that are in line with the Product Use Extension business model. Keep reading so that you are more illustrated with the forms of practice!

⁵⁶ <https://english.khabarhub.com/2022/26/238839/>, accessed on March 6, 2022. .

16

Great Giant Pineapple (GGP)

Turning Pineapple Into Animal Feed and Bromelain Enzymes

Terbanggi Besar, Central Lampung Regency, Lampung Province

R2 Reduce

R7 Repurpose

R8 Recycle

Actor: Private

Sector: Food & Beverage



Pineapple, a tropical fruit that knows no season, is one of the prima donna fruits in Indonesia. Indonesia has even become the top 5 pineapple-producing countries in the world! The huge potential of pineapple in Indonesia is reflected in the production of the Great Giant Pineapple (GGP), which can harvest more than one million pineapples every year to be processed into canned pineapple products.

GGP was founded in 1979 with a focus on pineapple plantations and the pineapple fruit processing industry. One of the subsidiaries of the Gunung Sewu Group was founded with the thought of its importance to support

the increase in the supply of food and non-oil and gas export commodities, especially in the agro-industry sector.

Of course in every production process, not all parts of the pineapple will be used. In 1984, they discovered the fact that the utilization of pineapple fruit only reached 30%, while 70% of it was considered waste. GGP then innovates and improves the manufacturing process to reduce the amount of waste. Thanks to this innovation, until now, the solid waste generated by GGP is only less than 18%, and continues to work to reduce it.

CIRCULAR ECONOMY PROGRAMS & INITIATIVES

Judging from a large number of declines, the question must arise “What program did GGP carry out to reduce the amount of waste that much?” Yes, this story starts with pineapple skin. Because a lot of pineapple skin waste is obtained from production by-products, they started thinking about how to recycle this pineapple skin. The idea came up with pineapple peel mixed with cassava pulp from the UJA tapioca flour factory (a subsidiary of Gunung Sewu Group) which produces output in the form of animal feed as a result

of recycling (R8/Recycle). This animal feed is then distributed to meet the needs of thousands of cattle owned by Great Giant Livestock (GGL), a subsidiary of Gunung Sewu which is engaged in cattle farming.

Regarding energy use, initially, the company’s energy consumption still relied on coal and residual fossil fuels (Heavy Fuel Oil/HFO), whose prices were increasing day by day. GGP then took the initiative to utilize the liquid waste from processing pineapple and cassava from the GGP canning



factory and UJA tapioca flour factory into biogas (**R7/Repurpose**). Biogas contains a lot of gases, including methane, which can be converted into energy that is cheaper and more environmentally friendly. In 2010, GGP built a biogas plant with a total cost of ± Rp40 billion. Biogas is produced from the anaerobic wastewater treatment process in the Methane Reactor. The methane reactor technology built by GGP uses UASB (Upflow Anaerobic Sludge Blanket) technology. The biogas produced is then used as a substitute for 7–8% of fossil fuel coal in power plants and 100% of residual fossil fuel/HFO in the Thermal Oil Boiler of tapioca flour mills.

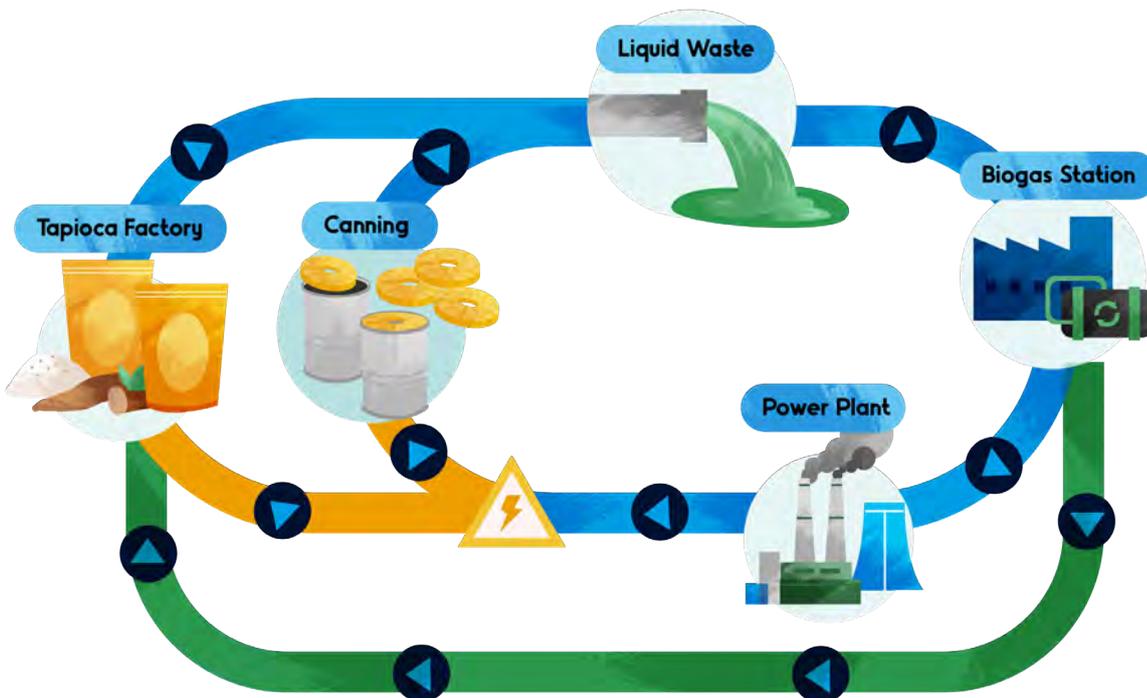
Well, it doesn't stop there, they also process animal manure into organic fertilizer for GGP pineapple plantations. In 2011, GGP invested USD 1.5 million to build a large-scale composting plant that could save composting time from 3-6 months to only a month. This effort can reduce greenhouse emissions through production efficiency (**R2/Reduce**) compared to the direct disposal of livestock manure.

GGP also processes pineapple stalks into bromelain enzyme which is the raw material for health supplements, following the **R7 (Repurpose)** strategy. GGP collaborated with Enzybel from Belgium to establish the

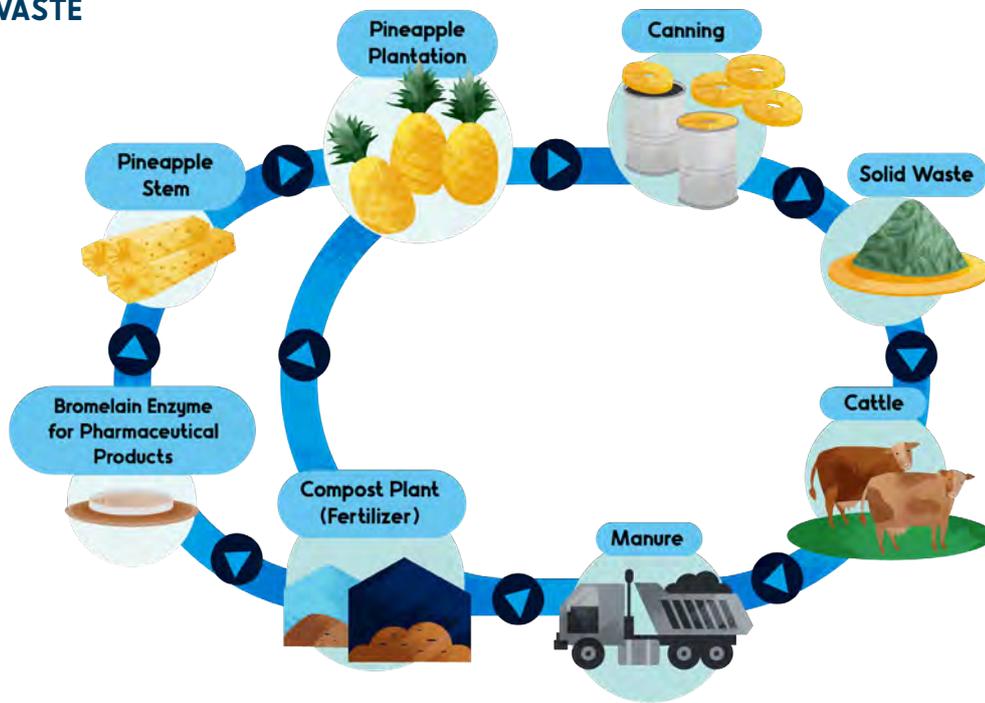
Bromelain Enzyme manufacturing company. In addition, the manufacturing process also produces stem pulp which can be composted into fertilizer for the GGP pineapple plantation.

Since 2017, GGP has also made efforts to save water (**R2/Reduce**). Water with low waste content is treated according to quality standards and then used as irrigation water in banana plantations belonging to the Gunung Sewu Group for as much as 792–800 m³/year (66 m³/hectare for an area of 12 hectares in 1 year) thereby reducing the use of underground water for irrigation.

LIQUID WASTE



SOLID WASTE



REAL IMPACT FOR SURROUNDINGS



By utilizing 90,000 tons/year of pineapple peel, GGP is able to meet the needs of thousands of animal feed and cut feed costs.



By utilizing 19,200 tons/year of pineapple stalks, GGP is able to turn waste into a new business opportunity, namely the production of Bromelain Enzyme for health supplements. This of course increases the company's revenue.



Meanwhile, 45,000–50,000 tons/year of animal manure which is processed into organic fertilizer can cut GGP expenditures for pineapple plantations.



Utilization of liquid waste through the construction of a Biogas Plant is able to reduce GHG emissions in the form of CO₂ by 36,196 tons CO₂eq in 2021. This decrease is equivalent to 86.55% of total waste emissions and 13.01% of total company emissions. With this circular intervention, GGP generates an average of 12,000 tons of CO₂eq from liquid waste emissions per year. This figure is much smaller than if GGP did not conduct circular interventions, which is an average of 52,000 tons of CO₂eq per year. So far, can you imagine, how a circular economy improves the quality of the environment?



The company was able to save 60% of tapioca flour drying costs, with savings in 2021 of IDR 6.3 billion. This significant decrease is because the price of biogas is much cheaper than HFO, and biogas has replaced 100% of HFO, with consumption of around \pm 1,000 KL/year.



The reduction in coal consumption by around 7–8% at the power plant or around \pm 7,000 tons of coal per year or equivalent to Rp4.2 billion (In 2021 it saves Rp6.35 billion) so the total savings in 2021 due to this circular economy initiative amounted to Rp11.66 billion. That's a fantastic number, huh! In 2021 it will reduce HFO by 884.54 KL, and reduce coal by 9,296.70 tons.



Reducing 40,000 tons of CO₂eq of liquid waste generated by the company.



Absorb 35 workers from around the company.

This activity also has an impact on improving the community's economy through labor absorption and development assistance as well as training on making biogas using cow dung so that the community can be independent in terms of energy and fertilizer. GGP has now developed partnerships with more than 2000 cattle breeders. GGP also supports women's empowerment through the Sustainable Food House

program, which is a program run by a group of women farmers around the company, which uses bananas with substandard specifications to make banana chips and other processed products.

By using renewable energy sources, GGP products are increasingly competitive in the global market. Nearly 60 countries that are customers of GGP products require reducing the use of fossil energy.

With circular interventions, GGP can meet customer demands so that sales and company profits increase because production costs can be reduced. Coal consumption can be reduced and even no residue (HFO) is consumed thanks to the construction of a Biogas Plant. With its circular economy initiative, GGP can assist the government in efforts to maintain national energy security and reduce GHG emissions.

IMPLEMENTATION CHALLENGE

The main challenges felt by GGP were the availability of the technology and the investment costs, including the potential benefits. In addition, GGP feels the need for support and a driving force in the process of implementing a circular economy from various parties. GGP hopes that financiers will provide

innovative funding for circular/sustainability projects, as well as government policies that encourage company efficiency.

During the pandemic, GGP experienced supply chain disruptions, starting from the scarcity of container

needs, increasing shipping costs (loads), as well as adjusting operations to the new normal. The pandemic also presents challenges for GGP to find ways to keep employees and the surrounding community safe and healthy in the face of the pandemic.

STRATEGY FOR REPLICATION

As a company engaged in the agro-industry sector, GGP continues to innovate. They use what is left as much as possible to support what is their main sector.

Through GGP, many important things are exemplary. One of them is utilizing production waste in the form of pineapple solid waste and liquid waste to be useful for other GGP business units. Not only does this reduce the amount of waste that goes to landfill, but this initiative also affects the company's production costs. This is important considering that in reality, business activities still need to pay attention to the inflow and outflow of money to ensure its sustainability. This sustainability is also not only beneficial for GGP, but also for the circular business ecosystem as a whole. The more industry players who apply this circular economy principle, the higher the standard of business operations that will be formed over time and can eventually become the direction set for other businesses.

GGP also said that to realize the enabling conditions for the circular economy initiatives carried out, they refer to the Sustainability Roadmap which is integrated into the KPI (Key Performance Indicator). GGP shows that it is important to have a good roadmap and plan, with clear targets, so that the direction of business development, especially towards economic circularity, becomes more focused. GGP also continues to actively research the potential use of food loss and biomass from agriculture following its scope of business.



17

Surplus Indonesia

Reselling the
Surplus Food

R1 Rethink

R2 Reduce

R3 Reuse

Actor: Private

Sector: Food & Beverage



Have you ever wondered: “Where will the ready-to-eat food stock go, if it’s not sold out? It’s a shame if everything is thrown away!” Surplus Indonesia is here to answer this concern.

As an anti-food waste app, Surplus provides a platform in the form of an application that connects food and beverage entrepreneurs with consumers so that unsold products can be sold quickly to customers at certain hours (happy hour) at half price.

Founder of Surplus, Muhammad Agung Saputra got the idea and concept of Surplus while he was studying for his master’s degree at Imperial College London majoring in Environmental Technology, Department of Environmental Policy. When studying environmental economics, Indonesia is often used as a case study because of its poor waste management system.

During 2000–2019, Indonesia generated food loss and waste of 115–184 kg/capita/year.⁵⁷ However, on the other hand, the stunting rate in Indonesia, which is the result of a lack of nutrition for children, is also high. For these reasons, Surplus was released in early 2020 and has now expanded its coverage area to Greater Jakarta, Bandung, Yogyakarta, Malang, and Bali.

The amount of raw food waste that cannot be processed (food loss) and food waste that is ready to be consumed (food waste) produced by one person in Indonesia, reaches 184 kg per year, or 48 million tons in total. If not wasted, it could feed an estimated 125 million people.⁵⁸

CIRCULAR ECONOMY PROGRAMS & INITIATIVES

Surplus Indonesia created an application for the process of selling edible food as a leading solution in dealing with food waste in Indonesia. Through the Surplus

⁵⁷ Studi Bappenas Food Loss and Waste di Indonesia, 2021

⁵⁸ Kajian Food Loss and Waste di Indonesia Bappenas bersama Waste4Change (2021) selama periode 2000–2019, accessed on April 5, 2022
<http://greengrowth.bappenas.go.id/pengelolaan-limbah-makanan-yang-berkelanjutan-berkontribusi-pada-pembangunan-rendah-karbon-di-indonesia/>

platform, food and beverage (F&B) vendors can sell food stocks that have not been sold out yet are still safe and suitable for consumption at a 50% discount, as expected from the **R1 (Rethink)** strategy.

The benefits of this initiative are felt by two parties, vendors and consumers. Vendors can earn additional income while reducing waste, while consumers can buy food at a lower price and reduce the rate of food waste. The registered F&B vendors also vary, ranging from MSMEs that sell home-cooked food, bakeries in shopping centers, supermarkets, and hotels, to fruit and vegetable traders who sell excess food ingredients or imperfect harvests.

Not only collaborating with F&B vendors, in 2021, but Surplus will also collaborate with Jakpreneur, an MSME development platform under the DKI Provincial Government, in the form of providing training on the potential of their excess food. In addition, Surplus also cooperates with the Small and Medium Enterprises Cooperative Trade Industry Office (PPKUKM) in establishing and realizing the “Jakarta Food Smart City”. In addition, Surplus has also collaborated with the Bekasi City Government and Yogyakarta Regional Government to realize “Bekasi Food Smart City” and “D.I.Y Food Smart City” in 2021 for the next 3–5 years.

In 2022, Surplus cooperates with the Ministry of Tourism and Creative Economy and the Ministry of Cooperatives and SMEs to realize the “Indonesia Food Smart City” program. This program was created to help hotels, restaurants, cafes, and MSMEs throughout Indonesia to prevent financial losses due to their food waste. In essence, Surplus wants to fully support food security to be achieved in 2030, in line with the G20 goals. Due to the positive impact that has been done so far, Surplus has won several international awards, such as ASEAN Best Social Enterprise Seed Grants Winner by ASEAN Foundation (2021), Digital Innovation Challenge Indonesia Winner by GIZ Innovation Factory & Adelphi (2022), and The Most Impactful Enterprise in the Asia Pacific by IIX Values (Impact Investment Exchange) (2022).

The Surplus app also supports single-use packaging reduction (**R2/Reduce**) by encouraging customers to use their lunch boxes or shopping bags when purchasing on the Surplus app with the Self Pick Up method to the store. Customers will get a 25% discount for every use of a lunch box or shopping bag from home so they are encouraged to implement the **R3 (Reuse)** strategy.

REAL IMPACT FOR SURROUNDINGS

As of the end of March 2022 or after 2 years of fighting against food waste in Indonesia, the Surplus team has succeeded:



Saved more than 10,000 servings of food.



Prevented more than 100 tons of CO₂ emissions from food waste if it ends up in the landfill.



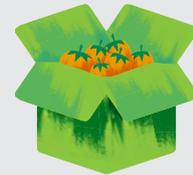
Saved 12 tons of food.



Reduces plastic use by 10% of users.



Saves the potential economic loss of + IDR 360 million.



During the pandemic, helped more than 2,000 business actors to sell excess stock/imperfect products to prevent business owners from losing USD 25,460 (approximately Rp360 million).



Benefited more than 100,000 beneficiaries in 10 cities (Jakarta, Bogor, Depok, Tangerang, and Bekasi (Jabodetabek), Yogyakarta, Bandung, Malang, Surabaya, and Bali).



Absorbs 20 workers.

IMPLEMENTATION CHALLENGE

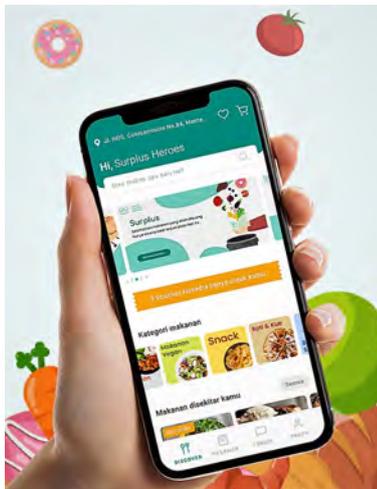
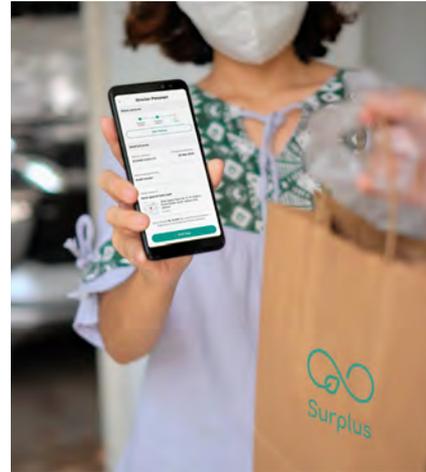
There are still not many entrepreneurs of raw materials or ready-to-eat food who are aware of the impact of food waste on the environment and the economic potential that can be felt from selling excess food. Therefore, entering its third year, Surplus is still often rejected by F&B business owners.

Regulations regarding food loss and waste (FLW) are also minimal, so no budget has been explicitly allocated for FLW reduction initiatives.

STRATEGY FOR REPLICATION

Surplus is very responsive in seizing opportunities which is also a problem in Indonesia. By utilizing technology as their application base, Surplus can reach F&B entrepreneurs and consumers more massively.

If many circular economy initiatives use waste or other unused materials to be converted into other forms, Surplus tries to take one step back and prevent waste from upstream. Furthermore, Surplus tries to dispel the view that the appearance of food raw materials affects the taste by selling raw materials with an imperfect appearance, but still very suitable for processing and consumption.



18

Garda Pangan

Channeling
Excess Food to
Those in Need

- R1 Rethink
- R2 Reduce
- R3 Reuse
- R6 Remanufacture
- R7 Repurpose
- R8 Recycle

Actor: Social Enterprise
Sector: Food & Beverage



Does anyone remember the tragedy of the Leuwigajah Landfills, Bandung which exploded in 2005? The explosion occurred due to large concentrations of methane gas trapped among the inorganic waste. Well, food waste that accumulates and is wasted contributes to large methane gas emissions. According to the United Nations, it turns out that if we stop throwing away food waste, we can reduce about 7% of the world's total GHG emissions.⁵⁹ This fact is very sad considering that there are still many people who also lack food in this world.

Seeing this fact in the field, Eva Bachtiar who has a background as a market development consultant in Eastern Indonesia is concerned. He thinks that if people continue to throw away excess food (both uneaten and unsold), climate change could accelerate. In the end, this will be

detrimental to farmers, because crop failures will occur more frequently due to bad weather. The same information was also obtained from his two colleagues, Dedhy Trunoyudho and Indah Audivtia, who are wedding catering entrepreneurs. After doing the validation, they realized that the problem was that there was no credible institution that could accommodate excess food. Therefore, they agreed to form the Food Guard in June 2017.

When it was first established, Garda Pangan was fully funded by the personal funds of its founders. However, over time, they began to open up to donation schemes, grants, and CSR, until finally, they focused on becoming a social enterprise to generate independent funds.

CIRCULAR ECONOMY PROGRAMS & INITIATIVES

Currently, Garda Pangan has two lines of activity, namely the business line (generating profit from the sale of products and services) and a non-profit food bank. The profits they generate from their line of business are used to finance their food bank operations.

For the business line, Garda Pangan offers products and services that are still related to the issue of food loss and waste. For example, by selling ugly produce or processed fruit or vegetable products whose appearance does not meet the standards so that they can still have

⁵⁹ <https://www.un.org/en/observances/end-food-waste-day/background>



use value (**R1/Rethink**). Garda Pangan also provides services for processing organic waste with maggot black soldier fly (**R8/Recycle**), making bio pores, as well as providing training, workshops, and consultations to schools, offices, and communities. In addition, they provide sustainable food handling services for companies that have a lot of food close to its expiration date. If the amount is above 500 kg per day, of course, a fee will be charged.

At the food bank, the Garda Pangan team distributed excess food to the beneficiaries. They work closely with many restaurants, caterers, bakeries, hotels, and events to collect excess food that is still fit to eat (food rescue). So far, they do not require any special criteria for the food they accept. They accept any kind of food, from ready-to-eat food, canned food, basic food items, fruit, chicken pieces, cakes, to egg whites. To ensure food is safely distributed, they perform organoleptic tests. If any do not meet the standards, the batch will not be used. Food distribution is carried out by a team assisted by volunteers. Their total team consists of 11 full-time employees, 30 core volunteers, and thousands of freelance (daily) volunteers. Before the pandemic, food distribution was done every day. Now, the division is done four times a week.

The food distributed does not only come from food rescue. They also distribute gleaned fruits, vegetables, and spices (collecting them directly on the farm). Usually, these vegetables cannot be sold in markets or supermarkets because they do not look up to standard, such as wrinkled, small, oddly shaped, overripe, or with black spots. It often happens, when the harvest season is high and prices drop drastically, farmers feel a dilemma because the selling

REAL IMPACT FOR SURROUNDINGS



Throughout February 2022, Garda Pangan managed to distribute 8,251 portions of food to 2,356 beneficiaries in Surabaya.⁶⁰



A total of 2.3 tons of potential food waste were saved (as of Feb 2022).⁶¹

Organoleptic test is an examination using the five senses. The indicators seen are from a visual perspective (whether there is a change in color or mildew), olfactory (whether there is a stale, musty, or fermented smell), and random testing (a sample is taken for direct tasting).

price of their harvest does not cover operational costs during maintenance plus harvest costs. As a result, crops are often left to rot in the fields and end up being wasted.

In their line of business (check their Instagram account at @lumbungalum!), reprocessing food ingredients into value-added products is more routinely carried out, such as the essence of the **R7 (Repurpose)** strategy. From fruits and vegetables that look ugly, they are processed into jams, fruit salads, homemade ice cream, dried products, apple cider vinegar, as well as cold-pressed juice for sale. They also sell kimchi and herbal teas. The products are sold at the Garda Pangan office and can be ordered online. In addition, some vegetables and fruits are sold whole for 20–70% cheaper. The proceeds from the sale are used to finance their food

bank activities. Their principle is, “It doesn’t matter if it’s bad or good, the important thing is that you can eat it and of course, it’s delicious and nutritious! Why bin it if you can feed people in need?”

They also have a return and refill system for the packaging of the products they sell. Consumers only need to buy the packaging once. After that, every time you want to buy again, just bring the package and it will be refilled (**R2/Reuse**). The returned glass containers will be reused after sterilization, while the plastic containers will be deposited with the managing partner. And most importantly, there is cashback for every returned container. In this way, they are trying to reduce the use of single-use plastic (**R3/Reduce**), including in every food distribution they do.

⁶⁰ Instagram @Gardapangan (https://www.instagram.com/p/CbqyFELvkGE/?utm_source=ig_web_copy_link)

⁶¹ Instagram @Gardapangan (https://www.instagram.com/p/CbqyFELvkGE/?utm_source=ig_web_copy_link)



There have been a total of 367,266 portions of excess food distributed to 25,764 beneficiaries at 155 points in Surabaya and its surroundings.



Since June 2017, they have reduced the potential for food loss and waste by 109 tons. Carbon emissions that can be reduced after this circular initiative is carried out outreach 207 tons CO₂eq.



Create job opportunities for 11 full-time employees, 30 core volunteers, and thousands of freelance/daily volunteers including vulnerable people, such as trans women or the poor, especially when they need additional manpower.

IMPLEMENTATION CHALLENGE

Garda Pangan realizes that collaboration with various parties is the key. They always maintain good relations with volunteers, partners, and the public. If you remember back when they first formed the movement, it was quite difficult to get one partner to deposit the excess food. Food loss and waste are usually considered a necessary evil in the F&B business (many F&B businesses that have SOPs must dispose of unsold food, to avoid bad possibilities). For this reason, throwing away food is considered the cheapest, easiest, fastest, and even necessary option. It takes more time

to get F&B businesses to donate/ use their excess food. Moreover, in Indonesia, there is no specific policy that regulates the use of food loss and waste. So, the challenge is how to keep them consistent on their mission and able to adapt to various conditions in the field.

Selecting beneficiaries is also a challenge. Not just anyone can be a beneficiary. When they just stood up, they had time to share on the side of the road, for example with a pedicab driver or the like. However, because they are often not on target, they have devised a new curation

strategy. Another challenge is how to deal with potential conflicts because each beneficiary area has different characteristics.

Now, the COVID-19 pandemic can be said to be a reflective moment for Garda Pangan so that they can implement business model ideas that have not been realized so far. On the one hand, the team and volunteers at the food bank have to go the extra mile because of the large amount of food distribution that has to be done to vulnerable people, and on the other hand, their business is growing rapidly.

STRATEGY FOR REPLICATION

Garda Pangan is aware that most Indonesians were raised with a passion for food, but many do not understand how to treat the excess food left in front of their eyes. So, education is indeed very important to be done consistently on social media so that more and more people are aware that if used optimally, food loss and waste can also bring #CuanLestari opportunities.

This can be replicated to any issue, not just food loss and waste. We need to learn and collaborate with those around us. Take time to sit

down together and talk about issues that are still a daily problem in the field to find the root of the problem and course, the solutions that need to be done. As has always been done by Garda Pangan: They always carry out surveys, evaluations, and changes to managerial systems and strategies regularly. For example, surveys to areas of potential beneficiaries, ranging from housing conditions and availability of food storage equipment to the demographics of potential beneficiaries (gender, age, and characteristics).

Discussions and approaches to local community leaders were also carried out to identify the target recipients so that the most effective way to distribute food could also be done. For example, if the target recipient area is predominantly Muslim, they will not bring non-halal food; or if the majority are elderly, they will also not bring food that contains too much sugar. In essence, they want the beneficiaries to be people who need the food.



19

Sejauh Mata Memandang

Recycled-Fabrics
Clothing Line

R1 Rethink

R2 Reduce

R8 Recycle

Actor: Private
Sector: Textile



Textile waste has long been a problem for the earth. Making one piece of clothing, takes a lot of water and energy. For example, to make one piece of t-shirt from cotton only, it takes 2,700 liters of water (this is equivalent to water that one person can drink for 900 days!)⁶² Not to mention that many fashion industries use chemical dyes which end up polluting rivers and seas.

The phenomenon of fast fashion, or the tendency of the fashion industry to always launch new products in large quantities and quickly to meet market trends, is not only a source of environmental problems but also social problems. Clothes that are sold cheaply are synonymous with reduced production costs. Many workers earn far below the standard and the safety of the factories where they work is also far from decent. Also keep in mind, because market trends change rapidly, there will be a lot of potential for clothes that are only worn a few times before finally piling up in the closet (or even being wasted in the landfill!)

Considering that textiles are one of the main human needs, it is important to change their production patterns to be sustainable. One company that sees this is Sejauh Mata Memandang (SMM) is concerned. All of their products belong to the slow-fashion category (high quality and durability, and the production process are ethical and environmentally friendly). Because it prioritizes the quality of the clothes produced, not the quantity, all of SMM's clothing products are made according to the needs of the customer and the ability of the craftsman.

The founder and Creative Director of SMM, Chitra Subyakto admitted that he was inspired by the natural beauty and local wisdom of Indonesia. At first, apart from liking Indonesian clothing, he realized that most of these clothes were only worn on special days, even though the kebaya could also be worn daily as a substitute for a cardigan or shirt. The research was continued until 2014, SMM was established. All of their products are full of stories and meanings that are always conveyed to their consumers.

Reporting from the Copenhagen Fashion Summit, approximately 92 million tons of textile waste is dumped into landfill each year.⁶³

⁶² <https://sustainablecampus.fsu.edu/blog/clothed-conservation-fashion-water>

⁶³ <https://www.unep.org/news-and-stories/blogpost/why-fast-fashion-needs-slow-down>



CIRCULAR ECONOMY PROGRAMS & INITIATIVES

Starting from the selection of raw materials, SMM does not use polyester which is a product derived from plastic, leather, or animal fur. Only natural fiber fabrics, such as Tencel, cotton, and linen are used. There is also a DAUR collection of leftover materials and unused fabrics (deadstock) which are then recycled. The clothing dyes used by SMM also come from plants or artificial dyes that have been certified by Oekotex Standard 100.

For wastewater treatment, SMM ensures the use of a wastewater treatment plant (WWTP) which is designed to remove biological and chemical waste from water. Also, they are trying to reduce single-use plastic packaging (**R2/Reduce**), by avoiding the use of plastic when clothes come from tailors, using cardboard and reusable shopping bags for packaging, and cloth for gifts (**R8/Repurpose**).

In line with Chitra Subyakto's enthusiasm to find out about the circular economy, in 2019 SMM was invited to take part in the Jakarta Fashion Week performance. SMM made the DAUR collection, which is an upcycled piece of cloth. In 2020, further inspiration came from collaboration with partners who talked a lot about processing leftover patchwork into new threads and fabrics (**R8/Repurpose**). SMM uses this collection made from recycled materials at the #DewiFashionKnights event which is a collaboration with Dewi magazine.

In the textile business, there must be products that are rejected, as well as SMM. They look for ways to make the products still usable, according to

the **R1 (Rethink)** strategy to utilize the product intensively, for example, if there are materials that have an uneven color during dyeing, they will use patchwork or embroidery to keep them beautiful. SMM always reprocesses the remaining production fabrics into other products (**R8/Repurpose**), such as masks, drinking bottle holders, slippers, multipurpose bags, various pillows, hats, and new clothes.

SMM is also aggressively promoting its circular practice intending to inspire more such practices. On various campaign occasions, SMM collaborated with various NGO and community partners, including Canopy, HAKA Sumatra, EcoTouch, Pable, Indonesian Plastic Bag Diet Movement, Divers Clean Action, Waterhouse Project, Dian Sasrowardoyo Foundation, BGBJ.org, Wecare.id, and Friends of the Elephant Sincere. In 2021, SMM together with EcoTouch and Pable Indonesia will hold an exhibition with the theme Sayang Sandang, Sayang Alam. Through this exhibition, SMM brings educational messages about sustainable fashion and clothing waste.⁶⁴ In the same year, SMM also held an exhibition entitled Bumi Rumah Kita and invited people to change their behavior and become an environmentally friendly community based on 4 principles, namely (1) reduce, (2) reuse, (3) recycle, and (4) renewable.⁶⁵ In these two exhibitions, SMM provided dropboxes to receive used clothes from the community for further processing by their partners. Clothing that is not fit for use will be processed into insulating fibers, insulators, sound absorbers, threads, and fabrics (**R8/Repurpose**).

REAL IMPACT FOR SURROUNDINGS



At the Bumi Rumah Kita exhibition in 2021, 68,850 pieces of clothing were collected, consisting of 37,600 pieces of suitable clothing to be donated and 31,250 pieces of clothing that were not suitable for recycling.⁶⁶



In early 2022, SMM succeeded in expanding the restoration of the protected forest area in the Leuser Ecosystem to 10 hectares (previously it was only 6 hectares).



Empowering approximately 100 workers, including partners.

⁶⁴ <https://www.liputan6.com/lifestyle/read/4503311/punya-pakaian-tak-terpakai-donasikan-ke-pameran-sayang-sandang-sayang-alam-yuk>

⁶⁵ <http://senayacity.com/view-event-id/108-sejauh-mata-memandang-gelar-pameran-bumi-rumah-kita>

⁶⁶ <https://www.instagram.com/p/CThKkycJu7P/>

IMPLEMENTATION CHALLENGE

The main challenge of QMS is to convey and convince the public that the choice of clothing can have an impact on the environment. Unfortunately, in Indonesia there are still many people who feel that the price of slow-fashion products is very expensive, so buying interest is still low. During the pandemic, purchasing power has decreased. Here the role of SMM is to convince consumers that the price is commensurate with the value obtained: quality and durable products, that can be used at all times and consumers do not need to be afraid of being out of date, plus basic materials that are already high in cost and long production processes. SMM

is always transparent by sharing stories about the long process of clothing production and other things, such as people, tools, weather, and others.

In addition, SMM had difficulty finding partners for textile waste processing, which was still limited in Indonesia. Until finally they were able to find EcoTouch, a start-up that makes sound and thermal absorbers from textile waste, and Pable Indonesia, a start-up that can make new fabrics from textile waste. The right waste treatment partner also makes used clothes donated by consumers to be used to the maximum.

STRATEGY FOR REPLICATION

Even though a fashion business does not produce even production waste, the selection of inappropriate materials can produce invisible waste, such as microplastics, wasted water, and chemicals that pollute the environment. For this reason, if we want to start a circular business in this field, we need to conduct in-depth research on materials, not only in terms of convenience or price but also in their impact on the environment.

Does the process of making material A require large amounts of water? Was material B created by involving chemicals? Know where the material comes from and what processes need to be done to make it ready for use.

Also consider using biodegradable materials, waste materials, or even recycled materials. Using minimal single-use plastic packaging and using natural dyes or artificial dyes with environmentally friendly certifications are also exemplary practices. The

waste management side must also be treated properly following existing technical standards.

In addition, the “green message” to consumers needs to be continuously conveyed, for example, so that consumers can keep their clothes durable or inform them where to deposit clothes that can no longer be worn.

An important tip from SMM to motivate consumers to buy a product (even though it may be more expensive) is that consumers need to understand the manufacturing process and what makes it different from other products. Tell the story and meaning behind the motifs and models of clothing so that consumers feel proud when wearing them so that they are also moved to care for and extend the life cycle of the clothes they have chosen.



20

EwasteRJ

Electronic Waste
Hub for Recycle

R8 Recycle

Actor: NGO
Sector: Electronic

Electronic devices are increasingly becoming an inseparable part of our everyday lives. Furthermore, the features that are presented are becoming increasingly diverse, causing many people to frequently switch between electronic objects simply for more trendy reasons. When it is broken, we frequently do not know where electronic waste is disposed of or where it goes when it can no longer be used. Many people do not know and are engaged in the field of e-waste or electronic waste, even though e-waste is included in the category of B3 waste (Hazardous

and Toxic Materials) whose recycling requires a special process so as not to harm people and the surrounding environment.

EwasteRJ, a non-profit community that focuses on the issue of e-waste management was born in 2015 as an answer to the question “Where should all this e-waste go?” After conducting surveys and research related to e-waste recycling and finding the root of the problem, EwasteRJ came up with a circular innovation of e-waste recycling through a program called Campaign. Collect. Circulate.

CIRCULAR ECONOMY PROGRAMS & INITIATIVES

Through a program called Campaign. Collect. Circulate, 2015 the EwasteRJ community has been active in educating the public about the dangers of electronic waste and how to properly dispose of electronic waste. To support this community education effort, EwasteRJ also involves the community in practicing how to properly dispose of e-waste through the EwasteRJ dropbox, a temporary electronic waste storage container. So far, there are 17 dropbox points spread across Jakarta, Depok, Bogor Regency, South Tangerang, Bandung, Salatiga, Surabaya, Semarang, and Yogyakarta.

Electronic waste (e-waste) received by EwasteRJ is electronic waste from small to medium-sized households. The e-waste that has been collected at the dropbox point is then distributed to a special manager for recycling (**R8/Recycle**), with an electronic waste manager certified by the Ministry of Environment and Forestry. To run this program, EwasteRJ spends IDR 75–100 million per year! They received financial assistance from the New Zealand Embassy. The activities carried out by EwasteRJ are voluntary so there is no economic benefit, either for EwasteRJ or for droppers.

EwasteRJ broke the record for the most collection from January–June 2021, which was 2.4 tons of electronic waste.

REAL IMPACT FOR SURROUNDINGS



Through public education programs, EwasteRJ has reached 30,000+ people regarding the issue of electronic waste.



A total of more than 7 tons of electronic waste have been collected, since 2016 to be recycled by certified/official recyclers.



Absorb 10–20 workforce consisting of core team, agents, and volunteers.

IMPLEMENTATION CHALLENGE

According to EwasteRJ, public awareness of B3 waste, especially electronic waste, is still lacking, so few people are willing to voluntarily collect the e-waste they produce. They prefer to store their e-waste at home or even sell it to flea dealers who do not necessarily have access to official e-waste recycling. Regulations related to e-waste and its supervision are still minimal, it is also felt that they still do

not support the improvement of these conditions.

During the pandemic, EwasteRJ had closed collection points several times when COVID-19 cases were on the rise. This is due to a recycling company partnered with EwasteRJ which had reduced the intensity of e-waste collection, causing a build-up of e-waste in the warehouse.

STRATEGY FOR REPLICATION

The scheme carried out by EwasteRJ is quite simple, the principle is almost the same as a waste bank that coordinates the sorting of waste to be then deposited to the recycler. Dropbox activities or establishing a waste bank can be carried out by anyone who has the capacity, both individually and collectively. Taking a peek at the EwasteRJ initiative, anyone can join their movement to distribute e-waste more responsibly.

EwasteRJ is also open to anyone who wants to provide a place to be one of their dropbox points, including in the area around you! With this policy,

EwasteRJ can create a more even distribution of dropboxes, not only concentrated in certain areas. Indirectly, EwasteRJ underlines that we as a society can also move to do what we can to avoid accidents to the environment and other living things that live in it, without having to wait for policymakers or those sitting in government ranks first. This includes separating and donating personal electronic waste to a dropbox which is intended for certain types of waste so that the processing can be adjusted according to the characteristics of the waste.



21

Ijen Restaurant, Desa Potato Head, Bali

Zero Waste
Concept
Restaurant

R2 Reduce

R7 Repurpose

R8 Recycle

Actor: Private

Sector: Food & Beverage



Ijen Restaurant is known as a seafood restaurant with a “zero waste” concept. This restaurant system has an environmentally friendly concept and puts forward the principles of a circular economy in terms of building and furniture design, cooking techniques, and waste management. Ijen is part of Potato Head Village located in Seminyak, Bali.

Potato Head Village itself is a creative village complex that includes a hotel, beach club, shop, workshop center, gym, art gallery, and restaurant. Ronald Akili, the founder of Potato Head, had the idea of making his business environmentally friendly while surfing in Bali. While he was surfing, suddenly a wave rolled over him, which contained a lot of plastic waste.

He immediately thought that there must be a solution to the problem of garbage in the sea. Ronald realized that there were many interacting parties in a business ecosystem, such as suppliers, staff, consumers, stakeholders, and other partners which is collected and accumulated could reach tens of thousands.

He also had the idea of using his business in the hospitality industry not only to serve visitors but also to inspire them so that they can spread the good message around the world. This then motivated Ronald to develop a business unit that could at the same time become a driving force, inspiration, and provide solutions to environmental problems.

CIRCULAR ECONOMY PROGRAMS & INITIATIVES

This circular initiative starts with the selection of raw materials. The Ijen team ensures that the supply of raw materials comes from suppliers who implement sustainable production and minimal waste, following the **R2 (Reduce)** strategy. The creation of food menus is attempted to use all parts of the food ingredients, for example, vegetable scraps are reprocessed into a pasta mixture,

bones are reprocessed into bisque or thick soup, pieces of croissant dough are made into bread, fish scales, and fins are made into furikake or crackers, or withered herbs are processed into oil. Used oil is not wasted, but is reprocessed into candles or donated to Green School to be used as fuel for children’s school buses (Bio-Bus Program), a form of implementation of the **R7 (Repurpose)** strategy.



Once maximized, the remnants of food waste that can no longer be created further are used as animal feed or composted (**R8/Recycle**). The Ijen team separated the soft shells (crab and shrimp) from the hard shells (scallops and oysters); the latter is ground and added to the mixture of recycled ornament-making materials. The soft shells are baked overnight in the oven to produce compostable ashes. In this way, all the organic waste produced is managed completely. Meanwhile, all dry waste (bottles and cans) is recycled.

To develop creative ideas aimed at minimizing waste, Potato Head created the Sweet Potato Lab, a research and development workshop program that can be visited by guests, school students, and the local community to see and learn how Potato Head processes plastic and other waste into new materials. (**R7/Repurpose**). In this lab, Potato Head makes most of the recycled ornamental items, such as table decorations or candle holders from cut-off wine bottles, candles from used cooking oil, and furniture decorations from leftover shells.

IMPLEMENTATION CHALLENGE

When starting this business, the main challenge faced Ijen was finding vendors and suppliers who were willing to reduce single-use plastic waste. An educational process is needed to ask vendors to use banana leaves as packaging. The Ijen team also invests in and buys reusable container boxes for vendors to refill every shipment of goods. By implementing this minimal waste practice, vendors then get other

REAL IMPACT FOR SURROUNDINGS



Not sending waste at all (0%) to the Final Processing Site (Landfills) in their daily operational activities.⁶⁷



Collecting used cooking oil is an average of 400 liters per month, of which 150 liters are made from candles and the rest is collected by the Green School to make biodiesel.



All organic and inorganic raw materials can be utilized and further managed circularly.



Currently, we have collected and measured together all the waste from all F&B outlets and Public Areas in Potato Head Village. 2,714 kilograms of garden waste and 561 kilograms of brown tissue are used as compost, while the amount of inorganic waste is 2,566 kilograms.



928 kilograms of plastic waste was collected from the Beach and Mangrove Clean Up event in December 2021 where Potato Head participated in it.



Absorbed about 30 workers before the pandemic and reduced to 15 during the pandemic.

benefits because they get orders from parties who also want to reduce waste in their supply chains.

The COVID-19 pandemic is also a formidable challenge for Ijen as a business that has been heavily impacted. In addition to affecting the number of visitors, Ijen must think of solutions for the waste generated from the health protocols, such as disposable masks, tissues, and

disposable straws. To overcome this, Ijen provides a special trash box to accommodate disposable masks and sends them to the special medical waste manager. As for avoiding tissue waste and straws, Ijen chose not to provide straws. If requested, Ijen will give you a bamboo straw. Hand sanitizer and hand soap also use the refill method so that packaging waste is minimized.

⁶⁷ Hasil interview tim Ijen

STRATEGY FOR REPLICATION

Ijen's practice of sorting and processing waste can be imitated by various types of business activities. Sorting waste can be started simply by separating organic and inorganic waste. In Ijen, waste is separated into 5 categories, namely: (i) for animal feed; (ii) sent to Sweet Potato Lab for wax and upcycled items; (iii) which is made into compost; (iv) made into charcoal; and (v) for recycling.⁶⁸

If successfully implemented, efforts to achieve a circular system like this can generate financial benefits, such as Ijen which can save costs on decoration needs while attracting customers who want to learn more from what Ijen has done through various workshops at the Sweet Potato Lab.



⁶⁸ Ijen interview







CHAPTER 05

**LET NOTHING
BE WASTEFUL**

When we hear the word waste material, the first thing that comes to our mind must be something that must be discarded, no longer useful, or can even pollute the environment, become a source of disease, and have other bad connotations. You must also imagine, plastic waste, vegetables, and fruit scattered in markets, roads, rivers, trash cans, and even the landfill which has mountains and is infested with flies.

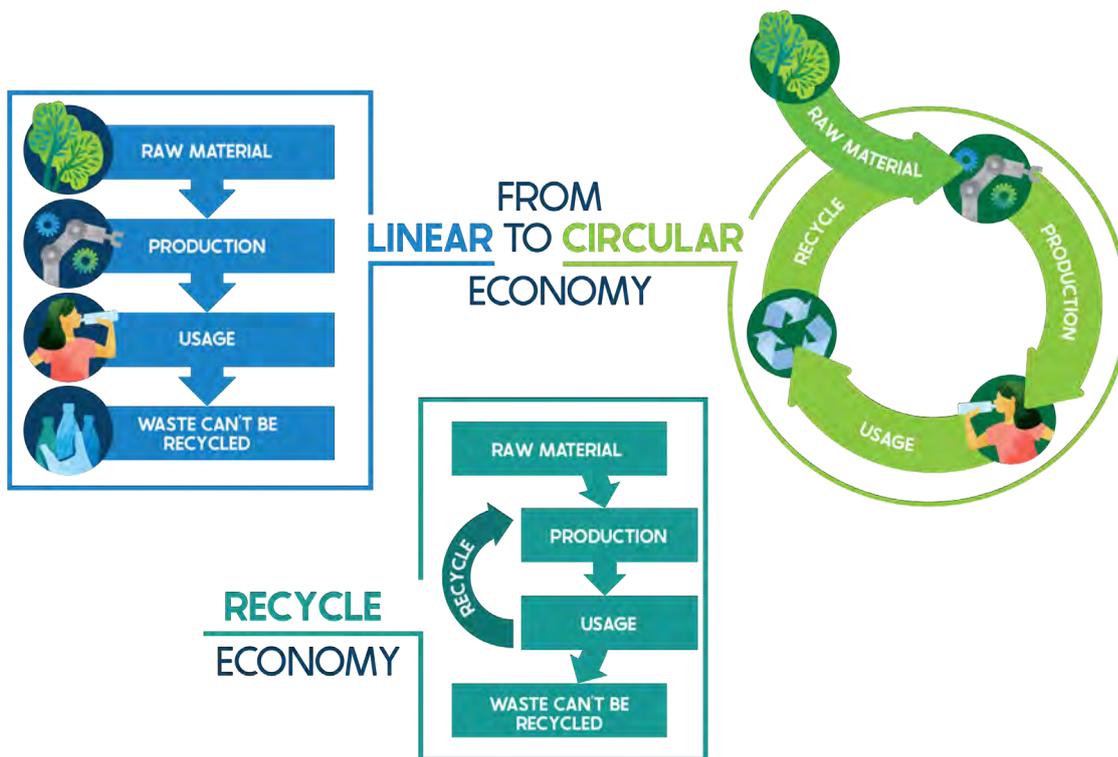
For people who consider waste material as something that is no longer useful and disturbing, the leftover material certainly becomes waste that will be immediately disposed of. They will think that the sooner the garbage is removed and removed from the surroundings, the better it will be for them. However, not a few people also think that the leftover material is an opportunity. Especially for the

scavengers who depend most of their lives on it, it is certain that it will be considered an income opportunity, a blessing to meet their daily needs. Not only scavengers, nowadays many creative economy actors see leftover materials as a promising business opportunity.

Taken from Law no. 18/2008 concerning Waste Management, waste is indeed defined as the residue of human daily activities and/or natural processes in solid form. From the data on Indonesia's waste generation in 2021 published by the Ministry of Environment and Forestry, from 206 districts/cities throughout Indonesia, 22.9 million tons of waste were generated. Well, of the total waste that much, it turns out that there are still 35% of it that is not managed. Still, quite a lot, although in the previous year there was a reduction of 14.1%.

Therefore, to continue to maximize the reduction of waste generation in Indonesia, the government emphasizes that all business people apply the principle of a circular economy.

Following the principle of a circular economy, the term waste is actually unknown. What exists is a product that is produced after and during the production process and can be reprocessed into a product and so on. So, the circular economy not only maximizes the cycle of material use to reduce waste (zero waste) but also generates additional benefits or blessings for managers. Let's look at the perspective of 'waste' in the principles of a linear economy, a recycling economy, and a circular economy, in the picture below, let's go!



There have been many initiators whose businesses and activities depend on the benefits of waste materials. The idea for this business came from their concern for the environment and was inspired by the principles of a circular economy that is already worldwide. To more clearly understand the concept of blessing opportunities from waste materials through a circular economy, let's look at the stories of the government and business people in Indonesia who take advantage of the opportunities of blessings from leftover materials, in line with the fifth circular business model, namely **Resource Recovery**.

22

PT Industri Jamu dan Farmasi Sido Muncul Tbk

Utilization of Production Dregs into Biomass, Organic Fertilizers, and Essential Oils

R2 Reduce

R8 Recycle

R9 Recover

Actor: Private

Sector: Food & Beverage



During the COVID-19 pandemic era, the term 'empon-empon' (rhizome spices) became a hit because it was believed to have properties to increase the body's immunity. Empon-empon and other herbal products are alternative prevention against COVID-19. For Indonesians, "Remember herbal medicine, remember Sido Muncul", one brand that immediately pops into your head.

Sido Muncul's herbal medicine industry was started in 1951 as a cottage industry with 3 employees. The founders of Sido Muncul, Mr. Rakhmat Sulistio and his wife, who are skilled at concocting herbal medicine, produced the Seven Angin brewed herbal concoction which we now know under the trade name Tolak Angin. The Tolak Angin concoction was formulated directly by Ms. Rakhmat in 1940.

After going through a cross-generational journey, Sido Muncul has now transformed into a modern herbal medicine industry under the name PT Industri Jamu dan Farmasi Sido Muncul Tbk from the previous form of a CV.

Until now, Sido Muncul has produced more than 300 types of products which include traditional herbs, food,

and beverages, medicines, herbal products, supplements, and vitamins, as well as essential oils. Almost all Sido Muncul products are made from local raw materials, except for a small number of raw materials that do not exist in Indonesia (eg red ginseng, vitamins, creamer, taurine, citric acid, and others). Sido Muncul always ensures the quality of the materials supplied through a series of standard assessments, audits, and supplier guidance.

It was recorded that throughout 2021, Sido Muncul's net profit was IDR 1.26 trillion, which means an increase of 35% from the previous year. With 104 distribution points throughout Indonesia, Sido Muncul's sales grew by 20.6% from the previous year to Rp4.02 trillion. They have successfully exported their products to many countries, including the Philippines, Malaysia, Cambodia, Singapore, Brunei Darussalam, Taiwan, Hong Kong, Japan, the United States, Saudi Arabia, and the surrounding Middle East countries, as well as Nigeria and other West African countries. Although currently, Sido Muncul's export contribution has only reached 4% of its total income. In 2022, Sido Muncul targets export sales to increase to 5-7% of total revenue.⁶⁹

⁶⁹ Sido Muncul Sustainability Report (2021), pages 4 and 29, <https://investasi.kontan.co.id/news/analisis-optimistis-kinerja-sido-muncul-sido-menguat-di-tahun-2022-ini-penopangnya>



In doing business, Sido Muncul continues to play an active role in encouraging farmers to be involved in the supply chain while helping farmers implement sustainable farming practices following Sido Muncul policies. The real action has been manifested in the Partner Farmer program with the concept of Creating Shared Value (CSV) since 2000. Currently, there are eleven assisted partner farmer groups consisting of more than 1,757 farmers spread over 8 districts in Central Java and 1 district in Central Kalimantan.

The purpose of this collaboration with the farmers of medicinal and herbal plants is to meet the supply needs of raw materials while at the same time improving the welfare of the community through local wisdom that is continuously maintained. Two of the sustainability practices promoted are agriculture based on balanced organic fertilizers and the use of micro-hydro power plants. Sido Muncul also cares about community issues so many programs are oriented to community care, such as capacity building, empowering women, creating job opportunities, health and disaster assistance, infrastructure development, and developing tourism potential. The Sido Muncul CSR program has succeeded in reaching more than 16,000 beneficiaries throughout 2021.

As a company that has been operating for a very long time - almost a century! Sido Muncul has received many awards for its contributions to the health sector. Innovation according to the times and concern with other aspects, including sustainable environmental management has led Sido Muncul to win PROPER Gold from the Ministry of Environment and Forestry (2020 and 2021), Green Industry Level 5 from the Ministry of Industry (2017, 2018, 2019, 2021), Best Of The Best Awards in the category of The Top 50 Listed Companies (2021) from Forbes Indonesia, and many other awards.

CIRCULAR ECONOMY PROGRAMS & INITIATIVES

Sido Muncul continues to strive to apply the circular principle in its various operational activities, such as the installation of an absorption chiller facility when constructing a new building for the Internal Medicine Liquid 2 (COD 2) production facility so that its electricity consumption is only 37.5% compared to a conventional chiller (**R2/Reduce**). This cooling system uses heat energy to drive the generator. Interestingly, the heat source needed comes from a steam boiler made from solid waste in the form of herbal waste from the extraction process which is used as biomass! In addition, the herbal waste is also processed into organic fertilizer (**R9/Recover**) which will be used by fostered partner farmers as part of the Rice Inspiration Village program.

To reduce the amount of other solid waste (**R9/Recover**), Sido Muncul also produces essential oils that utilize ginger dregs through the distillation process. With this distillation machine facility, Sido Muncul produces other essential oils, such as citronella, clove oil, nutmeg oil, and patchouli oil (**R9/Recover**).

IMPLEMENTATION CHALLENGE

For companies that are committed to implementing the principle of sustainability, all aspects must be considered, from the product supply chain to the finished product. This principle is also continuously applied by Sido Muncul to ensure the supply of herbal plant raw materials remains of high quality, inclusive, and sustainable. The role of farmers is very important to maintain crop quality. The next challenge is to determine environmentally friendly packaging that can also maintain the quality and food safety of herbal supplement products. This requires the development of research regularly and continuously as well as collaboration with other

Sido Muncul is actively conducting water conservation efforts through the construction of several shallow infiltration wells and deep infiltration wells in the factory environment, so that rainwater can be absorbed back into the ground. To save water use, Sido Muncul reuses return steam water condensate (**R8/Recycle**) and builds an artificial lake sourced from pond water for watering crops and irrigating local communities' agriculture. In addition, essential oil distilled water is also used as an additional aroma in the Herbal Steam Chamber.

To reduce the B3 waste of used oil from the use of blower machines, Sido Muncul changed the gear road blower, which originally used two gear roads to only one (**R2/Reduce**). This innovation can reduce used oil waste in regular maintenance programs by 0.26 tons per year. Sido Muncul also processes sludge from the Wastewater Treatment Plant (IPAL) into fertilizer (**R8/Recycle**). Since 2020, Sido Muncul has created a Go Sample digital application to reduce paper use in the R&D Unit (**R2/Reduce**).

institutions, such as universities and packaging suppliers.

One of the other challenges faced due to the COVID-19 pandemic is policy changes that adapt to conditions and respond to customer needs, such as accelerating digitization. This is done based on the observation that most consumers switch to online shopping patterns. Through this policy, Sido Muncul strengthens online sales channels to reach a wider market so that immune supplement products, which are innovations to adapt to the COVID-19 pandemic that is hitting our beloved country, are easier to recognize and obtain.

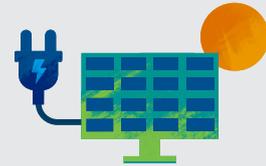
REAL IMPACT FOR SURROUNDINGS



In 2021, absolute energy efficiency will reach 133,671 GJ, which means an increase of 24% compared to 2020 which was only 108,128 GJ.⁷⁰



The intensity of non-B3 waste is 6.6 tons per tonne of production volume in 2021, down 18% from 8.0 tons per tonne of production volume in 2020. In 2021, the absolute result of reducing non-B3 waste is equivalent to 259,279 tons.



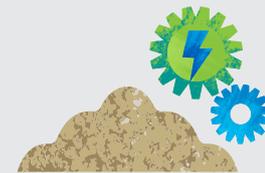
In 2021, Sido Muncul installed a Rooftop Solar Power Plant (PLTS) at the main production facility at the Semarang factory. This 2,000 kWp PLTS Rooftop started operating in 2022 and has the potential to reduce carbon emissions by up to 1,980 tons per year.



The intensity of electricity use from the PLN network for the production process is 0.55 GJ per tonne of production volume in 2021, down 17% compared to 2020.



The intensity of B3 waste is 0.00024 tons per tonne of production volume in 2021, down 7% from 0.00025 tons per tonne of production volume in 2020. Sido Muncul has made several initiatives that helped reduce the generation of B3 waste by 3.82 tons in 2021.



The proportion of herbal medicine waste biomass usage increased by 5%, to 49% in 2021, compared to 2020 at 44%. Now, herbal waste biomass is the main energy supplier (49%) for factory operations, followed by electricity (35%) and fossil energy (diesel and Compressed Natural Gas, 18%).



GHG emissions in 2021 in the factory environment are 14,896 tCO₂e, a 6% decrease compared to 15,792 tCO₂e in 2020, while the GHG emission reduction initiative provides an absolute result of 13,266 tCO₂e (or an increase of 22% from 2020).



Paper waste reduction with the Go Sample application reaches 1.1 tons per year.



The water reserves obtained from all infiltration wells can reach around 112,142 m³.



Absolute water efficiency in 2021 will reach 86.8 megaliters, up 37% compared to 2020.

⁷⁰ Sido Muncul Sustainability Report (2021), page 15.

STRATEGY FOR REPLICATION

Indonesia has the potential for many varied spices. This potential can continue to be explored to be utilized through the creation of products with high economic value. Sido Muncul's cross-generational journey can serve as an example, that changing times must be answered with changes for the better. Technological progress is an opportunity to continue to innovate to create new products, maintain product quality, and develop responsible production processes from upstream to downstream, such as Sido Muncul which utilizes the potential of residual production waste into new products that are useful and have high selling value.

In essence, we need to be observant to see the value of the benefits of all the things around us. Don't forget to keep updating your knowledge, especially regarding technology that is environmentally friendly, low in emissions, and minimal in waste or utilizing waste.



23

Beli Jelantah

Management of
Waste Cooking Oil
into Renewable Fuel

R9 Recovery

Actor: Private

Sector: Wholesale & Retail



In addition to the frenzied price tag, the issue of cooking oil exists in the remaining oil, namely used cooking oil. With the coverage of the wastewater management system which is still low in Indonesia, it is appropriate to ask, where is the waste cooking oil (estimated at up to 1.1 million tons/year) is disposed to?⁷¹

Used cooking oil does not include hazardous waste, but it must be managed properly because if it is disposed of carelessly it can contaminate rivers and seawater, as well as soil.

In the eyes of this start-up, used cooking oil can be a business

opportunity. Beli Jelantah, a start-up that distributes used cooking oil, partners with a cooking oil processing center to convert used cooking oil into biodiesel. Beli Jelantah also supports four points of the Sustainable Development Goals (SDGs), namely 7 (Clean and Affordable Energy), 8 (Decent Work and Economic Growth), 12 (Responsible Consumption and Production), and 13 (Climate Action) by acting to reduce the risk of river and sea water pollution due to wasted cooking oil waste. This initiative also prevents the negative impact of used cooking oil on health.

CIRCULAR ECONOMY PROGRAMS & INITIATIVES

Beli Jelantah collects used cooking oil supplies from various hotels, restaurants, the food industry, and resident houses around the Jakarta, Depok, Tangerang, South Tangerang, and Bekasi areas. Beli Jelantah is also active in inviting residents to exchange their used cooking oil for necessities, as well as educating them. The goal is to increase public awareness regarding the dangers, opportunities,

and potential of used cooking oil.

This used cooking oil is then distributed to Beli Jelantah partners who are the biodiesel producing companies with International Sustainability & Carbon Certification (ISCC) certification. This biodiesel can then be used as a fuel, as would be expected from the **R9 (Recovery)** strategy. The reason that used

⁷¹ Executive Director of the Indonesian Vegetable Oil Industry Association (Gimni), Potential as an energy source. Indonesia has wealth in the form of used cooking oil. <https://newssetup.kontan.co.id/news/berpotensi-sebagai-sumber-energi-indonesia-memiliki-kekayaan-berupa-minyak-jelantah>, accessed on 9 April 2022



cooking oil is reprocessed into biodiesel is because the emissions produced by cooking oil are much lower than fossil fuels.

In addition, this start-up also often conducts community and company training in the management of used cooking oil into biodiesel, soap, or aromatherapy candles. The example of empowerment in the form of capacity building and education to the community can be seen in Kotamu Community, Ciputat Tangsel, and Taman Baca Ainiyah, East Jakarta. Beli Jelantah also has the intention to make innovations in the form of ready-to-use goods made from used cooking oil.

IMPLEMENTATION CHALLENGE

The team also encountered challenges in finding a business model for the sustainability of their pro-environment business. This challenge also includes building an efficient pick-up operation system, which can accommodate the needs of all users (communities, restaurants, cafes) because in general, the volume of community cooking oil per user is quite small.

Educating the producers of used cooking oil regarding the dangers of used cooking oil to the environment and health is also not an easy thing because people are very accustomed to throwing used cooking oil instead of collecting it.

The business model that distributes used cooking oil from the commercial and household sectors for reprocessing is essentially dependent on external parties. Therefore, when there are certain situations, such as a pandemic, for example, the commercial sector activities that have slowed or even stopped have an impact on the sustainability of the Beli Jelantah Business.

STRATEGY FOR REPLICATION

Buying used cooking oil applies incentives in the form of necessities, ranging from rice to new cooking oil for those who are willing to collect and distribute used cooking oil. This approach is quite strategic, considering that the majority of community still needs to be lured by rewards to be willing to contribute to the good of the environment.

The types of incentives offered are also right on target, namely new cooking oil and several types of necessities such as dish soap, bath soap, eggs, and rice, which are essential in the household. With the implementation of incentives and the selection of the right form of incentives, the level of supply in a similar business model can be more maintained.

REAL IMPACT FOR SURROUNDINGS



So far, more than 2,000 households have deposited their used cooking oil into Beli Jelantah.



Collect 213,603 liters of used cooking oil so that it does not pollute the environment.



Beli Jelantah has succeeded in reducing 567,756 kg of carbon emissions while saving around 213,603,000 liters of water from pollution.



Provide economic benefits of more than 1 billion for used cooking oil producers, including communities, communities, waste banks, restaurants, cafes, and hotels during 2 years of operation.



Can absorb 3 new workers.



Earned more than IDR 500,000,000 in revenue for 2 years of operation with a gross margin of 46%.



24

Octopus

Multi-Stakeholder
Cooperation to Empower
Scavengers and Reduce
Plastic Waste

R8 Recycle

Actor: Private
Sector: Other



In contrast to used cooking oil, which may be less heard, plastic waste is well known for its impact and scale in environmental pollution. Octopus is one of the solutions to do something more about our plastic waste.

Octopus is an application platform for collecting used plastic packaging waste for recycling, which has been established in 2018. As a multi-stakeholder application that supports the supply chain in the recycling business, Octopus invites people to directly address the problem of waste from their homes (by sorting and collecting plastic waste), to be picked up by scavengers and deposited at the checkpoint.

Mostly, those who initiated Octopus have no environmental background at all, but IT (Information Technology). Therefore, they have no experience on the environmental problems from the field. However, because they continued to find out (had done manual waste trading as well) and their colleagues who had ten years of background in FMCG were quite familiar with supply chains, they realized that there were many problems in the supply chain of the recycling industry. For example, recycling facilities have difficulty finding materials to recycle; for scavengers to collect just 1 kg of waste every day are already difficult; the price per kilogram is often determined by the collectors so scavengers who do not agree have to look for other collectors; goods

are often mixed with scraps of iron so that prices at collectors are higher; when at the collection center, there is often unfair competition between certain individuals who can play around with prices; and for incoming goods, it is often not possible to check how many packages were rejected. These problems make them try to find a way out of this situation.

This is also what makes Octopus different from other applications. Octopus is not just a garbage collection application, but a supporting accelerator that sees and becomes a solution for all stakeholders related to the plastic waste recycling industry. The three main Octopus stakeholders currently are users, scavengers, and waste banks/checkpoints.

Octopus makes it easy for people to sort out plastic waste from their homes. They can contact Pelestari, the name for scavengers who have joined the Octopus network, through the application. The collected plastic waste will be picked up by Pelestari. Currently, Octopus is already in Bali, Bandung, and Makassar. They have also collaborated with various large companies, such as Kimberly Clark, Danone-AQUA, Tjiwi Kimia, and P&G to recycle plastic packaging waste from these companies.

CIRCULAR ECONOMY PROGRAMS & INITIATIVES

Octopus changes the stereotype of people we know as scavengers who are very attached to negative or dirty images. Octopus empowers scavengers so they can receive the direct benefits from the waste they collect. All Octopus Pelestari already have their bank and insurance (BPJS – social security administrator of Indonesia) accounts and have attended training, starting from how to use the application, the ethical services, as well as recognizing the recyclable materials in packaging or products.

Octopus Pelestari also come from various backgrounds, not only scavengers, but also housewives, online motorcycle taxi drivers, students, and even the unemployed.

In the Octopus business, the purchase price from the checkpoint for the scavengers is higher than the market price. Waste counts are also carried out per unit of pcs, not per kg.

Octopus collects PET plastic waste, multilayer sachets, pouches, and used baby diapers from consumers' homes. Consumers who exchange trash will get points that they can later exchange into merchant vouchers, credit, or data packages. The waste will be handed over to recycling partners (R8/Recycle). They work closely with the Provincial Government (Pemprov) of West Java. Furthermore, multilayer sachets and pouches are processed into paving blocks which will later be used for the construction of public spaces managed by the

West Java Provincial Government. Octopus is also working with PT Semen Indonesia's Refuse-Derived Fuel (RDF) to process the inorganic waste.

The unique thing that Octopus noted during this pandemic is that more and more people are finally able to sort out their waste at home. Before the pandemic, people used to have outdoor activities, and the garbage was naturally thrown anywhere it was not visible to their eye. However, during the pandemic, people frequently shop online, and garbage accumulates at home. They believe that now is the right time to reboot their lifestyles.

Sachet and multilayer packaging waste is a type of plastic waste that is often rejected by waste banks. In Indonesia, this type of waste accounts for 16% of the total plastic waste, or about 768,000 tons per year.⁷²

REAL IMPACT FOR SURROUNDINGS⁷³



It already has more than 2,000 garbage collection points.



Lowering more than 80% carbon footprint.



Empowering Pelestari, 52% of whom are women.



They have managed to collect 60–80 million pieces of waste per month and they are targeting the end of the year to be able to manage 1 billion waste.⁷⁴



Raising the standard of living for conservationists, one of which earns up to IDR 10.4 million in one month.



Successfully recruited 3,000 new Pelestari in Bali who were former hotel workers who lost their jobs due to the pandemic.

⁷² <https://www.no-burn.org/investigation-reveals-unilevers-expensive-plastic-sachet-chemical-recycling-failure>

⁷³ <https://www.octopus.co.id/page/impact>, accessed in March 2022, and interview

⁷⁴ Promote Waste Recycling Through Octopus Indonesia Start-Up - POWER BREAKFAST, <https://www.youtube.com/watch?v=qFgQ6gg52Zg>

IMPLEMENTATION CHALLENGE

Because it works in a multisectoral manner, Octopus faces challenges everywhere. For example, in terms of Pelestari, in the early days, up to 50% of the waste was rejected because it was dirty. This figure is far from the desire that 100% of waste is accepted for recycling. Therefore, at this time all Conservationists must attend training first. From the perspective of the community or “waste producers”, the habit of sorting waste is not an easy thing, coupled with sorting plastic waste so that it does not get dirty, exposed to oil, or exposed to other organic waste that makes its value lower.

In addition, there was a problem when they worked with Kimberly Clark to recycle used diapers. At that time they collaborated with a recycling facility in Bandung. The problem is that the facility’s monthly capacity of 30 tons is much higher than the incoming supply, which is only 4–5 tons. When there are adequate recycling facilities, it turns out that there is very little input of waste to be recycled. This means that there are problems in the supply chain, especially in the collection system that does not work well. However, in the end, the problem was resolved through the collection system from the Conservancy. Diaper waste is deposited at the checkpoint, then recycled into paving blocks which are finally used in Bandung. The collaboration went smoothly and Octopus succeeded in transforming a product that initially had no use value into a product of high use value.

STRATEGY FOR REPLICATION

The problem of plastic waste is still and will be a big challenge for all of us. From Octopus we can see that this challenge can become an opportunity if it is managed properly. Innovating with this opportunity is supported by mature collaboration between parties. We need to jointly prepare the time and effort to research and find out the challenges that exist in each stakeholder so that the innovation is effective and on target.

Dare to innovate is also something we can learn. With so many ecosystems and actors in the field of waste management, Octopus can come and provide interesting solutions for the parties involved in the ecosystem.



25

RawhausPrefabricated
Micro House

R2 Reduce

R8 Recycle

Actor: Private

Sector: Construction



Living in a micro-sized house is starting to become a trend, especially because of the problem of limited land in urban areas. This trend gave rise to the tiny house movement, which is a social movement that promotes simple living in tiny houses. Introducing, Rawhaus, the first zero waste high-performance microhouse in Indonesia which has been established in 2018.

Although built from recycled materials, this house owned by Rawhaus remains durable, termite-resistant, and earthquake-resistant, making it suitable for areas of Indonesia that are still prone to earthquakes. The construction was made in such a way by the co-founder of Rawhaus, Cassandra Sari Damayanti, with her small team of architects, urban designers, and contractors.

Cassandra's anxiety to see the garbage from construction activities that were piling up, and the desire to contribute according to her expertise became the inspiration that eventually gave birth to Rawhaus. Cassandra's

decision became even more unanimous after talking with fellow architects, namely Rendy Aditya who is also the founder of recycling and waste management Parongpong RAW Lab. Eventually, the two teamed up to build and run Rawhaus.

The name Rawhaus itself was chosen to resemble the word 'Bauhaus', a movement that was popular in the 19th century when design and architecture responded to industrialization and mass production. Art turns out to be functional and can be used to respond to the problems of the times, such as the spirit that is upheld by Rawhaus.

This innovation and environmental perspective led Rawhaus to become the best of the best Mandiri Young Entrepreneur 2020 winner in the business plan category and Winner of Good Design Indonesia 2021 in the Personal Residence/Small Apartment category. If you want to make Rawhaus your residence, you can start by taking ownership of the land as a first step.

"As an architect, designing micro homes allows me to think about the relationship between humans and nature in new ways, and even helps define the future of housing."

- Cassandra Sari Damayanti, co-founder of Rawhaus



CIRCULAR ECONOMY PROGRAMS & INITIATIVES

You know Styrofoam, right? Polymer materials that are widely used for food packaging are also a contributor to toxic and difficult to decompose waste. Styrofoam is one of the most common wastes found in Indonesian seas. This unpleasant existence made Cassandra look at Styrofoam waste to be used as a building material called B-panel to support the circular economy.

*Styrofoam takes 500
- 1 million years to
decompose.⁷⁵*

B-panel is a building system consisting of reinforced concrete panels covered with B-foam material, both B-panel and B-foam are made by PT Beton Elemindo Putra. B-foam comes from 100% recycled Styrofoam-type waste, namely recycled expanded polystyrene (EPS).

In addition to reusing the results of recycling unused waste according to the R8 (Recycle) principle, the house from Rawhaus is also designed to be easy to assemble and disassemble if at any time the occupants decide to renovate or move house. Thus, the life cycle of the materials used is getting longer and the process of demolishing buildings which will eventually leave debris is unnecessary (**R2/Reduce**). The finished Rawhaus building structure can be moved to a new residential area to minimize costs in the manufacturing process.

Not only environmentally friendly in terms of building materials but Rawhaus's eco-design concept is also reflected in the features of processing and recycling water and waste independently. The roof design of Rawhaus is also designed to easily accommodate rainwater (rainwater harvesting) which is then filtered and stored in water reservoirs for reuse (**R3/Reuse and R8/Recycling**) in the garden area. Used water from faucets or showers goes through a gray water treatment process and Bio septic tanks are also used by each Rawhaus house, where sewage from the toilet will be treated simply before being released into the environment so as not to pollute the water and soil.

Its micro size with a template of 3x3 meters applies this multiple to maximize the function of the land as best as possible, including leaving outdoor space for urban gardening or other purposes, in order to improve the quality of life for homeowners.

In November 2021, Rawhaus collaborated with the Regional Government of Bone Bolango, Gorontalo province in building the SiSa House (Garbage Shelter House) as part of the #Paredice program, which is an educational program as well as waste reprocessing. This program also collaborates with several other collaborators such as Lingkar Temu Kabupaten Lestari, Evo&Co, Parongpong RAW Lab, Divers Clean Action, and Carbon Ethics.

Interestingly, the SiSa House was built by residents who had no basic knowledge of architecture and

building construction at all. Even with this lack of knowledge, Rumah SiSa was completed in just 10 days. All thanks to the prefabricated method and the modular cutting list or the method of sending the size and shape of the panels according to the design drawings, thus increasing the speed of the construction process and making it easy to delegate even to the layman.

After the construction was completed, the SiSa House was used as a waste recycling center facility for the surrounding community. Six months after Rumah SiSa was established or when this book was completed, local communities have succeeded in recycling waste into new products (**R8/Recycle**) ranging from plates, and multifunctional containers, to buttons from inorganic waste, compost, and organic waste that has been processed into eco-enzyme.

The #Paredice team (a climate alliance that is a combination of social enterprises and non-profit foundations; Parongpong RAW Lab, Rawhaus, EvoWare World, Divers Clean Action, and Carbon Ethics) has also conducted door-to-door education to 83 houses and held management workshops. waste to 40 PKK women in Huangobotu Village, Gorontalo within four months, from October 2021 to February 2022. After successfully producing functional value products from waste, the #Paredice team is trying to get residents to make plastic panels that can be used as walls if at any time there is a need to construct a building.

⁷⁵<https://www.sej.org/publications/backgrounders/styrofoam-facts-why-you-may-want-bring-your-own-cup>, accessed on April 5, 2022

REAL IMPACT FOR SURROUNDINGS



The use of the B-panel in Rawhaus as a wall material reduces 2.3 tons of carbon emissions or 40% lower when compared to ordinary red brick.



Rawhaus's modular design only requires a short development process (+/- 7 days) so that it is more efficient in terms of energy, cost, and the use of other construction supporting materials.



Water savings of up to 679 liters per month. This calculation is based on a study of calculating the volume of rainwater on the roof of 1 Rawhaus module measuring 3x3 meters and using the average daily rainfall data in the last ten years of 26.64 mm/day.



Energy savings and the use of natural sunlight to illuminate the house during the day thanks to the installation of large windows, without affecting the temperature in the house.



Absorbing more than 75 workers in the initial phase of product production research.

IMPLEMENTATION CHALLENGE

Given its small size, the construction of the Rawhaus microhouse did not take much time so the challenges experienced by Rawhaus were more on the market side. Although the tiny house movement has started to be heard a lot and has sparked interest in micro-sized houses for a few people, the market still needs to be educated about the urgency of living a sustainable lifestyle, one of which is by living in a more compact size house and considering the hidden costs of what is consumed.



STRATEGY FOR REPLICATION

Although armed with architectural knowledge and experience, Rawhaus still upholds the spirit of collaboration with various parties, for example, PT Beton Elemindo Putra as the maker of B-panel and B-foam. Rawhaus also dared to break away from the traditional forms of construction practices that they had been familiar with and use new materials and new methods instead.



Rawhaus has succeeded in finding and relying on alternative construction materials that are more environmentally friendly, as well as implementing a disassembly design concept that is contrary to most developments. Rawhaus' processes and work are not made exclusively for their team but simplified so that they can be replicated by anyone. This can be seen in the construction of Rumah SiSa which empowers residents.



With this open engagement, Rawhaus introduces sustainable lifestyle choices of housing to more people from various backgrounds. This initiative at the same time dispels the idea that advanced technology and high costs are needed if you want to live a sustainable lifestyle because this should not be the case.



26

Parongpong Recycle And Waste (RAW) Lab

Production of Furniture Made from Cigarette Butts and Garbage Masks

R8 Recycle

Actor: Private
Sector: Construction



For those of you who can speak Sundanese, of course, you know what Parongpong means, which is empty. This principle is the motivation for Parongpong Recycle and Waste (RAW) Lab in every research collaboration they do. The business, known as Parongpong RAW Lab, is based in Bandung. Incidentally, the Parongpong office and workshop are located in the sub-district of the same name, namely Parongpong District!

For Rendy Aditya Wachid the founder of Parongpong, there is no such thing as garbage, there is only unused and unrevitalized material. As a facilitator or enabler, Parongpong plays a role in

converting residue into high-quality materials and functional products in various forms, such as ashtrays, flower pots, tiles, and outdoor furniture.

In 2019, Rendy met with Conture Concrete Lab, a furniture design studio that utilizes waste disposable masks and cigarette butts as raw materials for its production. Parongpong as the processing party for residual waste into components, of course, requires parties who can absorb these components to be used as useful things. This is where the collaboration between Parongpong and Conture begins.

CIRCULAR ECONOMY PROGRAMS & INITIATIVES

During the COVID-19 pandemic, there are 129 billion single-use masks used every month in the world.⁷⁶ Cigarette butts are no less, especially in Indonesia. WHO noted that Indonesia is ranked as the third largest smoker in the world, after China and India.⁷⁷ Seeing this harsh reality, Parongpong processes cigarette butts and uses masks through hydrothermal technology to be used as a substitute for fiber mixed with concrete (**R8/Recycle**). This fiber will be used as material for new products that have usability, ranging from ashtrays, and flower pots, to tiling and other outdoor furniture. For this project, Parongpong collects cigarette butts from various cafes, restaurants, and coffee shops. Until June 2021, 15 drop points have been opened in Jakarta and 15 in Bandung to collect cigarette butts.

⁷⁶ <https://katadata.co.id/ariayudhistira/infografik/6136feaeed17d/gunungan-sampah-masker-selama-pandemi>, accessed on April 7, 2022

⁷⁷ <https://pusdatin.kemkes.go.id/download.php?file=download/pusdatin/infodatin/infodatin-hari-tanpa-tembakau-sedunia.pdf>, accessed on April 7, 2022



REAL IMPACT FOR SURROUNDINGS



Processing 18 tons of low-value plastic that cannot be converted or recycled into material components, starting in 2017.



Saved 1,200 liters of water since 2017, thanks to the use of hydrothermal technology that does not require new water in every waste treatment process.



Supplying alternative supplies of raw materials for other business owners that are of high quality and have a good impact on the environment.



Reducing 2 tons of cigarette butts since 2020 and 5,000 single-use masks since December 2021.



Save 6,000–12,000 kWh by utilizing LED lights for all facilities, biogas for ovens, and pyrolysis to power the chopper.



The increase in demand for finished products from processed waste, indicates an increase in public awareness and attractiveness of residue-based materials. There has been a 5-fold increase in turnover since the beginning of Parongpong's establishment.



Doubled the number of workers from the start.

IMPLEMENTATION CHALLENGE

Cigarette butts and disposable masks are vulnerable to being exposed to viruses, so when the COVID-19 pandemic rolls around, health protocols need to be applied to the waste management process. Due to the economic impact felt by Parongpong's clients, demand for waste management has decreased, while mask waste has increased.

In addition, residual waste has an unfavorable "reputation" in the eyes of the public, so efforts need to be made to shift this perception. Parongpong also requires in-depth research to ensure the feasibility, resilience, and safety of the processing process to convince the public of the quality of the processed waste residue.

To prove that residual waste can still be an industrial raw material with high selling value, Conture Concrete Lab never attaches the frills that their products are made from recycled materials. The hope is that their consumers can buy Conture products not only because of the sentiment of doing good for the environment but purely because of the quality and good design of the product.

STRATEGY FOR REPLICATION

There needs to be an extra effort to eradicate the perceptions that have been formed in the community, including the perspective on residues. For this reason, Parongpong has a different approach, adjusting to the demographics of the community being targeted. For example, when conducting socialization with the lower middle-class community, the Parongpong team will emphasize the economic potential they can get when sorting and sending their waste to the waste bank. When targeting people who already understand the importance of extending material life, the Parongpong team will focus on the circularity aspect of their business. Thus, the campaign from Parongpong became more effective and impactful.

In addition, Parongpong also cooperates with other business units so that the material components of their residual waste processed are not only utilized by end users so but their absorption is faster. In the future, in an interview, Rendy admitted that he is open to the possibility that Parongpong will no longer need to process waste and will only become a research institution. Hopefully, when that day comes, waste won't be a problem either!



27

Rebricks

Turning Rejected
Packaging Into
Building Materials

R8 Recycle

Actor: Private
Sector: Construction



Behind its practicality, sachets are increasingly becoming a problem for the earth. As of 2020, there were 855 billion sachets sold in the global market, with Southeast Asia's market share reaching around 50%.⁷⁸ In addition to the large number, the process of recycling sachets is still difficult because of its multilayer nature. In Indonesia alone, the recycling rate is only 10%.⁷⁹ This waste that is not recycled will end up, of course, in waters and coastal areas. Because of their small size, the sachets take a long time to collect and are therefore not considered very valuable in the recycling market. This packaging is also of low value and is very difficult to recycle so not many waste banks or collectors are willing to accept it.

The form of multi-layered sachets, starting from the inner clear layer, aluminum foil, image layer, to this laminate layer is very difficult to peel off one by one. In addition, because of its lightweight and easily carried by the wind, we often encounter this type of waste in the sea and rivers. Predictably, there is a potential danger if this type of waste is accidentally eaten by marine animals.

However, Rebricks managed to see a business opportunity from this fact. Rebricks is a company that recycles plastic waste into building materials. Indeed, Rebricks focuses on using rejected waste, such as soft plastic packaging, multilayer sachet packaging, crackle bags, drink labels, and bubble wrap. The waste is processed into paving blocks, bricks, and rosters, the raw materials for building materials. This business was formed in 2019, but the research has been going on since 2018.

Their manufactured materials are durable (can be used for more than 20 years), can withstand loads of up to 250 kg per cm², and have been tested for quality through a series of tests at the B4T Laboratory, Ministry of Industry in Bandung. With such product characteristics, Rebricks products are suitable for parking areas, pedestrian areas, and parks. Now, their materials have been used in several locations in Indonesia. The McDonald's parking lot for the Parung branch is already using its products!

⁷⁸ Throwing Away the Future: How Companies Still Have It Wrong on Plastic Pollution "Solutions", Greenpeace 2019

⁷⁹ In-depth Report: Radically Reducing Plastic Pollution in Indonesia: A Multi-Stakeholder Action Plan. Global Plastic Action Partnership collaborates with Indonesia's National Plastic Action Partnership. World Economic Forum, 2020.



They are very aware of environmental problems from the waste they process into materials. So, their business was indeed built to be a new solution as well as to provide added value for rejected waste. In doing business, they have a special strategy so as not to add new environmental problems again. For example, do not use any

combustion process that produces smoke, and do not place shredded plastic on the top surface of the paving block. One of the founders of Rebricks, Ovy Sabrina explained that this was done to prevent possible contamination due to the top of the paving block which would later be exposed to rain, heat, and friction with vehicles.⁸⁰

This circular initiative made another Rebricks founder, Novita Tan, win the GreenShip Awards 2022 for the Young Leader category. Rebricks also won the ICLIF Leadership Energy Award 2021 and the Circular Innovation Jam 2020.

CIRCULAR ECONOMY PROGRAMS & INITIATIVES

Rebricks collects almost 50 kg of plastic waste per day.⁸¹ For now, Rebricks still only accepts waste from households (individuals) and small businesses, such as food stalls. The waste is then chopped twice, mixed with other formulas, treated/ cured for 21 days, then molded into paving blocks and hollow blocks from recycled products (**R8/Recycle**).

In addition to supplying the needs of its consumers, Rebricks also applies its building materials to public buildings, one of which is the construction of communal bathing-washing-latrine (MCK) facilities. Last January 2022, Rebricks collaborated with Novo Nordisk in the #CircularforZero program. They built MCK consisting of 4 cubicles,

2 toilets, and 2 bathrooms for the people of Kampung Pemulung Cireundeu.⁸² This year, Rebricks, Hush Puppies Indonesia, and Komunitas Lebah provided MCK facilities for the residents of Panagan Village, Sukamakmur, and Bogor in The Good Brick program.



COLLECTING WASTE

Plastic sachet waste are collected from individual donation, company and purchase from Waste Bank



RECYCLE PRODUCTION

88 thousands plastic sachet are processed inside 1 recycle machine



END PRODUCT

Produce new waste-free Pavers, Hollow Blocks*, Roof* and Tiles* products

REAL IMPACT FOR SURROUNDINGS



150 kg of rejected plastic packaging waste is used as a building material for toilets for residents of Panagan Village, Sukamakmur, Bogor.



125 kg (equivalent to 125,000 pieces) of single-use plastic packaging waste was used to build 2 bathrooms and 2 toilets in the Cireundeu scavenger village.



Up to 17,500 kg of plastic waste has been collected by May 2022.⁸³

⁸⁰ Rebricks di Utak Utik Sampah di Refleksi DAAI TV (<https://www.youtube.com/watch?v=0LyrQqAfQ0>)

⁸¹ Rebricks di Utak Utik Sampah di Refleksi DAAI TV (<https://www.youtube.com/watch?v=0LyrQqAfQ0>)

⁸² <https://rebricks.id/what-we-do/circular-for-zero-novo-nordisk-gandeng-rebricks-indonesia-bangun-mck-di-perkampungan-pemulung>

⁸³ <https://rebricks.id/what-we-do>

IMPLEMENTATION CHALLENGE

As a new business, Rebricks feels that it still has to try harder to get more demand. Currently, supply and demand are still quite limited. In addition, Rebricks is a business that uses a bootstrapping system (relying on personal funds as capital). So, all decisions must be taken carefully and on target so that there is no big loss. Developing a business is also still a challenge because it requires a large amount of capital.

The COVID-19 pandemic situation has also become one of its obstacles because they cannot meet directly with consumers to market products. They are aware that in the construction industry, there needs to be a strong trust between producers and consumers. Consumers must see firsthand the quality of the product they will buy.



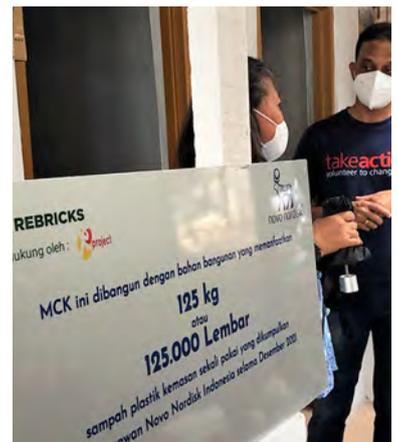
STRATEGY FOR REPLICATION

Rebricks is a construction business owned by two female founders. Although the image of the construction business sector is closer to that of men, Rebricks with its two female founders can bring innovation with the principle of a circular economy. One of the successes of this innovation is due to the support of good research and development.

Research and knowledge upgrades regularly need to be done so that we can understand the characteristics of the market and adjust the products

that are made. Perform national or international standardized tests to gain consumer confidence and be open to collaboration opportunities. Moreover, if the capital is very limited, surely collaboration will also be very helpful.

Business owners must also be willing to hear and learn from people from different backgrounds, as well as from seniors in their respective fields. This is why one of the founders of Rebricks, Ovy Sabrina, comes from a family that has managed a conventional paving block factory for 30 years.



Successfully increasing the use of plastic waste 5 times from at least 1,000 kg in 2020 to 5,000 kg in 2021 and is expected to increase again in 2022. Until March 2022, 3,500 kg of plastic waste has been used.



Employs 10 workers.



Each 1m² paving block contains a minimum of 880 pieces of sachet waste. Therefore, because the production capacity of Rebricks per day can reach 100 m²/day, around 88,000 sachets of waste can be reduced per day.⁸⁴

⁸⁴ Rebricks di Utak Utak Sampah di Refleksi DAAI TV (<https://www.youtube.com/watch?v=0LyrQqIAfQ0>)

28

The Body Shop

Single-Use Packaging
Return Program and
Refill Station

R1 Rethink

R2 Reduce

R7 Repurpose

R8 Recycle

Actor: Private

Sector: Wholesale & Retail



The Body Shop, a retail company that is famous for its personal care products (skincare, haircare, and makeup) comes from England. Anita Roddick founded it in 1976 as a simple soap shop to help her husband's adventurous husband economy. Because she also likes adventure, Anita has learned how to make natural soap.

Unlike other businesses, Anita has the principle that profit is not the main goal she seeks. He likes to share his positive impact with others. This is a principle that The Body Shop has firmly adhered to until now. The Body Shop started to enter Indonesia in 1992, with its first outlet at Pondok Indah Mall. The retail business that we often see its outlets in malls is known as one of the businesses that care about the environment and social justice.

Since 1987 until now, The Body Shop has carried out a business model based on Community Trade, or family-friendly cooperation between suppliers and business people. Products are guaranteed to be made from sustainable raw materials without any environmental or human exploitation. The Body Shop also strongly rejects environmental destruction, animal testing, and human slavery in the

industry through campaigns, concrete actions, and market education in the form of webinars, watching movies together, school competitions, research on microplastic testing, and others. The ethical business model they have built is an important value to attract market share.

In the environmental field, The Body Shop Indonesia won 2 award categories from Waste4Change, for the initiative of Zero Waste to Landfill and Extended Producer Responsibility (waste management efforts from consumers) in 2020. Well, that's not all, their program which we know as the abbreviation BBOB (Bring Back Our Bottle) has also won 2 awards, namely from the Ministry of Environment and Forestry of the Republic of Indonesia and Indonesia's Best Corporate Social Initiative for the Corporate Social Marketing category.

In addition to its work related to the circular economy and sustainability, The Body Shop has also won many awards for its contribution to social and women's empowerment, through the Stop Sexual Violence campaign, All Cares for All Protected #TBSFightForSisterhood and initiatives to achieve gender equality in the workplace.

CIRCULAR ECONOMY PROGRAMS & INITIATIVES

Through the Bring Back Our Bottles (BBOB) program which is part of the #KerenTanpaNyampah campaign, The Body Shop invites its consumers to return empty product packaging to nearby shops for recycling (**R8/Recycle**). The Body Shop wants to ensure that the principle of circularity is implemented in the use of its product packaging. This program was first conducted in 2008, as well as being the first in Indonesia. The Body Shop collaborates with the Buddhist Tzu Chi Indonesia Foundation, Waste4Change, ecoBali Recycling, and eCollabo8. The partners will sort the used packaging and return it to the recycling partner and agent. PP (polypropylene) bottles will be chopped and heated to be reprocessed into soap containers or recycled mirrors, while the residual waste will be processed into Refuse-Derived Fuel (RDF). This program was well received by consumers, as evidenced by the return rate moving up from 20% to 24%.

Optimizing the value of circularity in its products, The Body Shop also has products with packaging made from recycled waste (**R8/Recycle**), for example, bottles of the Avocado series which are made from recycled plastic waste carried out in Bengaluru, India. The lid of the packaging is also made of recycled aluminum.

Currently, The Body Shop is focusing on the target of 75% PCR (post-consumer recycled) plastic as an implementation of the **R2 (Reduce)** strategy, which has only been applied to bottles of 60, 250, and 750 ml sizes. With this existing target, the use of new plastics can be saved by approximately 580 tons per year. In addition to focusing on the **R8 (Recycle)** principle, The Body Shop also wants consumers to be able to apply the **R1 (Rethink)** principle, by providing a refill station system at

Kota Kasablanka Jakarta outlets, Paris van Java Bandung, and Hartono Mall Yogyakarta which makes it easier for consumers to shop without plastic packaging. It is enough to buy a 300 ml aluminum bottle once, consumers can continue to fill it to the store when the product is out of stock.

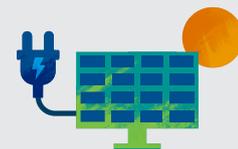
The application of the circular economy principle is not only demonstrated by The Body Shop in its core business, but also in the operations of its head office with a green office concept. This building in South Tangerang received a green certificate during 2013–2018. For office waste management, apart from collaborating with Waste4Change, waste sorting is carried out actively every day, and employees often make decorative ornaments from plastic bottles (**R7/Repurpose**). Since 2015, the office has also been installed with 252 solar panel modules covering an area of 409 m² to reduce GHG emissions (**R2/Reduce**). The employees also continue to upgrade their knowledge through internal training and workshops held with external parties. On the other hand, The Body Shop is also actively reusing wood and empty packaging to make school supplies, such as tables, chairs, and blackboards. The equipment is used for students at the Bisa School, which is a free school for underprivileged children and scavengers.

Other environmental care activities were also carried out by The Body Shop, such as the planting of 200 mangrove trees by The Body Shop's Marketing and Values team in the PIK Mangrove Ecotourism area, North Jakarta in December 2021.

REAL IMPACT FOR SURROUNDINGS



The Body Shop opened the first modern refill station in Indonesia in 2021 and is expected to reduce around 25 tons of plastic waste in landfill every year.



The installation of solar panels in offices and warehouse distribution centers is expected to save 8.8% of electricity because these panels (at the head office only) can produce an average of 4,787 kWh/month if they work optimally.



During 2013–2021, 287 tons of empty packaging were collected. This amount is much heavier than the Statue of Liberty which only weighs 204 tons!⁸⁵



The Body Shop has reduced the accumulated waste by 13,490 kg as of September 2020. This is tantamount to saving 17,667.6 kg of CO₂ emissions from the environment or the equivalent of planting 292 trees for 10 years.



Absorb more than 50 workers.

⁸⁵ https://www.instagram.com/p/CdfmG1Fj_fA/

IMPLEMENTATION CHALLENGE

In general, the challenges faced are related to The Body Shop's plastic reduction campaign. For example, the return rate for returning empty bottles from member-consumers is still less than the target. Therefore, they continue to educate on the return of empty bottles regularly. This challenge is also compounded by the inadequate recycling system in Indonesia. They must find partners and provide ideas that can solve this single-use plastic problem.

The Body Shop must face a crisis that is quite shocking due to the pandemic. Most outlets in Indonesia are located in malls, so they must follow mall policies. 82% of their outlets in Indonesia were closed. They also cut costs that are not needed, make mobile apps and delivery services, and offer their products via WhatsApp. The key is to keep innovating and adapting.

The pandemic has also forced many of their campaign activities, which previously ran offline, to be stopped. However, efforts to reduce the use of plastic continue to be carried out by not using plastic in their online shop packaging.

STRATEGY FOR REPLICATION

An important lesson that can be drawn from what The Body Shop is doing is developing a business model that involves the utilization of resources that have the potential to be wasted, even though they can still be processed into high-value products. They can also implement a refill service so that consumers only need to buy a package once it can reduce the consumer's need for new packaging. The dissemination of good values for the environment is also carried out with cool marketing and branding so that it is attractive to consumers.

Cooperation with various parties, such as waste banks or partners in processing waste into recycled products can also be an example that can be taken from The Body Shop. With good cooperation, the good intentions of running a circular business can be smoother!



29

Schneider Electric

Product Transparency and Selection of Recyclable Materials

R1 Rethink

R2 Reduce

R8 Recycle

Actor: Private

Sector: Electronic



How do you feel when the power goes out? Most of us will likely find it difficult to continue with work or even activities. It is undeniable that the digital ecosystem has disrupted our lives, and this ecosystem certainly needs electricity to support it. A multinational company from France, Schneider Electric is here to maximize energy and resources to bridge digital progress in Indonesia in the form of providing electricity infrastructure.

Its services also vary, ranging from providing large-scale electrical products, and hardware suppliers for companies that want to build

data centers, to consulting services for electricity distribution and digital asset performance management to avoid disruption and loss based on Internet of Things (IoT) configurations.

Interestingly, Schneider is also committed to carrying out efforts to reduce emissions for the companies that work with him. Currently, PT Schneider Electric Indonesia has factories in Cikarang and Batam Island with a total of 4,500 employees. Not only producing products for the Indonesian market, but more than 75% of the products produced also enliven the export market.

CIRCULAR ECONOMY PROGRAMS & INITIATIVES

Schneider Indonesia has implemented a circular economy system in its company with the motto “Circularity is win – win – win”, which promotes favorable conditions for all parties in the application of the circularity principle. The parties involved here are Consumers/Customers, Earth/ Planet, Community/People, and Business/Business.

Consumers will feel benefited by Schneider by owning assets

that have a longer lifespan and implementing the **R1 (Rethink)** strategy so that costs in the product life cycle are relatively lower. With durable products, consumers are calmer, more comfortable, and can focus on their main activities.

The impact on the earth is the use of materials and resources which also considers emission reduction (**R2/Reduce**). For society in general, Schneider opens up more meaningful employment



opportunities through the application of this circularity principle. Business owners and administrators who are also Schneider clients can benefit from this principled business development.

Schneider Electric implemented the Green Premium sustainable product program in 2008, namely the production of products that provide transparent information about materials that are sensitive to their impact on the environment, as well as instructions for handling products after they can no longer be used. Product packaging labeled with Green Premium has also been certified Eco Passport, such as the materials used are recycled materials, namely 60% recycled paper and 40% recycled polycarbonate.

In addition to a product design program that pays attention to its environmental impact, Schneider Electric also targets the manufacture of eco packs made of 100% recycled materials without single-use plastic by 2025 (**R8/Recycle**).

Through these circular initiatives, Schneider has won a number of awards related to sustainability globally and locally, including No. 1 in the World in 2021, Best Global Sustainable Supply Chain Organization in 2021, Leading Company for a Clean Energy Future in 2021, and so on.

IMPLEMENTATION CHALLENGE

As a company in the electronics business, the challenge for Schneider was its dependence on product performance. Electronic products are prone to errors, not to mention there are production errors whose defects are not visible. Another challenge that Schneider felt

was the relatively limited battery life and storage.

The electronics industry in Indonesia is also still overshadowed by several common challenges.⁸⁷ First, the unavailability of adequate infrastructure. Even if it is available, its operations will

still be concentrated on the islands of Java and Batam. In addition, domestic component suppliers engaged in the electrical equipment manufacturing sector are still relatively small, and if you want to rely on suppliers from abroad, of course, it will cost money and produce a large carbon footprint.

REAL IMPACT FOR SURROUNDINGS⁸⁶



Reducing energy use by 6% in 2021 or equivalent to 627 MWh with the installation of solar power plants that replace conventional electricity by 26%, as well as increasing efficiency in use in production activities.



Achieved a Sustainability Impact score of 3.92/10, exceeding the target of 3.75/10 in 2021.



Reducing CO₂ emissions by increasing the efficiency of electricity use by 2% or equivalent to 12.2 tons since 2017.



Since 2019, Schneider has succeeded in reducing metal and electronic parts waste from around 3,500 product units. Meanwhile, 99% of recovered waste from the total volume of waste from production activities is equivalent to 1,417 tons in 2021. This waste includes 100% hazardous waste and no waste is recycled through combustion to make energy (WTE).



Involving more than 1,000 suppliers who are committed to realizing the Zero Carbon Project.

⁸⁶ <https://www.se.com/ww/en/assets/564/document/322964/sustainability-report-2021.pdf>, accessed on May 18, 2022

⁸⁷ <https://blog.usetada.com/id/industri-elektronik-di-indonesia-tantangan-dan-peluang-di-2022>, accessed on May 18, 2022

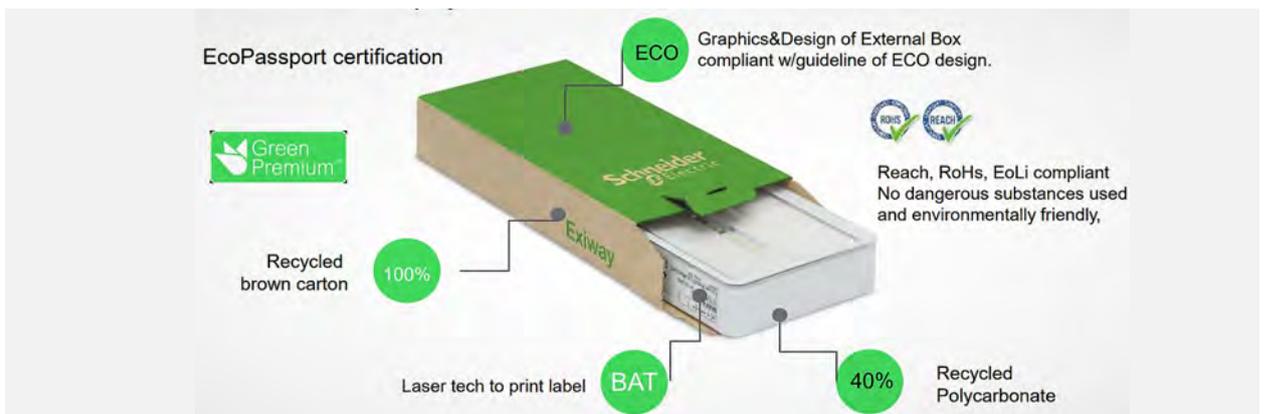
STRATEGY FOR REPLICATION

The win-win-win-win principle is reflected in Schneider's focus on creating products and services that benefit not only one party, but many. For example, by providing training and empowering local technicians

to develop businesses in the digital era. This will ensure the continuity of Schneider's circularity work.

Work that only focuses on environmental benefits, for example, will also not be

realized without parties who do not feel that they have benefited from their work practices. Therefore, it is important to pay attention to other aspects besides the environment even though circularity is the finish line.



30

Danone - AQUA (PT Tirta Investama)

Recycle PET Bottles
Into Various Products

R1 Rethink

R2 Reduce

R3 Reuse

R8 Recycle

Actor: Private

Sector: Food & Beverage



Without drinking, humans can only survive 3 days, he said. Indeed water is vital for human life; even looking at history, the world's great civilizations were born in locations near water. Well, the story this time comes from a drinking water company, AQUA. The company, which was founded in 1973 under the name PT Golden Mississippi Indonesia, was the pioneer of the first bottled drinking water. AQUA was founded by Tirta Utomo when this drinking water model was still very, very strange. At that time, people usually drank boiled groundwater. However, bottled water products began to be in demand because many foreign workers were working on the Jagorawi Toll Road project. Because it is practical, bottled drinking water has started to be bought by consumers.⁸⁸

In 1974, the first packaging used was made of glass, measuring 950 ml. Furthermore, when using plastic packaging, AQUA started using the circular concept through reused gallons in 1983 and created the AQUA PEDULI (R3/Reuse) program, by serving the recycling of plastic bottles into packaging in 1993. Over time, AQUA continues to adapt so that the business can be in line with

the circular principle, which means that it can support the Indonesian government in achieving the SDGs target by 2030. They have also received a B-Corp certificate since 2018 which reflects the company's commitment to the principles of sustainability, transparency, and responsible business.

Since 1998, a strategic alliance has been established between PT Tirta Investama and a French company, Danone. After that, PT Aqua Golden Mississippi merged into a group with PT Tirta Investama and PT Tirta Sibayakindo. They produce bottled water with the trademarks "Aqua", "Mizone", and "Vit". Currently, 70% of Danone-AQUA's business is the production of drinking water with reusable gallon packaging.

Now Danone-AQUA has 22 factories in Indonesia. This company is also the first company whose factory has won Green PROPER since 2014 and Gold PROPER since 2017. Some of the Danone-AQUA factories also received the Green Industry award and Green Industry Certificate from the Ministry of Industry.⁸⁹ In 2019, the Bekasi factory won the Subroto Award for Energy Efficiency (PSBE).

⁸⁸ <https://money.kompas.com/read/2020/11/04/073853226/sejarah-aqua-didirikan-tirta-utomo-hingga-dibeli-danone-perancis>

⁸⁹ <https://www.aqua.co.id/18-pabrik-danone-aqua-raih-sertifikasi-dan-penghargaan-industri-hijau-2021#>

Danone-AQUA creates a business model that not only focuses on ensuring food security but everything is done sustainably, in line with the

vision of One Planet One Health 2030. Through the 3 pillars of #BijakBerplastik launched in 2018 (collection, education, and innovation),

Danone-AQUA is determined to support the Indonesian government in reducing the amount of plastic waste by 70% by 2025.⁹⁰

CIRCULAR ECONOMY PROGRAMS & INITIATIVES

Danone-AQUA developed Recycle Business Units (RBU) in South Tangerang, Bali, Lombok, and Bandung. Every year, their assisted RBU collects an average of 15,000 tons of plastic waste consisting of used plastic waste from Danone-AQUA products and various other types of plastic waste⁹¹. In the RBU, plastic waste is sorted, washed, chopped, and then sent to a third party. Third parties recycle used bottles into new products, such as fashion products for H&M (a collection of children's clothing made from recycled plastic bottles), geotextiles for highway construction, tire stripping, dacron, new plastic bottles, or other household and industrial products according to the **R8 (Recycle)** strategy.

Danone-AQUA created the #KamiAngkut program to increase the collected plastic waste to the RBU. Garbage transportation services are provided to business owners in the Tangerang and Jakarta areas. Types of used packaging that can be transported include used bottles, plastic cups, and used cardboard. The material is then brought to the South Tangerang RBU to be sorted, chopped, and deposited at the Bandung recycling factory to be used as raw material for AQUA's new bottles.

In 2018, Danone-AQUA encouraged the development of an inclusive recycling program, working together to collect bottles from waste banks, collectors, and river interception. The bottles will be taken to Danone-AQUA's recycling business partner to be processed into raw materials for new bottle-making mixes.

Regarding education programs and waste collection in the community, Danone-AQUA built the Lamongan TPST (which can process 60 tons of waste per day)⁹² and Jimbaran Integrated Waste Processing Site (which can process up to 120 tons of waste per day).⁹³ In total, these two TPSTs can collect waste from more than 30,000 families in 12 urban villages and various areas, such as offices, and commercial and industrial areas in Lamongan.⁹⁴ In addition, they are also working with Octopus, Grab, and PlasticPay to collect waste directly from consumers' homes. Together with PlasticPay, they launched an original plastic bottle exchange machine made by the nation's children. Everyone who deposits plastic bottle waste into the machine will get points which can later be exchanged into digital balances or Alfagift Points.

The final step is to continue to innovate and improve the production process, such as the use of recycled plastic (recycled PET/rPET) for up to 25% of all product packaging (**R1/Rethink**). In 2020, they launched a 1.1 liter 100% recycled bottle with no additional label, called AQUALIFE. They have also launched a similar 600 ml bottle to make it easier for the public to use, but only in the Bali area.⁹⁵ Danone became the first company to launch a type of beverage packaging that was made of 100% recycled plastic.

On the innovation side, in addition to plastic packaging, Danone-AQUA reduces waste oil, grease, and used cleaning chemicals (**R2/Reduce**), uses used cooking oil as a substitute for diesel in the factory, and continues to use a rainwater cycle system that is treated with the second method. discharge and primary discharge, using WWTP (Wastewater Treatment Plant). The water that enters the WWTP is processed so that some can be reused and partly released into the river, under the quality standards that have been set.

⁹⁰ Danone-AQUA Sustainability Report 2020, page 69

⁹¹ <https://www.republika.co.id/berita/r6o6go430/kunjungi-tpst-di-bali-wakil-menteri-lhk-dukung-industri-dalam-pengelolaan-sampah>

⁹² <https://aqua.co.id/danone-aqua-dan-pemkab-lamongan-resmikan-tpst-terbesar-di-jawa-timur-guna-tingkatkan-pengelolaan-sampah-terpadu>

⁹³ <https://makassar.terkini.id/punya-kapasitas-120-ton-per-hari-danone-aqua-resmikan-tpst-terbesar-di-bali/>

⁹⁴ Danone-AQUA Sustainability Report 2020, page 71

⁹⁵ <https://www.balipost.com/news/2021/06/18/198866/Jaga-Lingkungan-Bali-Bersih,AQUA-Hadirkan...html>

REAL IMPACT FOR SURROUNDINGS



Currently, the six Danone-AQUA RBUs can collect up to 15,000 tons of plastic per year.⁹⁶



Collaborating with more than 10,000 scavengers, Integrated Waste Processing Sites (TPST), Reduce, Reuse, Recycle Waste Management Sites (TPS3R), RBU, waste banks, collection centers, and digital platforms to collect plastic bottle packaging for recycling by their partners.



Save energy consumption of 2.13 kWh/bottle.⁹⁷



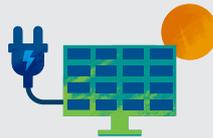
The use of used cooking oil has succeeded in reducing diesel consumption by an average of 3 tons per month or the equivalent of 116 tons of CO₂/year.⁹⁸



Reduction of 56 thousand tons of CO₂eq or equivalent to 3% of total emissions in 2020.



The #KamiAngkut program is available in 40 stalls or shops, 10 schools, 4 restaurants, 6 offices, 2 sports venues, and 7 waste banks. In just one month, used plastic bottles collected can reach six tons.⁹⁹



The solar-powered waste filter machine, The Interceptor™ 001 succeeded in reducing 60% of river waste to the sea, transporting approximately 466 kg of waste/day or 170 tons/year.



The use of recycled plastic makes approximately more than 15,000 tons/year of new plastic which can be reduced in use.



Total energy savings during 2019–2020 reached 149,713 GJ.



Together with Veolia Indonesia built a recycling plastic (R-PET) processing and production facility in Pasuruan, East Java. The target is that 25,000 tons of R-PET will be produced annually.¹⁰⁰



During the trial period from March–November 2020, TPST Lamongan managed to process 3,950 tons of waste, and 20% of it was plastic waste. This TPST has succeeded in preventing 70% of the waste from being thrown into Landfills.



Jimbaran Integrated Waste Management Site can process 70 tons of waste per day.¹⁰¹



The gallon recycling business reduces the use of new plastic packaging by up to 250,000 tons per year while reducing carbon emissions by up to 85% and 95% of water compared to using single-use gallons.

⁹⁶ <https://aqua.co.id/danone-aqua-laporkan-hasil-usaha-keberlanjutan-perusahaan-bagi-kemajuan-indonesia>

⁹⁷ <https://aqua.co.id/inovasi>

⁹⁸ <https://aqua.co.id/inovasi>

⁹⁹ Danone-AQUA Sustainability Report 2020, page 73

¹⁰⁰ <https://industri.kontan.co.id/news/veolia-indonesia-dan-danone-aqua-bangun-pabrik-daur-ulang-botol-plastik-di-pasuruan>

¹⁰¹ <https://elshinta.com/news/253089/2021/12/07/tpst-samtaku-jimbaran-wujud-nyata-pengolahan-sampah-di-bali%C2%A0>

IMPLEMENTATION CHALLENGE

To make a sustainable strategy, they recognize that the readiness and commitment of all systems within the company, both strategy and resources (financial and human) needs to be maintained. The problem is, it's not something easy. To turn theory into practice, plus to make it sustainable, it needs support from all stakeholders. Currently, that support is still not enough. So, what we need to live together in support, both from the government in terms of regulations

and regulations, from consumers, namely, awareness to consume more ethical products, as well as changes to the system within the company itself, for example, the mindset of human resources, budgets, and policies. internal.

Challenges during a pandemic come from within (internally) as well as from outside (externally). The internal challenge is how to maintain business continuity. Danone-AQUA is

required to prioritize the allocation of resources for activities and programs that can encourage rapid company growth. However, this has to do with sustainability as well because most of the sustainability activities themselves are a form of long-term investment. Meanwhile, from an external perspective, government policies and changes in consumer lifestyles during the pandemic have made it difficult to implement a circular economy system.

STRATEGY FOR REPLICATION

It is not easy to find alternatives to plastic packaging that is commonly used. However, technology can simplify the process of recycling plastic packaging into other products, which we may never have imagined before. In addition, of course, collaboration is also very important to be a trigger for other ideas.

Moreover, we can see for ourselves that since the pandemic and the current waste situation in Indonesia, consumers and any corporate responsibility in their daily business practices are strongly required to have more awareness of the waste problem. Learning from Danone-AQUA, make sustainability a core element of the standard practice of every business.

For example, if you have a retail business, you might consider implementing a return package program and working with a waste manager. Strive consistently to voice and educate about environmental issues on social media. Start by focusing on the simple things that can be done, before moving on to implementation on a larger scale.



31

Unilever

Recycling of Plastic Packaging into New Packaging and Strengthening of Waste Banks

R2 Reduce

R8 Recycle

R9 Recover

Actor: Private

Sector: Food & Beverage



Who uses Bango soy sauce for cooking or Pepsodent for brushing their teeth? If you are familiar with these brands, do you also know that they are all products of Unilever Indonesia, which has been established on December 5, 1933? This company, which is engaged in food and refreshment as well as home and personal care, has more than 40 brands. They also have nine factories located in Cikarang, West Java, and Rungkut, East Java. In 1982, they began to 'go public' and listed their shares on the Indonesia Stock Exchange.

As a producer of daily necessities, Unilever is aware of its important role in the chain of plastic use so it has a role in helping to solve the plastic problem in Indonesia. The more time goes by, the more they discover the fact: the plastic problem is not as simple as it seems! There are so many parties in the chain. So, instead of looking for who is to blame, it is better for all parties involved, from the government, producers, consumers, and collectors, to recyclers to collaborate to find a solution. It also has to be done continuously, it can't just be because of the hype.

Therefore, they want to help overcome the problem of plastic waste by implementing strategies from upstream to downstream, from packaging design to managing consumer consumables. The target is quite ambitious: reduce their use of new plastic by 50% by 2025, while reusing or recycling 100% of their plastic packaging. Another target to be achieved is an absolute reduction of 100,000 tons of plastic and the use of recycled plastics by at least 25%.¹⁰²

Continuing Unilever's journey of making sustainable living commonplace, Unilever has a Unilever Compass strategy – a purpose-led and future-fit business and sustainability strategy that integrates and creates long-term value. long for all stakeholders. As a multi-brand company, Unilever is also aware that collaboration to achieve circular business goals is an important strategy for continued growth. Unilever's office building also now carries the green building concept and gets the highest category in the Greenship rating, which is Platinum.

¹⁰² Unilever Indonesia 2020 Sustainability Report, page 108

CIRCULAR ECONOMY PROGRAMS & INITIATIVES

Referring to its Sustainability Report, the scope of Unilever’s circular initiatives is very broad, starting from the use of recycled consumer plastic (PCR) for bottle packaging for Bango, Zwitsal Kids, Dove SCL, Tresemme, Sunsilk, Lifebuoy, Clear, Sunlight, CIF, Wipol, Rinso, and Molto, as well as Lifebuoy SCL (sizes 1 L and 500 ml) and Vival (190, 500, and 700 ml), have encouraged the digitization of waste banks so that the level of waste recycling in the community can increase. On the ‘Google My Business platform, consumers can see the location of the nearest waste bank via Google Search or Google Maps. Not only implementing the **R8 (Recycle)** strategy internally, Unilever also facilitates the wider community to do the same.

Unilever will also cooperate with PT Solusi Bangun Indonesia and the Provincial Government of DKI Jakarta and Cilacap Regency, Central Java in 2020 so that they can extract energy from plastic waste from the Bantargebang Integrated Waste Management Site by converting it to refused-derived fuel at the cement factory of PT Solusi Bangun Indonesia Narogong. Even though the material is burning, the combustion products in the form of energy are reused, according to the **R9 (Recover)** principle.

Since 2014, no waste from Unilever factories or offices has been disposed of in landfill. Everything was successfully processed again circularly. They also continue to make efforts to save energy, water, and waste treatment, both B3 and non-B3 (**R2/Reduce**).

REAL IMPACT FOR SURROUNDINGS



The absolute reduction in the plastic content of Unilever’s product packaging by 3,800 tonnes of plastic by 2021.¹⁰³



Since 2008, more than 4,000 waste banks assisted by Unilever have been spread across 45 regencies/cities throughout Indonesia. Plastic waste has collected as much as 24,534 tons in 2021.¹⁰⁵



Around 94,066 kg of multilayer sachet waste has been recycled into plastic pellets for new packaging through CreaSolv technology in the Krian area, East Java.¹⁰⁴



The Cikarang NSD Powder Plant uses palm kernel shell biomass-based fuel, saving energy equivalent to 44,601 GJ per day (in 2021).¹⁰⁶



21,445.29 tons of plastic were successfully processed into Refuse-Derived Fuel (RDF).



Water savings will continue to be made to around 24,811 m³/year throughout 2020.



Total non-B3 sludge recycling is 10.5 tons in 2020 so waste treatment costs can be reduced by IDR 8.2 billion.

¹⁰³ https://www.kompas.id/baca/adv_post/atasi-permasalahan-plastik-siapa-harus-berperan

¹⁰⁴ Unilever Indonesia 2020 Sustainability Report, page 114

¹⁰⁵ https://www.kompas.id/baca/adv_post/atasi-permasalahan-plastik-siapa-harus-berperan

¹⁰⁶ Unilever Indonesia 2020 Sustainability Report, page 97

IMPLEMENTATION CHALLENGE

During the COVID-19 pandemic, Unilever continues to put consumer health and safety above all else. Due to the pandemic, many of Unilever's waste bank partners were forced to close. On the other hand, more and more consumers are depositing waste into the waste bank because of the large amount of garbage piling up at home. Seeing the circular economy opportunity here, Unilever created the #GenerasiPilahPlastik campaign, through the Rinso brand and partnered with the delivery service AnterAja. The community is invited to deposit the sorted inorganic waste in the waste bank. This free campaign will be held until the end of May 2022 in 10 provinces, namely West Java, Central Java, DI Yogyakarta, DKI Jakarta, Banten, East Java, East Kalimantan, Bali, South Sulawesi, and North Sumatra.

The pandemic has also made Unilever change several strategies according to consumer spending patterns, namely personal hygiene and sanitation products. It also makes Unilever more aggressive in informing consumers about the importance of sustainable products. Consumers need to realize the importance of sustainable products compared to conventional products, and not just compare prices.

STRATEGY FOR REPLICATION

Many things can be learned from Unilever. The key is, to try to keep the use of new plastics (or even other materials) to a minimum. The trick, business people or producers can provide a support system that supports changes in consumer lifestyles. For example, by creating a product refilling scheme at nearby shops or selling products in bulk, while at the same time getting consumers used to bringing their packaging containers. The use of recycled plastic for packaging products whenever possible is also an example that can be drawn from Unilever's practice. If you don't understand how collaboration with those who understand is the answer. This collaboration can also support an increase in recycling rates, namely by collaborating with parties who receive our waste to be recycled or used for other uses.



32

Independent Energy Village of Urutsewu, Boyolali

Processing Animal Manure into Energy

R9 Recover

Actor: Society
Sector: Other



Livestock is one of the largest sources of GHG, with cattle farming as the main contributor. One way to reduce GHG from cattle farming is to manage the manure.

This is what Urutsewu Village in Boyolali Regency is doing. This village is known as the Independent Energy Village because it has succeeded in creating clean and renewable energy by processing animal manure there. People in this village no longer need to buy LPG because they can use biogas which is produced and managed independently by the residents.

The energy independence program in Urutsewu Village started with village communities that have many cattle farms. The cow dung waste produced by the farm is very disturbing to residents because the smell can be smelled around the village.¹⁰⁷ On the other hand, it turns out that based on research results

from the Faculty of Animal Husbandry (Fapet) of Gadjah Mada University (UGM) in 2017, the economic potential of cow and buffalo dung throughout Indonesia as alternative energy is estimated to reach Rp 64.3 trillion/year.¹⁰⁸

The Center for the Study of Agricultural Technology assisted in the form of cow dung waste processing equipment. Unfortunately, this tool has not been maximized properly until 2013, Pak Sri Haryanto, who was then the Village Head, was moved to coordinate further with the relevant agencies to use and develop this tool. Finally, by developing this tool, the community gets many benefits because cow dung waste is handled properly. In addition to cow dung waste, the residents of Urutsewu Village have also managed to manage chicken livestock waste and tofu factory waste so that they can produce biogas for their daily needs at a lower cost.

On a national scale, the biogas program initiated by MEMR has succeeded in reaching 14 provinces, 120,274 beneficiaries, reducing emissions of 370,000 tons of CO₂eq and 25,428 biogas units built (as of 30 June 2021).¹⁰⁹

¹⁰⁷ <https://solo.tribunnews.com/2022/03/14/kisah-awal-mula-desa-urutsewu-boyolali-jadi-desa-mandiri-energi-gegara-terganggu-bau-kotoran-sapi?page=2>, accessed on March 20, 2022

¹⁰⁸ <http://dlh.semarangkab.go.id/?p=4870>, accessed on March 25, 2022

¹⁰⁹ <https://www.biru.or.id/>, accessed on March 25, 2022



CIRCULAR ECONOMY PROGRAMS & INITIATIVES

After knowing the potential and benefits of managing waste into biogas, the residents collectively build a biogas digester. The digester is an underground tank that holds livestock and tofu factory waste. In the processing step, the dirt is mixed with water, then put into the digester so that the water and gas are separated. After the waste is treated and gas is formed, the gas will be ready to be distributed to the pipes which are supplied to people's homes and can be used for cooking, such as stoves that use LPG gas.

It doesn't stop there, the people of Urutsewu Village continue to innovate to develop portable digesters made from used plastic drums. This portable digester does not use cattle waste but uses household organic waste (food and cooking waste). The principle is the same, household organic waste will produce biogas which can be used for cooking. Pemdes Urutsewu will distribute

50–60 of these portable biogas to the community for 1 million per unit. The residents of Urutsewu Village also use this biogas to generate electricity by using gas to power a generator.

This Urutsewu Village community initiative is consistent with the circular economy principle which emphasizes (design) waste processing, precisely in the form of burning materials to extract energy according to the **R9 (Recover)** principle, maintaining economic value for as long as possible, and maximizing renewables. The biogas program also encourages local community empowerment because the community learns to process the existing waste in an environmentally friendly way. This biogas program from cow dung can encourage the community to be involved in efforts to overcome global warming, climate change, and the substitution of national energy needs from renewable fossil fuels.

IMPLEMENTATION CHALLENGE

In general, the challenge for the people of Urutsewu Village in this independent biogas program lies in the development of future initiatives. Currently, people who own at least 5 cows are expected to have livestock waste processing equipment. In the beginning, people did have to learn how to operate new technologies that they might not have been familiar

with before, but as time went on, people were able to operate these machines. On the other hand, there is a need for the construction of digester infrastructure and gas pipes for gas distribution to people's homes.¹¹⁵ However, the people of Urutsewu Village received a lot of assistance from the province for this initiative.

¹¹⁰ <https://jatengprov.go.id/beritaopd/desa-urutsewu-mandiri-energi-dari-kotoran-sapi/>

¹¹¹ <https://solo.tribunnews.com/2022/03/14/ini-desa-urutsewu-di-boyolali-warga-tak-perlu-lagi-beli-elpiji-di-sini-gas-melimpah-dan-gratis?page=4>, accessed on March 20, 2022

¹¹² <https://ebtke.esdm.go.id/post/2021/03/23/2827/satu.dekade.program.biru.25.157.biodigester.terbangun?lang=en>, accessed on March 20, 2022

¹¹³ <https://www.esdm.go.id/id/media-center/arsip-berita/cerita-biogas-dan-limbah-pabrik-tahu-di-desa-urutsewu>, accessed on March 20, 2022

¹¹⁴ <https://www.esdm.go.id/id/media-center/arsip-berita/cerita-biogas-dan-limbah-pabrik-tahu-di-desa-urutsewu>, accessed on March 20, 2022

¹¹⁵ <https://money.kompas.com/read/2021/03/23/170357426/program-biogas-rumah-masih-terkendala-pendanaan>, accessed on March 25, 2022

REAL IMPACT FOR SURROUNDINGS



The village of 7,000 inhabitants now has 43 large digester units.



Electricity generated from biogas can power pumps to provide clean water for a shared well pump for 60 customers and even to neighboring villages.¹¹³



Each family head saves IDR 720,000.00 on LPG costs per year, when compared to firewood, it can save 1.4 million in firewood costs for a year.



Utilizing 5,000 L of tofu factory waste in a day into biogas.¹¹⁴

STRATEGY FOR REPLICATION

The development of this initiative in Urutsewu Village will not succeed without the support of the villagers. It is proven that seeking solutions by working collectively on common problems can bring profit opportunities that can be enjoyed together by the residents. On the other hand, there are many opportunities and programs from the government or local agencies that can be explored to support circular economy initiatives. Therefore, an active role in collaborating with the government or relevant non-governmental organizations can be tried.



33

PT Indonesia Power Bali Power Generation Unit (Unit PLTD/G Pesanggaran)

Turning Waste into Energy

R1 Rethink

R2 Reduce

R9 Recover

Aktor: Government
Sector: Other



Talking about economic problems, it's hard to imagine if there is no electricity. One of the electricity providers in our country is PT Indonesia Power. Since its establishment in 1995, PT Indonesia Power as a subsidiary of PT PLN (Persero) has been designed to act as a solution to meet the needs of electricity supply in Indonesia. Through superior competence to operate and maintaining various types of power plants that are environmentally friendly, Indonesia Power always ensures the sustainability of energy supply through continuous process improvement and innovation in various fields, to become a trusted electricity provider.

One of them is PT Indonesia Power Bali Power Generation Unit (PLTDG Pesanggaran Unit) which since 2018-2021 has received a Gold rating in the PROPER program by the Ministry

of Environment and Forestry. This was achieved following its vision, which is to become a trusted energy company that grows sustainably with a mission to provide energy solutions that are reliable, innovative, environmentally friendly, and exceed customer expectations. Located in South Denpasar, west of Sanur Beach, this UP has a total electricity production capacity of 312 MW. The Pesanggaran PLTDG was built in 2014 to meet the electricity needs of the Bali subsystem and is part of PLN's efforts to support the 35,000 MW program.

PT Indonesia Power Bali Power Generation Unit – The Pesanggaran PLTDG Unit is a generating unit that produces electrical energy with LNG as the main fuel and High-Speed Diesel (HSD) backup energy.

LNG (liquefied natural gas) is methane gas with a composition of 90% methane (CH₄) which is liquefied at atmospheric pressure and a temperature of -163 degrees Celsius. Before the liquefaction process, the gas must undergo a purification process to remove unwanted compounds, such as CO₂, H₂S, Hg, H₂O, and heavy hydrocarbons.¹¹⁶

¹¹⁶ <https://migas.esdm.go.id/post/read/Mengenal-Jenis-jenis-Gas-Bumi>, accessed on May 30, 2022

CIRCULAR ECONOMY PROGRAMS & INITIATIVES

The development of new and renewable energy sources (NRE) on a small and large scale is increasingly rapid, one of which is the use of waste as a source of NRE with the gasification method. This was then carried out by PT Indonesia Power Bali PGU (PLTD Unit/G Pesanggaran) through the WTE SETIP (Waste To Energy, Indonesia Power Renewable Energy Solution) program.

They utilize organic waste (biomass) obtained from residents around the work area of the Pesanggaran Unit through a series of processes (fermentation, chopping, and milling), processed into pellets/briquettes.

This is supported by their active participation in community empowerment, disaster response, and social innovation activities. Such as the TOSS program (Local Waste Processing Site) in Gunaksa Village, Klungkung Regency, as well as a replica of the TOSS Program in Pakseballi Village, Klungkung Regency, namely TPS3R Nangun Resik, Pakseballi Village. PT Indonesia Power Bali Power Generation Unit handed over a total of 70 units of pellet-fueled stoves in Gunaksa Village and Pakseballi Village as an effort to overcome the problem of waste used through the fermentation process for Small and Medium Enterprises (SMEs)

and underprivileged communities in Pakseballi Village. In its development, in addition to pellets, the organic waste produced is also used as a compost product for the community.

In its seriousness in dealing with waste, Klungkung Regency through the Department of Environment and Forestry of Klungkung Regency established a TOSS Center in Kusamba Village, Klungkung. In addition to being a center for waste management from upstream to downstream, the TOSS Center is also a center for waste management education in Klungkung Regency and direct use where there is the Klungkung Regency PKK Kahatinya Garden Program.

By using a gasifier engine, the pellets will be converted into gaseous fuel in the form of syngas. The syngas from the gasification process is then fed into the generator engine to generate electricity. The electricity generated from this program is then used by them for their electricity consumption in the PT Indonesia Power Bali PGU building. PT Indonesia Power Bali PGU has applied the installation of PLTD Gasifier with a capacity of 40 KW. This program costs quite a fantastic

amount, but it is also paid off by the energy savings from burning (**R9/Recover**) and the funds obtained from this program on an ongoing basis.

Meanwhile, in meeting the needs of the national electricity supply and Bali in particular, currently, the Pesanggaran Unit has also implemented the principles of circularity through updating the design processing unit (eco-design), energy efficiency (**R1/Rethink**), and low emission production (**R2/Reduce**). In early 2015, the 200 MW PLTDG Pesanggaran was fully operational using fuels such as High-Speed Diesel (HSD) and Marine Fuel Oil (MFO). Both types of fuel are hydrocarbon-based fossil fuels that have high emission levels. To reduce the burden of air pollution on the Pesanggaran PLTDG, since April 2016 the 200 MW PLTDG Pesanggaran has been operating using gas fuel (LNG).

Some of the awards that Indonesia Power has received include Top 10 Indonesia Green Sustainable Companies Achievement 2022 from SWA Media Group, Highest Proper Score Winner in the PLN Group from PT PLN (Persero), and 13 Units of Green PROPER Indonesia Power 2021 Rating from the Ministry of Energy and Mineral Resources. Environment and Forestry of the Republic of Indonesia.

Peuyeumisasi is microbiological processing of waste (fermentation), which aims to accelerate the decomposition of waste¹¹⁷ to accelerate the process of decomposition and drying of waste that will be used as pellets.

¹¹⁷ <https://dlh.probolinggokab.go.id/teknologi-peuyeumisasi-ubah-sampah-menjadi-sumber-energi/>, accessed on April 19, 2022

REAL IMPACT FOR SURROUNDINGS



The energy efficiency of 65.749 GJ from 2018 to June 2021 and savings of Rp34,642,226



The water efficiency of 622.70 cubic meters from 2018 to June 2021 and savings of Rp.11,252,189 from reusing a mixture of wastewater from the PLTDG (Diesel and Gas Power Plant) engine.



Management of B3 waste as much as 269.14 tons from 2017 to June 2021 (this activity is not carried out in the above initiative program, but is PROPER program in internal activities).



Emission reduction of 13,465 tons of CO₂eq from 2018 to June 2021 and savings of Rp3,090,857



Management of non-B3 waste of 4,557 tons of organic waste and savings of Rp113,925 from the application of 3R (Reduce, Reuse, Recycle) principles by utilizing non-B3 waste (domestic waste) as raw material for making solid pellets for Gasifier fuel.



Absorb 5 workers.

IMPLEMENTATION CHALLENGE

The initial investment cost for the procurement of equipment is quite large, not to mention the operating and maintenance costs. In addition, the need to conduct regular emission and wastewater testing is also a challenge faced by Indonesia Power.

New challenges also arise when the pandemic, which results in restrictions on meetings, especially with outsiders, also affects additional expenditures in terms of health screening, such as a rapid antigen, PCR, and others.

STRATEGY FOR REPLICATION

The replication of PT Indonesia Power's initiatives into our daily lives may not be easy. But, we can take the point: energy efficiency is a key lesson for us as energy users. We can optimize our energy-saving behavior through daily activities, for example by being disciplined about turning off electric tools when not in use or replacing electronic devices at home or in the office with more energy-efficient ones.

As a company that is engaged in serving the needs of the community,

PT Indonesia Power UP Bali (Unit Pesanggaran) considers that external support or the surrounding community, especially in the power plant area, is the key to the sustainability of the program they run. Applying this at a household scale, we can start inviting people in our immediate environment to join in on the move to save energy. In addition to increasing the impact, moving with people in our environment can make our steps lighter!



34

Coca-Cola Europacific Partners (CCEP) Indonesia

Implementing a Circular
Economy through Product
Design and Community
Empowerment

R1 Rethink

R2 Reduce

R3 Reuse

R6 Remanufacture

Actor: Private

Sector: Food & Beverage



Who has never drunk Coca-Cola? Or other carbonated drink brands, such as Fanta and Sprite? How about Frestea and Minute Maid? Most likely these drinks become one of your favorites. These brands are drinks from Coca-Cola Europacific Partners (CCEP) Indonesia, plus Ades mineral water, milk drinks containing Nutriboost fruit juice, as well as Schweppes tonic water, and A&W root beer. As a company whose operations are centered on the production of packaged drinks, is it impossible to apply the principles of a circular economy?

CCEP Indonesia has ambitions to make a World Without Waste or a world without waste which is translated into various initiatives. Not only in the form of solid waste, but also including water “waste” aka wastewater, and other wastes such as GHG emissions. If you refer back to the question in the previous paragraph, CCEP Indonesia proves that the application of the circular economy principle by large-scale companies that sell goods is far from impossible, even though it is accompanied by facing challenges. Come on, find out more below.

CIRCULAR ECONOMY PROGRAMS & INITIATIVES

From 2015 to 2021, CCEP Indonesia carried out a lightweight initiative on the design and packaging of brand products under CCEP Indonesia, especially products with plastic packaging (PET) by reducing the weight of virgin plastic in each bottle following the **R2 (Reduce)** and **R6 (Remanufacturing)** concept. Starting in 2022, this initiative will be accompanied by the use of recycled plastic following the **R3 (Reuse)** concept. This reduces carbon emissions given that virgin plastic requires more fossil fuels to manufacture. This initiative does not only apply to primary packaging such as bottles but also to secondary

packagings, such as labels and shrink wrap.

In 2017, CCEP Indonesia also used the latest bottling technology through the affordable single-serve packaging (ASSP) initiative 2017 which combines various materials to reduce plastic use by up to 40% when compared to non-ASSP products. Starting in 2022, CCEP Indonesia will integrate recycled PET components into PET bottles as part of its commitment to using 50% recycled PET content by 2030.

In addition to seeking circularity in product design, CCEP Indonesia also collects waste in various forms.



First, garbage collection through the Bali Beach Clean Up program, which is cleaning the coast every day in collaboration with local residents. CCEP Indonesia also provides support to Seminyak Village, Bali to create an integrated waste management facility (TPST 3R) to take advantage of circularity opportunities in terms of waste utilization, open networks with hotels, restaurants, and other industries, as well as provide education to the public regarding waste management and utilization. . This program has been running since 2007.

In other areas, CCEP carries out community-based waste management by cooperating with stakeholders who play an important role in waste management in the intervention area, such as waste banks, community groups that care about the environment, BUMD, and so on. This program has been running in Randugunting Village, Semarang, Tamanan Pasuruan Hamlet, and Cihanjuang Sumedang Village.

CCEP has also conducted a pilot project for managing PET bottle waste in Metro Lampung City since early 2022. This program brings together environmental agencies at both the city and provincial levels, financial institutions, and existing collection centers to become potential partners of the Mahija Parahita Nusantara Foundation. Starting from developing a roadmap for waste management at the city level, developing non-cash transactions, and carrying out community development. The whole program is aimed at increasing public interest in the collection and disposal of plastics through collection centers.

CCEP Indonesia in collaboration with Dynapack Asia established the Mahija Parahita Indonesia Foundation which aims to help

improve the livelihoods of our main partner in PET bottle waste collection: scavengers and their families, and to ensure we have a safe and ethical supply chain. All Mahija programs focus on four main pillars, namely livelihood, education, ethical supply chain (responsible collection), and value creation. By providing competitive incentives, providing informal education for the children of scavengers, and providing human rights protection for scavengers, CCEP Indonesia through Mahija aims to improve the welfare of scavengers.

In its action to reduce the negative impact of production activities on the climate, CCEP installs rooftop solar panels in manufacturing areas for renewable energy use. Energy management is also carried out to make its use more efficient (**R1/Rethink**) starting by equipping refrigerators with sensors that detect user behavior patterns, changing the lighting system to LED-based technology, and replacing diesel with more environmentally friendly energy such as LNG and LPG. In addition, CCEP also uses integrated systems and automatic sensor technology for engines, lighting, automatic shutdown, start-up processes, maintenance systems, and others to save energy.

The use of water used in CCEP's production facilities is also designed to be efficient (**R1/Rethink**) by monitoring, setting annual targets, and identifying its use so that consumption can be reduced. When it comes to producing wastewater into the environment, the waste is ensured to be 100% safe.

CCEP Indonesia also provides education through the Coca-Cola Forest program, namely a tree nursery program and environmental education for the surrounding community, and Green School, which is an environmental education program and behavior change for school officials, students, and parents of students initiated by the Ministry of

Environment and Forestry. Forestry. To improve the welfare of the main partners of bottled waste collection such as scavengers and their families, CCEP Indonesia established the Mahija Parahita Nusantara Foundation mentioned above. Through this foundation, CCEP Indonesia provides competitive incentives, provides informal education for the children of scavengers, and provides human rights protection for them.

CCEP Indonesia has also made various efforts to improve the efficiency of resource use. To address the challenges of water scarcity and safeguard water resources, CCEP Indonesia adopts a value chain approach to water management. CCEP Indonesia focuses on reducing the consumption of water used in production facilities (water use reduction) and returning 100% of water to nature (water replenishment) safely. One of the initiatives to reduce water consumption is through the use of reverse osmosis technology which allows the reuse of wastewater. Starting operations in 2021 at three factories in Indonesia, wastewater that is treated and processed through reverse osmosis is then reused for general purposes, such as cleaning and solvents for chemicals. This project helps save 161 million liters of water by 2021 and contributes to 86.7% of Indonesia's total CCEP water consumption reduction projects.

Various initiatives have also been implemented to reduce GHG emissions. This is stated in CCEP Indonesia's commitment to reduce Absolute GHG emissions by 25% by 2030 and achieve Net Zero Carbon by 2050. CCEP Indonesia's efforts to reduce GHG emissions lie in two important areas: increasing energy efficiency and switching to renewable energy. One of them is by installing rooftop solar panels at the Bekasi factory, West Java, since 2019. This 72,000 m² solar panel is capable of producing 9.6 million kWh of electricity which is used for the operational

activities of the CCEP Indonesia factory. With the use of solar power, CCEP Indonesia can reduce 8.9 million kilograms of carbon emissions per year. By 2021, the solar panels generated a total of 7,699 MWh Peak, enabling CCEP Indonesia to reduce carbon emissions by 7,936 metric tons and make cost savings of around IDR 8.6 billion for the year.

Not only limited to solar panels, but CCEP Indonesia has also changed its lighting system to LED (Light Emitting Diode) based lighting technology in all facilities since 2016 so that it has succeeded in reducing energy consumption by 496,246 kWh which contributes to a reduction in carbon emissions of 385 tons. We also converted boiler, power generation,

and forklift energy from diesel fuel to natural gas and compressed natural gas in 2008. CCEP Indonesia also continues to optimize energy efficiency used in operations, including the use of integrated systems and automatic sensor technology for engines, lighting, automatic shutdown and start-up processes, maintenance systems, and others.

REAL IMPACT FOR SURROUNDINGS

PRODUCT DESIGN



Reduced plastic content by 19% as of April 2022 compared to 2014 use from light-weighting initiatives. Economically, it reduces production costs by approximately 7%.



Reduces up to 40% of plastic content in packaging through the Affordable Single Serve Packaging (ASSP) program when compared to non-ASSP products.



Using 10% recycled PET content in bottled packaging for all CCEP beverages by the end of 2022. Predicted to reduce production costs by approximately 2%.

WASTE COLLECTION



Collected more than 41 million kilograms of waste through the Bali Beach Clean Up program since 2007.

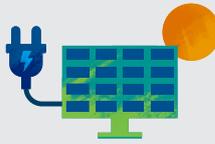


Since 2019, it has managed to collect more than 6,000 kilograms of waste in Randugunting Village, Semarang; more than 40,000 kilograms of waste in Tamanan Hamlet, Pasuruan; and more than 252 kilograms of waste in Cihanjuang Village, Sumedang by empowering the community.

ACTION ON CLIMATE¹¹⁸



Increase 32.9% Energy Use Ratio in 2021 compared to 2014 baseline.



Installing solar panels at the Bekasi 1 factory, West Java, in 2021 will generate a total of 7,699 MWh peak and enable CCEP to reduce carbon emissions by 7,936 metric tons.



Installation of LED lighting reduces energy consumption by 496,246 kWh thereby reducing carbon emissions by 385 tons.

¹¹⁸ <https://www.cocacolaep.com/id-id/sustainability/action-on-climate/>, accessed on 23 May 2020

ACTION ON WATER¹¹⁹



Reducing 35% of the amount of water used to make one liter of the product since 2014.



Return 197% of used water to the environment by 2020.



100% of production facilities have implemented a water management plan.

EDUCATION AND WELFARE IMPROVEMENT



Through the Coca-Cola Forest program in Sumedang, Semarang, and Lampung, around 3,000 kg of organic waste and more than 13,000 PET bottles have been recycled and environmental training for around 340 people has been carried out.



Through the Green School program, 592 students, 21 teachers, and parents have been educated at SDN 05 Sukadanau and SDN 01 Kapuk Muara. In 2020, SDN 05 won the Raksa Prasada Award for the Environmental Culture/Adiwiyata School Category from the West Java Provincial Environment Service.



As of April 2022, the Mahija Parahita Nusantara Foundation has embraced more than 18 collection centers, and 584 scavengers, and has had a positive impact on more than 5,360 people in the form of providing basic food packages, improving public facilities for the garbage collection community, facilitating the COVID-19 vaccination program, and free health services.



Running the Bestari Village Program (Clean, Healthy, Resilient, Sustainable), which was created to help answer the challenges presented by COVID-19 such as increasing public awareness of the importance of health and the environment with a focus on entrepreneurial activities and waste management. Has provided training on product development from the aloe vera plant to 35 women around the Bekasi factory as well as training on composting and recycling materials to 316 people in West Java.



Running an MSME development program, to help MSMEs overcome challenges that hinder their economic growth and resilience, such as limited capital, difficulties in obtaining business permits, and limited access to markets. As of March 2022, this program has captured 336 MSMEs in Lampung, 40 MSMEs in Central Java, 20 MSMEs in East Java, and 32 MSMEs in Bali.

¹¹⁹ <https://www.cocacolaep.com/id-id/sustainability/action-on-water/>, accessed on 23 May 2020

IMPLEMENTATION CHALLENGE

The number of available waste management facilities is still relatively small so its implementation is still very dependent on the informal sector. Public awareness to reduce and manage waste is also still lacking, which can also be caused by the lack of education programs for the community. Incentives both fiscal and non-fiscal for the community and industry players who manage waste are still lacking. The supply of used PET bottles with food-grade quality is still limited and prices are also unstable.

STRATEGY FOR REPLICATION

As a global company, of course, there are many aspects that CCEP Indonesia pays attention to in implementing its sustainability baseline. At the same time, many things can be done with the application of the circular principle, plus with a big impact. To implement this on a smaller business scale, we can try to see one by one what can be applied at each stage of our operations, for example from each aspect of product design, water, climate action, waste management, and others. Initiatives can also start with the simplest, for example, to be implemented in one stage of production, before then increasing the scale of implementation and also the number of initiatives.

Bottom line: just get started!



35

PT Astra International Tbk

Equitable Circular Policy
Across Sectors

- R1 Rethink
- R2 Reduce
- R3 Reuse
- R4 Repair
- R5 Refurbish
- R6 Remanufacture
- R7 Repurpose
- R8 Recycle
- R9 Recover

Actor: Private
Sector: Other



Consciously or not, you have most likely used one of the products or services of PT Astra International Tbk. This is because the Astra Group has 7 different business sectors, ranging from automotive, financial services, heavy equipment, mining, construction and energy, agribusiness, infrastructure and logistics, information technology, and property. Even as simple as passing a toll road, for example from Tangerang to Merak, is also a form of contact

with the products/services of the Astra group.

With different business sectors, there are certainly more aspects that need to be considered and considered by the Astra group in its journey to practice a circular economy. What are the initiatives and programs that are in line with the circular economy principle of the Astra group? Below are some examples from some of Astra's business units.

CIRCULAR ECONOMY PROGRAMS & INITIATIVES

1. Reducing product waste, which is realized in:

- PT Astra Otoparts Tbk through CBI and GS Battery cooperates with waste users to recycle car/motorcycle batteries into raw materials to be remanufactured by PT GS Battery (**R8/Recycle**).
- PT Komatsu Remanufacturing Asia seeks to reuse critical machine materials and heavy equipment parts by remanufacturing and reconditioning heavy equipment components to return to their original specifications (**R6/Remanufacture**).
- PT Astra Otoparts Tbk implements cleaner production through its subsidiary, PT Pakoakuina, by collecting aluminum left over from machining to be reprocessed into ingots by a third party which will later be used as raw material for making aluminum wheels for motorcycles/cars. Furthermore, the cutting fluid (water coolant) will be purified into a clearer cutting fluid so that it can be reused so that the cutting fluid waste can be drastically reduced (**R8/Recycle**).



- PT Universal Tekno Reksajaya (UTR) focuses on improving product quality and reconditioning small and medium-sized heavy equipment from Komatsu and non-Komatsu.
 - Astragraphia manages waste from the use of photocopiers and from the process of reconditioning photocopiers, such as leftover consumables, packaging, damaged spare parts, and so on. This waste is collected at the Eco Facility owned by Astragraphia and then managed by a third party (especially for B3 waste managed by a licensed third party according to regulations) **(R3/Reuse, R4/Repair, R8/Recycle)**.
2. Reducing operational waste by applying the 6R concept (Refine, Reduce, Reuse, Recycle, Recovery, and Retrieve to energy) which is realized as follows:
- PT Astra Agro Lestari treats liquid waste from its operational activities at the Waste Water Treatment Plant (IPAL). Processes that have met these quality standards are then used as liquid organic fertilizer on plantation land, while solid waste in the form of empty oil palm fruit bunches and boiler ash is used to replace some of the chemical fertilizers on plantation land **(R7/Repurpose)**. PT Astra Agro Lestari also uses biomass fuel from production process waste in the form of palm fiber and shells. Its utilization is for boiler fuel that produces steam for power generation and the processing needs of Fresh Fruit Bunches (FFB) into Crude Palm Oil (CPO). This biomass is used in all palm oil mills belonging to the Company Astra Agro Lestari.
 - Fly Ash and Bottom Ash (FABA) is a type of waste that comes from the combustion of coal in the PLTU boiler furnace, which is used by PT Energia Prima Nusantara (EPN). FABA was originally handed over to a third party as a collector and manager of B3 waste. However, since the change in government regulations regarding the category of B3 Waste, the FABA waste can be processed internally and independently by EPN. FABA has been successfully processed into a variety of useful products, such as construction materials (brick, ready mix/concrete), roadbase, soil improvers, and materials for stabilization of acid mine drainage (AAT). This FABA management is also followed by testing the characteristics of the waste using the Toxicity Characteristic Leaching Procedure (TCLP) and Lethal Dose 50 (LD50) methods which indicate that the use of FABA in the above products is not toxic or hazardous. These products have been used for internal purposes of the Company and with the community through the CSR **(R7/Repurpose)** program.



- PT Komatsu Remanufacturing Asia reuses plastic spare parts wrapping in the warehouse area **(R3/Reuse)**, standardizes the use of plastic to wrap products, and uses environmentally friendly plastics. **(R9/Recover)**.

3. Establish a separate function for the energy management system, called Astra Green Energy (AGn) starting from perfecting the energy use system, designing energy conservation and efficiency programs in all business lines of the Astra group, and utilizing the latest technology to achieve optimal energy efficiency (**R1/Rethink and R2/Reduce**), with a concrete example:

- Regulation of the use of electricity consumption in buildings, especially the use of lights and air conditioners.
- Replacement of energy-saving equipment such as TL lamps into LED lamps and the use of inverter technology.
- Optimization of process equipment such as chiller, wet scrubber, and compressor system
Optimization of the processing system by using an economizer for heat treatment and the use of a booster pump to maintain process pressure.
- Installation of solar PV in company installations.
- Facilitating Safety, Health, and Environment (SHE) managers to obtain energy manager certification so that personnel who manage energy use are competent and able to optimize energy-saving efforts.
- Substitution of diesel and LPG into biodiesel and natural gas.

4. Designing products with circular designs and making them environmentally friendly (**R1/Rethink**), which is realized in:

- PT United Tractors Tbk provides quality products and spare parts that are designed for long-term use and a longer maintenance period.
- Every material and product of PT Astra Otoparts Tbk always pays attention to the provisions and regulations to be environmentally friendly, such as the use of easily biodegradable materials, or materials that are free from harmful metal content (Pb, Hg, Cd, Cr6+, PBB, PBDE) and SoC products. Free.
- PT Astra Otoparts Tbk uses asbestos-free car/motorcycle brakes at PT Akebono Brake Astra Indonesia, using parts made of aluminum, cast iron, and plastic that can be recycled.

REAL IMPACT FOR SURROUNDINGS

After carrying out the above initiatives, the Astra Group has reduced:



The total GHG emissions are quite significant. In 2019, the total cumulative GHG emissions produced by the Astra Group reached 4,936,800 tons CO₂e_q and managed to decrease to 4,012,308 tons CO₂e_q in 2021, or equivalent to a decrease of 18.73% in absolute terms and a decrease in intensity of 22.54% is calculated. 2020 to 2021 only.



Total solid waste B3. In 2019, the Astra Group produced a total of 20 thousand tons and then decreased to 18 thousand tons in 2021, or equivalent to a 10% decrease in absolute terms and a 49.84% decrease in intensity only from 2020 to 2021.



Reducing various costs, ranging from user fees for transporting and treating waste, utility costs such as energy and electricity, and overall business operating costs.



Total non-B3 solid waste. In 2019, the total reached 3,279 million tons and decreased to 3,073 million in 2021, or equivalent to a decrease of 6.28% in absolute terms and of 20.39% in intensity in 2020 to 2021 alone.



Provide a positive economic impact on many external parties, such as third-party waste managers, waste banks, waste-off takers, waste recycling industries, and informal sector waste collectors.

IMPLEMENTATION CHALLENGE

Seeing that many initiatives carried out by the Astra Group are quite dominant in optimizing, reusing, and recycling waste both from operational activities and whole products, circular initiatives are highly dependent on production activities. Thus, when there are events that hinder or stop production activities, such as the COVID-19 pandemic or other factors, of course, this circular initiative cannot be carried out with the usual high intensity.

STRATEGY FOR REPLICATION

In the path of realizing the circular economy embodied in the 9R strategy, the position of recycling lies far behind the production chain. This means that, although recycling activities are recommended to avoid the accumulation of waste in landfill, in principle, many action plans need to be carried out before reaching recycling, starting from refuse, rethink, reduce, reuse, repair, refurbish, remanufacture, repurpose, just recycle. The Astra Group is aware of this and although they also do recycling, some of the products produced by the Astra Group business units have been made environmentally friendly from the start.

As a business group, Astra also uses management strength and systematic efforts to implement change, including the application of the circular economy principles, to all companies in the group. If you are a business owner with a variety of units, don't let any business units be left behind!



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PT Solusi Bangun Indonesia Tbk

Converting Waste
Into Refuse-
Derived Fuel (RDF)

R9 Recover

Actor: Private
Sector: Construction



We all need a home to live in. To build a house, one of the commonly used building materials is cement. Well, have we ever thought that cement, which is the main raw material for construction, has a negative impact on the environment? However, over time, everything can change. Technology is developing rapidly and you could say almost nothing is impossible. The cement industry can also be a solution to environmental problems. Through the Waste Heat Recovery Power Generation (WHRPG) system which converts the exhaust gas from cement combustion into electricity generation, the use of fossil fuels can be reduced. Especially if the cement company also recycles its waste into alternative fuels.

The waste recycling system into fuel is carried out by PT Solusi Bangun Indonesia Tbk (SBI), which is a business unit of PT Semen Indonesia (Persero) Tbk (SIG). Maybe if you've heard of Semen Andalas and Dynamix brands, both are products from this company. Apart from producing cement, SBI also offers finished concrete products and supplies aggregates. The company, which has factories in four cities in Indonesia,

namely Narogong (West Java), Cilacap (Central Java), Tuban (East Java), and Lhoknga (Aceh) has a total production capacity of 14.86 million tons of cement per year. All of its factories have also received the Green PROPER award from the Ministry of Environment and Forestry.

The Sustainability Report also states that SBI benefits from having sustainable solutions. No kidding, the income from this sustainable solution reaches 15.8% and 1.6 million tons of alternative fuels and materials are also obtained from the use of waste!¹²⁰ The company has also succeeded in reducing CO₂ emissions by 15% (equivalent to 580 kg CO₂ per ton cement equivalent) compared to 2010. The emission reduction is also an achievement in itself because the target was set for 2025, and they managed to achieve it in 2021.¹²¹

The fact that the company relies heavily on fossil fuels is also what motivated SBI to create solutions. The circular economy is considered an opportunity so that the 2030 target, which is to reduce CO₂ emissions by 29% compared to 2010 (specific net emission per ton cement equivalent),

¹²⁰ PT Solusi Bangun Indonesia Sustainability Report, page 10 and overview

¹²¹ PT Solusi Bangun Indonesia Sustainability Report, page 10 and overview

can be achieved.¹²² 1.59 million tons of waste per year has been utilized through the use of alternative fuels and materials, including industrial waste (B3 and non-B3) from various industries, as well as Fly Ash and Bottom Ash. Utilization of this waste is carried out with co-processing technology, which is an environmentally friendly waste management method, using a cement kiln owned by PT Solusi Bangun Indonesia Tbk which has a high temperature - up to 1,500°C - and is stable, to destroy waste without leaving any residue. Waste that can be treated in this way includes industrial waste, unqualified materials, expired products, and other types of waste that cannot be recycled by the usual process.

CIRCULAR ECONOMY PROGRAMS & INITIATIVES

As a substitute for coal, SBI uses rice husks and palm kernels that are no longer used. This initiative helps reduce CO₂ emissions that arise if these two types of waste are left to decompose. The use of this waste contributes to the income of entrepreneurs in areas that supply biomass regularly.

This company (represented by its waste management business unit, Nathabumi) also processes urban waste through Refuse-Derived Fuel (RDF) technology into alternative fuels (**R9/Recover**). This initiative has been started in 2014. To make this material, the waste to be used is first weighed, then sorted, chopped, and dried using biological methods. Reject waste will be further chopped and re-milled, while inert (waste that is difficult or cannot be decomposed such as sand and concrete) will be used as cover soil at the Landfills. After that, the RDF is ready to be loaded and sent to the storage warehouse to be fed to the kiln.¹²³ This RDF is used for the cement production process. This SBI is the pioneer in processing urban waste into RDF in Cilacap Regency, Central Java, with funding assistance from the Danish International Development Agency (DANIDA) and in collaboration with the Coordinating Ministry of Maritime Affairs and Investment, Ministry of Public Works and Housing, Ministry of Environment and Forestry, Central Java Provincial Government, as well as Cilacap Regency Government.

REAL IMPACT FOR SURROUNDINGS

Circular initiatives that are carried out do not have an immediate impact on income, but they will have a long-term impact on the risk of financial burdens related to the use of fossil fuels (coal). For local governments, this initiative can extend the service life of the landfill to reduce costs for the preparation of new landfill sites and maintenance costs. On the other hand, Cilacap municipal waste is more manageable and the work area of scavengers as partners in managing municipal waste is safer and more organized. This initiative to utilize domestic waste can also reduce plastic waste, which amounts to around 40% of the total domestic waste used. With the use of waste into fuel, dependence on fossil fuels can be reduced, including a reduction in the financial burden.

In addition, several other effects can be quantified by numbers:



The total volume of waste managed is 45,000 tons (data as of December 2021).



The reduction in CO₂ emissions in 2021 reached 19,815 tons, compared to 2020 which was only 8,853 tons. In 2021, CO₂ emissions with RDF will be reduced to 1,589,209 tons, or almost 20 thousand tons lower without RDF.



Meanwhile, in 2020, CO₂ emissions with the presence of RDF will be reduced to 1,710,727 tons or almost 9 thousand tons lower without RDF.



Absorb 30 workers.



11.4% substitution of heat energy is obtained from alternative fuels.



Save 29.38% of water by using rainwater.

¹²² PT Solusi Bangun Indonesia Sustainability Report, pages 59 and 151

¹²³ <https://solusibangunindonesia.com/masadepanyangkitamau/>

IMPLEMENTATION CHALLENGE

Municipal solid waste (municipal solid waste) has a much more complex character than industrial waste which is more homogeneous. It also requires high capital and operational costs to procure a pre-processing plant and collect it. Not to mention, there is still a need for a strategy to equalize the perception or mindset of the actors involved in the realm of waste management, both the government, the community, and the informal sector. Building the RDF business model also took a long time to finally be implemented because it needed to be introduced to increase the understanding of the stakeholders, not only from the environmental and technical aspects but also from the economic aspects.

Due to the pandemic, the RDF project also faces new challenges, including the very limited paradigm and financial capacity of local governments for waste management needs. The availability of waste management machines with high TKDN (domestic component level) in Indonesia is also still limited. This pandemic has also forced companies to learn and adapt to conditions that are difficult to predict.

STRATEGY FOR REPLICATION

To strengthen the commitment to sustainability, according to SBI, the main key is synergy and cooperation between the community, the informal sector including scavengers, and the government. In addition, the support of other parties needs to be sought to help the sustainability of the initiative, such as donor agencies and the government, both national and regional. The amount of support becomes important, especially if the initiative to be implemented is still not common so a strong booster is needed, both in terms of funding as well as from technological innovation and other related aspects.

Learning from this RDF project, this unusual initiative requires an active campaign to introduce it to the relevant parties. This requires a lot of time, knowledge, and capital. However, this is not impossible; the key is consistency and embracing the supporters closely for good initiatives to be carried out.







CHAPTER 06

**LEADING
THROUGH
ACTION,
STEPPING
INTO
CHANGE**

If we look at the root of motivation, in fact, why do entrepreneurs need to run a business with the principle of a circular economy? Is it for the sake of keeping up with industry movements, answering the call of the heart, or even further, offering solutions to urgency?

Talking about business cannot be separated from talking about profits. And speaking of profits, the principle of a circular economy with its 9R activities offers various advantages. The environment is certainly the most impacted by the work of a circular economy business. The circular economy is more than waste management. The application of the circular economy principle has an impact on reducing the use of new natural resources so that nature has time to “breathe”, regenerate, and recover for its survival, which will also be used by us again, and other living beings.

In its application, the circular economy can also reduce waste because it is converted into useful products. Waste is reduced, and waste management costs are also reduced. The Final Processing Site (Landfills), which is currently still the mainstay for processing our waste, can also have a longer life. With the Landfills still having functional value, the government does not need to allocate special funds for the construction of new Landfills, considering that land conditions are also increasingly limited. The allocation of funds can be used for other activities.

Not only good for the environment, but the implementation of the circular economy business model is also beneficial for the country. Like businesses with other business models, every transaction that occurs becomes a lubricant for the wheels of the economy and absorbs labor so that human resources in Indonesia can feel empowered and have a decent living for themselves and their families. Another major plus point,

the circular economy adds to the country's ‘savings’ towards the GHG emission reduction figure which has become the country's commitment to the international community.

Like two sides of a coin, there will always be challenges behind every profit, especially for work that goes against the flow, such as implementing circular economy activities. The circular economy initiators whose stories are told in this book recognize the challenges of doing this good business.

One of the challenges is the issue of money. Some initiators feel that conventional input materials such as plastic are much cheaper than environmentally friendly materials. The comparison of economies of scale from this input material depends on the limited number of producers, which results in high production prices.

This challenge is not only manifested in the form of difficulty in determining prices or the percentage of funds that need to be further suppressed. The consumer's perspective certainly affects their willingness to make transactions. Will consumers easily glance at the products and services of a circular economy business, even though the price is higher than that of a linear economy business? Don't we often buy products and/or services with the hope that these products and services can make life easier?

The challenges regarding the consumer's perspective above then multiply and give birth to the next challenge: The limited market that consciously chooses products with the principle of a circular economy. Business actors not only need to market their products, but they also have homework to educate the public about the definition, urgency, and benefits of a circular economy.

Not to mention, the words ‘garbage’, ‘waste’, and their friends still have

negative connotations ranging from low quality to dirty and unsightly. To eliminate the doubts that exist in the community, this perception that has been accepted and understood for many years needs to be broken, with the hope that people can choose circular economy products not only because they are good for the environment, but also because of the quality of the product. alone.

In addition to the challenges of money and consumer behavior, the existence of vendors and producers of production raw materials who understand and have an environmental perspective is still not optimal. The empowerment of these parties is the key so that production can run lasting. Several initiators have also proven that the application of the circular economy principle by raw material producers can open the door to wider opportunities. Especially, cooperation with circular economy business owners who are looking for suppliers of raw materials with the same principles.

As there are not many challenges in implementing the circular economy principle, there are still other challenges, namely, limited infrastructure, as experienced by Aruna, Asia Pacific Rayon, and Independent Energy Village of Urutsewu. Some circular economy initiatives, especially those involving producers and consumers in two different areas, certainly need supporting technology as a means of communication. Affordable internet access and smartphones are key facilitators in these circular economy initiatives.

Not only for communication purposes but technology is also needed to simplify the production process and other things that support it. For example, research and manufacture of products from renewable materials and the creation of environmentally friendly packaging of good quality, both require qualified equipment.

A GLIMMER OF HOPE TOWARD TRANSFORMATION

The good news is that Indonesia's journey towards implementing a circular economy is not like a backside that misses the moon!

There is still room, progress has been made, and there will be avenues for more massive and comprehensive implementation.

It is evident from the existence of the initiators in this book who have implemented circular economy initiatives on various scales and types of businesses. There may be many more initiators that have not been picked up in this book. This proves that there is already an example, it just needs to be careful in looking for opportunities so that innovation is not just an idea or dream, but a solution. Oftentimes, these opportunities stem from things in our daily lives.

Collaboration is also one thing that needs to be underlined. Almost all initiators place collaboration as the fuel of their business processes, starting from collaboration with suppliers such as farmers or waste producers or parties who work to help the wheels of their circular business such as scavengers. Do not forget of course the workers and consumers. For example, the Plastic Free Market is the result of collaboration between the community and the government, as well as the management of the Urutsewu Energy Mandiri Village with the villagers. The Koinpack business model can also be realized thanks to the cooperation that exists with FMCG companies in providing their products.

The power of collaboration has proven beyond just jargon.

The government and other institutions are important entities that are expected to also

collaborate, especially to create a conducive environment through various ways such as drafting regulations, providing financial support, as well as capacity building support so that all parties involved have the same understanding and enthusiasm in turning their circular business. The government and other institutions are also expected to take this initiative even further so that more parties are inspired and dare to take steps in implementing the circular economy principle.

In this collaborative action, sharing knowledge is one form of action that is no less important. Increasing the capacity of the partners involved is not only beneficial for the main business, but also other parties. This will create a butterfly effect, our actions, no matter how small, can make a difference. Partners will become agents of continued change who will transmit circular economy initiatives in their various activities to other parties.

In collaborating, there is also an even greater potential, namely taking lessons from local wisdom which often actually reflects the principles of a circular economy. For Example, Aruna, applies sustainable fishing practices to fishermen who trade aquatic biodiversity to the wider community, and Sejauh Mata Memandang, who designs clothes by adopting Indonesian fashion models so that they can not only be worn at certain events.

With its uniqueness, and potential, as well as its very diverse culture, and local wisdom throughout the country, Indonesia has enormous capital to develop business models that are suitable for the characteristics of its region. With the support of connectivity infrastructure, information and communication technology, as well as product

development technology, the circular economy business model in Indonesia can develop rapidly.

Circular economy development in practice is not much different from conventional business development. Thought and creation seem to be the main capital whose value cannot be valued in numbers when developing a business with the principle of a circular economy. This creativity generates an attractive business with unusual input materials or business objects, which is the main attraction. Persistence, courage, and an unyielding forward spirit are also a recipe for developing a circular economy-based business and spreading the values of circularity for a better economy and environment.

Last but not least, the government as an enabler has also paved the way and built corridors in the implementation of the circular economy in this country. Existing policies and regulations have demonstrated the government's commitment to supporting the initiators in translating circular ideas to be implemented into business in the field.

Indonesia already has the capital: a fairly large GDP, as well as a plan to get out of the middle-income trap into a developed country. It's not impossible, with the proliferation of businesses with circular economy principles -maybe your business is one of them?- Indonesia can become one of the countries with the largest and largest circular economy business model in the world.

All initiators, including the government and other institutions, have shown concrete actions in moving towards a change from a linear economic ecosystem to a circular economy in Indonesia: earning money, sustainably.





**THE FUTURE IS
CIRCULAR**

UNCOVERING
CIRCULAR ECONOMY
INITIATIVES IN INDONESIA

THE FUTURE ^{IS} CIRCULAR



UNCOVERING
CIRCULAR ECONOMY
INITIATIVES IN INDONESIA